

**SUPPLY CHAIN RISKS INFLUENCING THE PERFORMANCE OF SMALL AND  
MEDIUM ENTERPRISE CONTRACTORS IN  
SEMBABULE DISTRICT-UGANDA**

**By**

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## DECLARATION

I, DENIS **GALABUZI**, do here by declare that this research report is solely my own product and do state that it is not anyone else's efforts or a reproduction of any other person's work. I further declare that this dissertation has never been submitted for any academic award in any academic institution.

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**APPROVAL**

This dissertation was carried out under our supervision and has accordingly been submitted for examination with our approval.

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## **DEDICATION**

This research is dedicated to my Parents; Mr. and Mrs. Frederick and Regina Ssekandi, and my wife Mrs. Berna Arinaitwe Galabuzi.

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## **ABBREVIATIONS**

SME-Small to Medium Enterprise

PPDA-Public Procurement and Disposal of Public Assets Authority

ANOVA-Analysis of Variances

## ABSTRACT

This report presents findings of the study on Supply Chain Risks influencing Performance of Small to Medium Enterprise (SME) contractors in Sembabule district of Uganda. The study objectives were to; investigate the extent to which operational risks influence performance; examine how control risks influence performance and examine the influence of Supply Chain network risks on performance of SME Construction firms in Sembabule district. The study used a case study design and adopted both qualitative and quantitative approaches. A total 43 contractors and 9 contract supervisors were interviewed. Primary data was collected using self-administered questionnaires for the contractors while the interview guide was used to collect data from the contract supervisors. In this study, three hypotheses were tested using the ANOVA technique. The study findings showed that there was no significant relationship between operational risks and performance. However, the study established a significant relationship between control risks and performance ( $r = 0.448$ ;  $p = 0.003 < 0.05$ ), as well as supply chain network risks and performance ( $r = 0.362$ ;  $p = 0.017 < 0.05$ ). The study therefore concluded that: risks that manifest during the construction phase are originated in prior phases of the construction process normally due to client, consultant and contractor related factors; adoption of improved managerial practices by SME contractors presents the biggest opportunity for improvement of contractor performance and that collaboration plays a big role in ironing out the deficiencies that accrue as a result of poor communication and lack of linkages within parties. The study recommended strengthening of management capacity through targeted skills based training in financial, communication, human resource, procurement and contract management as a way of reducing control risks. It also recommended reduction of supply chain network risk through better relationship management by contractors through building trust, maintaining open lines of communication and proper interpretation of contract documents.

# **CHAPTER ONE:**

## **INTRODUCTION**

### **1.1.Introduction**

This study aimed at evaluating the influence of supply chain risks on the performance of Small and Medium Construction Enterprises in Sembabule District. Supply Chain Risk was conceived as the independent variable while performance was the dependent variable. A Small Enterprise was defined as an enterprise employing a maximum of 50 people, with annual sales/revenue turnover of maximum Uganda Shillings 360 million and total assets of maximum Uganda Shillings 360 million. A Medium Enterprise was defined as an enterprise employing more than 50 people, with annual sales/revenue turnover of more than Uganda Shillings 360 million and total assets of more than Uganda Shillings 360 million (Common Wealth Secretariat, 2010). In Uganda, small and medium enterprises (SMEs) account for 99% of private businesses and provide employment to about three million people, contributing approximately 70% of gross domestic product as well as paying taxes for national development.

This study was limited to Small and Medium Construction Enterprises, focusing on contractors hired for Works between the years 2009 and 2011 in Sembabule District. This case was selected due to the diversity of civil infrastructure that were constructed in the district during that period that provided an opportunity to give a wide view on the implication of the factors influencing performance of Small and Medium Construction firms in the country as were conceptualised in this study. This chapter presents the background to the study, statement of the problem, the purpose of the study, the research questions, the hypotheses, the scope of study, the significance, justification and operational definition of terms and concepts.

## **1.2. Background to the study**

### **1.2.1. Historical background**

The history of supply chain initiatives can be traced to the early beginnings of the textile industry with the quick response program and later to the efficient consumer response in the grocery industry (Lummus & Vokurka, 1999). It also finds its roots in a strategy used by Japanese enterprises known as the Time Based Competition, that was documented by several United States authors in the late 1980s, and whose basis was the use of speed to gain competitive advantage (Suri, 2003). With the shift from mass-production of the early 1900's to mass customization led by the lean manufacturing and quality control era of the 1970's – 1990's, organizations began to investigate how higher quality goods could be produced at lower prices (Siems, 2005). This move to mass customization, assisted by the incorporation of information technology and the improvements in communication technology, led to the development of collaborative strategies and alliances across the supply chain, in an effort to shorten planning cycles, delivery times, and overall costs (Lummus & Vokurka, 1999).

Increasingly, organizations have looked to become more efficient in costs and procurement of materials and consequently have looked into the network of contributing suppliers for optimization of the process (Marulanda, 2010). In addition, companies have become leaner and more efficient by dramatically improving service levels, delivery times, and overall costs (Lummus & Vokurka, 1999), which gains have been achieved by collaborative strategies that transcend individual organizations and span internal and external business units involved in a product's supply chain.

Recent events however, have vividly demonstrated that a disruption affecting an entity anywhere in the supply chain can have a direct effect on a corporation's ability to continue

operations, get finished goods to market or provide critical services to customers (Jüttner, Peck, & Christopher, 2003). While many firms have implemented various supply chain initiatives to increase revenue and reduce costs, supply chains have become more complex and consequently more vulnerable to disruptions than they were before.

### **1.2.2. Theoretical background**

The study is based on the Resource Dependency Theory proposed by Pfeffer and Salancik (1978). This theory characterises the corporation as an open system, dependent on contingencies in the external environment. It further recognises the influence of external factors on organisational behavior.

The theory further contends that as organisations continually relate and collaborate with one another, there is a tendency of increased dependency. These interdependencies, coupled with uncertainty about what the actions of those with which the organisations interdepend will be, leads to a situation in which survival and continued success are uncertain. Interdependence is relative to the amount of available resources and the demand, and the transactions between individuals in the same environment. Control over resource allocation is an important power source that will arise from possession, ownership, control of access and control of actual use of the resource. While organisations strive for control over vital resources and take actions to manage external interdependencies, such actions are never completely successful and produce new patterns of dependencies and interdependencies. These patterns produce interorganisational as well as intraorganisational power, which has some effect on the organisation.

Organisations are therefore not autonomous but depend on other organisations for needs of critical inputs, such as goods and materials. Therefore to understand the behaviour of an organisation, one needs to understand the context of that behaviour - that is the ecology of the organisation (Pfeffer & Salancik, 1978).



### **1.2.3. Conceptual background**

In classical decision theory, risk is commonly conceived as a variation in the distribution of possible outcomes, their likelihoods, and their subjective values (March & Shapira, 1987). On the other hand, the label risk can be assigned to factors, either internal or external to the firm, that impact on the risk experienced by that firm (Jüttner, Peck, & Christopher, 2003). In this study, supply chain risk is considered from the perspective of risk sources within the environment, network (industry) and the firm.

Environmental risks correspond to factors that affect the business context across industries (Miller, 1992). They may be the result of accidents, socio-political actions, government policy instability, macro-economic uncertainties and natural uncertainties.

Miller (ibid) adds that supply chain network (industry) risks occur between supply chain partners and involve three major classes of uncertainties: input market uncertainty, product market uncertainty and competitive uncertainty. Input market uncertainty refers to the uncertainty surrounding the acquisition of adequate quantities and qualities of inputs into the production process and is likely to occur in situations where there are only a few suppliers. Product market refers to the unexpected changes in demand of an industry output due to changes in consumer tastes or availability of substitute products. Competitive uncertainty is associated with rivalry among existing firms and potential entrants into the industry.

Organizational risks lie within the boundaries of the firm. Miller (1987) mentions labor uncertainty, firm specific input supply uncertainty, and production uncertainty as major contributors to operating uncertainty. Labor uncertainties include changes in employee productivity due to for example labor unrest or strikes. Raw materials shortages, quality changes in inputs, and spare parts restrictions are all examples of firm operating uncertainties in the input supply category. Production uncertainty includes variations in output due to

factors such as machine failure and random factors such as accidents that disturb the production process.

#### **1.2.4. Contextual background**

The challenges facing local contractors in East Africa have been associated with lack of adequate work opportunities, corruption, poor availability of credit facilities and inadequate business skills (Tanzania Contractor's Registration Board Newsletter, 2011). In Uganda, the causes of construction related problems have included inadequate design, use of unqualified personnel and sub-standard materials, poor construction methods and failure by the builders to interpret available engineering/architectural drawings and technical specifications (Ministry of Works and Transport, 2010). Restricted access to equipment leads to poor performance, since equipment enhances performance and is one of the criteria for registration and classification of contractors. Basheka & Tumutegyereize (2010) noted that the unregulated nature of the local construction industry in developing countries has encouraged an “informal sector” mentality approach to business, with no long term view on work continuity on the part of contractors and consultants.

Sembabule district is in short supply of competent contractors capable of efficiently and effectively executing district infrastructural projects. The district has to rely on a few contractors trusted for their working record, to undertake a huge chunk of the work. Consequently, projects are abandoned, not completed or poorly done because the workload stretches these contractors beyond their capacity. A procurement audit (PPDA, 2012) found that several projects had either been abandoned or delayed beyond the prescribed contract time, even when payments had been made, owing to contractor inefficiencies. A number of complaints have been raised by beneficiaries on the substandard quality of work produced by contractors that is threatening the sustainability of government infrastructure investments, yet

they cost the district a lot of money. The remoteness of project sites also makes them difficult to supervise and as such, mistakes made by contractors go uncorrected, leading to delays, especially in the event that the products are rejected by the receiving communities. The shortage of critical infrastructure was highlighted as a major challenge to the movement of goods and services, thus undermining development in the district (Sembabule District Local Government, 2008).

### **1.3. Problem statement**

Performance of local contractors on government funded projects has been a challenge in Uganda and Sembabule District in particular, due to a multitude of factors. It has been reported (PPDA, 2008) that contract performance in Sembabule District was very poor with a high risk rating of 80% of the sampled contracts. This represented 89% of the total monetary value of all the sampled contracts of Ug. Shs 1,278,357,711=. A similar national audit of donor funded infrastructure projects (PPDA, 2012), of which Sembabule was among the districts sampled, found that; 50% of projects sampled delayed beyond the contract period, 17% were abandoned and 37.5% had evidence of poor workmanship. These factors were reported to have led to a failure to achieve value for money, since the projects were not completed and thus were of no use to the public in their state. This also implied additional cost to the government and district in particular in case new contractors were to be obtained to complete the work. On the side of the contractors, there was a high potential of cost escalation due to change in rates with additional costs incurred in order to improve poorly done works and complete the works that had been left incomplete.

### **1.4. Purpose of the study**

The purpose of the study was to assess the influence of Supply Chain risks on performance of SME Contractors in Uganda, with specific emphasis on Sembabule District.

### **1.5. Objectives of the study**

The following objectives guided the study:

1. To investigate the extent to which Operational risks influence performance of SME Construction firms in Sembabule District.
2. To examine the extent to which Control risks influence performance of SME Construction firms in Sembabule District.
3. To examine the influence of Supply Chain network risks on performance of SME Construction firms in Sembabule District.

### **1.6. Research questions**

In pursuance of the above study objectives, the three major questions addressed by the research were:

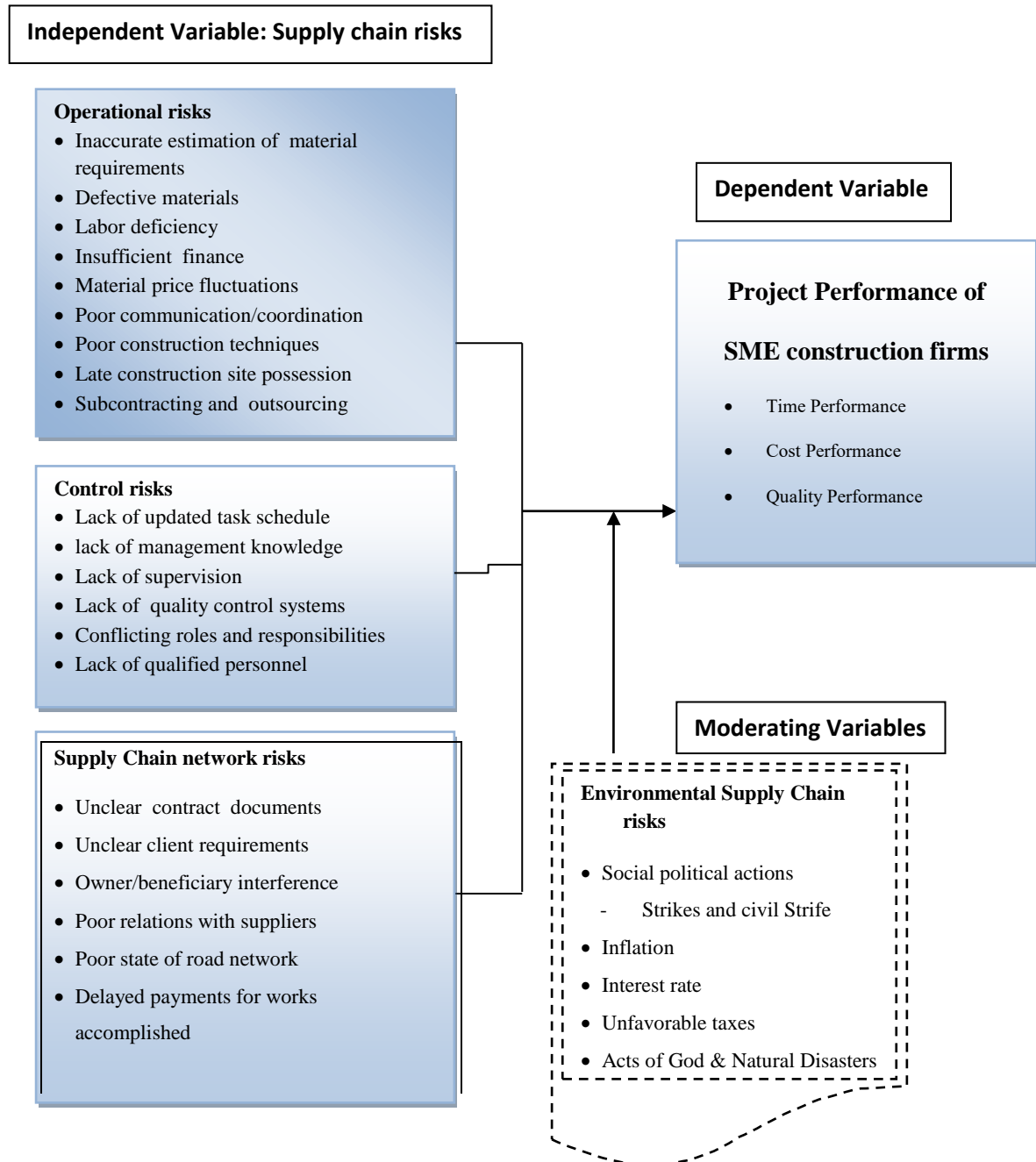
1. To what extent do Operational risks impact on performance of SME Construction firms in Sembabule District?
2. To what extent do Control risks impact on performance of SME Construction firms in Sembabule District?
3. To what extent do Supply Chain network risks influence performance of SME construction firms in Sembabule District?

### **1.7. Research hypothesis**

1. Operational risks have an effect on the Performance of SME construction firms in Sembabule District.
2. Organization control risks have an effect on performance of SME construction firms in Sembabule District
3. Supply chain network risks have an influence on performance of SME Construction firms in Sembabule District.

## 1.8. Conceptual framework

The conceptual framework in Fig. 1 shows the relationship between supply chain risks and performance of SME construction project firms



**Figure 1: Conceptual framework adapted from Jüttner, Peck, & Christopher (2003) and Miller (1992)**

The conceptual framework illustrates the relationship between the independent variable (Supply chain risks) and the dependent variable (project performance of by SME construction projects). The framework further demonstrates that performance of SME construction projects is influenced by Operational risks (estimation of materials, communication, finances and price fluctuation), Control risks (in terms of management failures and wrong decision rules), Supply Chain Network risks (poor relation with suppliers, unclear contract documents, interference) and environmental supply chain risks (political instability and inconsistent government policies, natural factors). Further, the framework illustrates that the relationship between the independent and dependent variables can be moderated by environmental risk factors, such as political uncertainty, inflation, acts of God, among others.

### **1.9. Significance**

The study aimed at determining the root causes of poor performance of Small and Medium Enterprise Construction firms that could be attributed to poor management of risks at supply chain level. In Uganda, small and medium enterprises (SMEs) account for 99% of private businesses and are therefore an engine for economic growth. While poor performance of contractors has been attributed to lack of capacity, no information exists regarding supply chain risk exposure of these enterprises and how this impacts on performance. Conventional risk management focuses on managing risk through formal procedures such as transfer, avoidance, acceptance and mitigation at firm level. However, ignoring exposure along the supply chain can equally have catastrophic impacts on organizations. This study sought to establish this relationship with the view of informing policy aimed at improving performance of the construction sector as a whole.

### **1.10. Justification of the study**

In Uganda, no study had been carried out regarding supply chain risks in the construction sector. Most studies (Apolot, Alinaitwe, & Tindiwensi, 2011, Basheka & Tumutegereize,

2010) focused on challenges faced by the contractors at execution stage yet studies show that many of these originate from other areas within the supply chain during the different phases of inception, design, execution and closure of a project. Recent events such as rampant collapse of buildings, abandoned projects, decline in competitiveness of local construction firms, pointed to a wider problem that required investigation. This study sought to establish supply chain wide risks faced by firms in order to explain the poor performance exhibited by contractors while undertaking construction projects.

### **1.11. Scope of the study**

In terms of geographical scope, the study was carried out in Sembabule district. The study content focused on supply chain risks influencing the performance of SME construction projects. The time scope for the study focused on contractors that had undertaken infrastructure development works in the district between years 2008 and 2011.

### **1.12. Operational definitions**

This section presented the operational definition of key concepts considered in the study.

**Supply chain** referred all the activities involved in delivering a product from raw material through to the customer including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer, and the information systems necessary to monitor all of these activities (Lummus & Vokurka, 1999).

**Supply Chain Risk** was “the variation in the distribution of possible supply chain outcomes, their likelihood, and their subjective values” (March & Shapira, 1987). These uncertain variations or disruptions affect the flows of information, materials or products across organization borders. In simple terms, supply chain risks refer to the possibility and effect of a mismatch between supply and demand.

**Performance** – referred to the firm’s capacity to complete projects within contracted periods at budgeted cost and to the required quality. Poor performance equates to schedule delays, poor quality work and cost overruns.



## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. Introduction**

This chapter presented a critical review of literature relevant to the study. In the theoretical review, theories on which the study was grounded were explored in order to identify relevant variables. The chapter further gives a review of literature in line with the study objectives so as to explore the variable relationships through the literature, while identifying gaps where applicable. Finally, the chapter gives a summary of the reviewed literature.

### **2.2. Theoretical review**

The term is majorly used in reference to unanticipated variation or negative variation in business outcome variables such as revenues, costs, profits, market share and so forth (Miller, 1992). Risk as performance variance is also widely used in finance primarily as probabilities of expected outcomes; variability of returns on a portfolio of investments; or risk of default, bankruptcy, and or ruin (Manuj, 2008). On the other hand, risk is used to refer to uncertain internal or external, environmental variables that reduce outcome predictability (Jüttner, Peck, & Christopher, 2003). In this sense, risk actually refers to a source of risk and uncertainty, such as political risks and market risks or from supply chain view, ‘the volatility of customer demand’. Such terms link unpredictability in firm performance to specific uncertain environmental components. Within this study risk is considered from the second perspective with regard to the source of risk.

The origin of supply chain risks can be explained by the resource dependence theory proposed by Pfeffer and Salancik (1978). Resource dependancy theory characterises the corporation as an open system, dependent on contingencies in the external environment. Each organisation is defined by activities they perform and the resources they control and is

connected to the other via resources and activities. Risk is generated owing to the fact that the corporation cannot solely meet its entire needs and has to depend on other parties within the environment for the supply of these resources. Continued collaboration between organisations creates increased levels of interdependence and this, coupled with uncertainty about what the actions will be of those with which the organisations interdepend, leads to a situation in which survival and continued success are uncertain. Consequently, organisations take steps to reduce that uncertainty and this could affect other organizations with which they are linked in the network.

Miller (1992) identifies three categories of uncertainties perceived by managers, namely; general environmental, industry, and firm specific variables. Each of these categories encompasses a number of uncertain components.

Environment risks include political instability, government policy instability, macro-economic uncertainties, social uncertainties, and natural uncertainties. Political uncertainty reflects the threats and opportunities associated with potential or actual changes in the political system. It can result from war, revolution, coup d'e'tat or other political turmoil. Policy uncertainty refers to instability in government policies that impact the business community (Ting quoted by Miller, 1992). Such uncertainties could be unanticipated fiscal and monetary reforms, price controls, changes in levels of trade barriers, the threat of nationalization, changes in government regulation and barriers to earnings repatriation.

Macro-economic uncertainty encompasses the fluctuations in the level of economic activity and prices and can take the form of general price inflation or movements in the relative prices of inputs (such as materials and labor) and consumer goods. Social uncertainty follows from beliefs, values and attitudes of the population that are not reflected in current policy or

business practice. It occurs in contexts characterized by social unrest, riots, demonstrations or small scale terrorist movements.

Natural uncertainty can be attributed to natural phenomena such as extreme weather or earthquakes that can impact on economic output. Natural calamities can impair numerous business functions and decrease productive capacity of firms operating in the affected region.

Industry risks refer to the possibility and effect of a mismatch between supply and demand (Jüttner, Peck, & Christopher, 2003). They are triggered by disruption in material, information, or capital flow between supply chain parties. Miller (1992) classifies three major groups of industry risks: input market which refers to industry level uncertainties surrounding the acquisition of adequate quantities and qualities of inputs, product market consisting of the unexpected changes in demand of a company's output and competitive uncertainty due to the rivalry among existing firms and potential entrants into the industry. Vrijhoef & Koskela (2005) attribute industry risks in construction to the temporary organisation nature of construction undertakings. Vrijhoef & Koskela (ibid) assert that grouped organisations, which have had no prior collaboration but have to work together at a project, are mostly operating less efficiently and effectively than steady organisations.

Firm specific factors can be categorised as operating, liability, credit and behavioral uncertainties (Miller, 1992). Jüttner, Peck, & Christopher (2003) identify operational risks and control risks as being firm specific. Operational risks comprise disruptions within the production processes while control risks include management failures and wrong or inflexible decision rules that lead to irregularities. Raw material shortages, quality changes in inputs, and spare parts restrictions, labor unrest, machine failure and accidents are all examples of firm operating uncertainties.

### **2.3. Thematic review of literature**

The following section gave an account of the thematic review of literature regarding the main variables being investigated in the study presented in the order of Operational Risks, Control risks and Supply Chain Risks affecting performance of contractors. The purpose of this section was to provide an insight of the parameters driving the relationship between the independent and dependent variables.

#### **2.3.1. Operational risk factors affecting performance of contractors**

Operating uncertainty includes three sub categories of uncertainties namely; labor uncertainty, firm specific input supply uncertainty and production uncertainty (Miller, 1992). Labor uncertainties are caused by fluctuation in employee productivity due to factors such as strikes, shortage of skilled labor force and can lead to delayed or even destruction of accomplished works during the execution stage. Secondly, firm specific input supply uncertainty results from raw material shortages, fluctuating quality and price of inputs, insufficient finance and inaccurate estimation of input requirements and can result in stock outs, poor quality outputs, delay in execution of works and consequent cost overruns that erode the profits of the firm. Production uncertainty includes variations in output due to machine failure, poorly skilled operators or random factors like accidents that disrupt the production process.

Apolot, Alinaitwe, & Tindiwensi, (2011) mentioned five most frequent causes of delay in construction projects as; delayed payment, inadequate/ inefficient equipment, rework due to poor quality work, clients' bureacracy and change in work scope. Sambasivan & Soon, (2007) mentioned poor site management, inadequate contractor experience, equipment availability and failure, material shortages, and low quality and productivity of labor as key factors contributing to delays and cost overruns of construction projects in Malaysia.

On the other hand, Frimponga, Oluwoyeb, and Crawfordc (2002) identified payment difficulties from agencies as a major delay and cost factor. Mohammed and Mohammed (1999) linked the most important success constraints to cashflow and other financial difficulties faced by the contractor such as improper review of the contract, ineffective planning and scheduling, and delay in making the required submissions.

Cash flow mismanagement, lack of capital and low profit margin due to tough competition were ranked ranked factors causing business failure of contractors in Palestine (Enshassi, Al-Hallaq, & Mohamed, 2006). Chilipunde (2010) noted that access to finance remains a dominant constraint to Small and Medium Construction Enterprises in Malawi. He recommended strategic programmes to promote the development of skills in areas of management, technical, book-keeping, supervisory, estimating and tendering skills, to enable entrepreneurs run their firms profitably and in a sustainable manner.

### **2.3.2. Control risk factors affecting performance of contractors**

Control risks include management failures and wrong or inflexible decision rules that lead to irregularities (Jüttner, Peck, & Christopher, 2003). Due to lack of skillful management, less attention is paid to resources allocation that is to say human, financial and material resources (Frimponga, Oluwoyeb, & Crawfordc, 2002).Lack of budgetary controls can lead to non-detection of fraudulent practices in organizations which could lead to cost overruns and loss of profits. Lack of material control may lead to unprecedented theft of materials leading to a compromise in quality by utilizing fewer quantities than desired. Chitkara (2006) emphasizes that unclear targets, inadequate information flow, incompetence in adopting appropriate monitoring techniques and the absence of timely corrective measures, cause poor workmanship, schedule creep, which in turn lead to cost overruns. The lack of quality control

measures leads to production which is out of control, whereby defects are only realized late in the construction process at which point they are very expensive to rectify.

Project management tools and techniques play an important role in effective management of a project. Therefore, good project management lies in management tools and techniques used to manage the project (Frimponga, Oluwoyeb, & Crawfordc, 2002). Ineffective management has been cited as the primary cause of poor productivity rather than an unmotivated and unskilled work force (Katende, Alinaitwe, & Tindiwensi, 2011).

Makgati & Thwala (2009) assert that Poor record keeping, due to the low priority attached by new and fresh entrepreneurs, and a lack of the basic business management skills is a cause for startup business failure. A recent study of causes of construction delay (Odeh & Batteineh, 2002) found that delays in construction were caused by reluctance of contractors to invest in planning and control and the lack of professional construction managers.

Schaufelberger (2003) cited by Wong & Thomas (2010) asserts that among the primary causes of subcontractor business failure were lack of early warning measures, increase in project scope, poor billing procedures, failure to evaluate project profitability and poor use of accounting systems. Enshassi, Al-Hallaq, & Mohamed (2006) observed that small firms did not have dedicated accounting departments to publish financial reports on a regular basis and therefore, monitoring financial ratios was rather difficult. Assaf & Hejji (2006) stressed the importance of assigning administrative and technical staff as soon as a project is awarded to make arrangements to achieve completion within specified time and with the required quality, and estimated cost.

Zou, Zhang & Wang, (2005) highlighted seven risk factors related to contractors namely “unsuitable construction program planning” and “variation of construction program”;

resulting from inadequate program scheduling, innovative design or contractors' lack of knowledge in planning construction programs; "lack of coordination between project participants" leading to chaos in the management of construction teams and programs; "unavailability of sufficient professionals and managers" or "unavailability of sufficient amount of skilled labour" that may result in delays in the construction phase; "general safety accident occurrence" which is usually due to project management negligence of construction safety policy and "occurrence of dispute" which exists on account of the discrepancy in the design and construction scenarios.

Frimponga, Oluwoyeb, & Crawfordc (2002) after considering varied opinions from contractors, consultants and owners, found that the three groups felt the major factors that caused excessive ground water project overruns in developing countries were poor contractor management, monthly payment difficulties from agencies, material procurement, poor technical performances and escalation of material prices according to their degree of influence.

### **2.3.3. Supply chain network risk factors affecting performance of contractors.**

Risks within the supply chain are mainly triggered by disruptions of the material, information or capital flow between the supply chain partners (Jüttner, Peck, & Christopher, 2003). A supply network brings with it risks from all related network sources, namely uncertainties due to lack of ownership, chaos and inertia. Zhi (1995) cited relationships between supply chain parties as key drivers of supply chain risk. Pfeffer & Salancik (1978) identified input market uncertainty, product market uncertainty, and competitive uncertainty as major classes of industry uncertainty. They mentioned shifts in producer supplies, fluctuations in users' demand, and changes in consumer tastes, substitute products and competition between firms, as examples of industry level uncertainties. Zsidisin, (2003) mentions inability to handle

demand fluctuations, quality problems with suppliers, and the inability to stay in pace with technological changes as major sources of supply risks.

Client related factors such as change orders (changes in deliverables and requirements) , mistakes and discrepancies in the contract document, delay in the payment for works completed affect the completion of the project and cause time overrun, which in most instances leads to cost overrun (Sambasivan & Soon, 2007). Mistakes and discrepancies in contract documents can be in scope, deliverables, resources available and allocated, payment terms, achievement of various milestones and project duration.

A combined ranking of the sources of delay from owners, contractors and consultant in a study on the causes of delay in large projects (Assaf & Hejji, 2006) ranked owner related factors highest in terms of frequency of occurrence, degree of severity and level of importance. Among these factors were delay in progress payment, late reviewing and approving of design documents by the owner, change orders, mistakes and discrepancies in design documents, rigidity of the consultant and slowness in decision making by the consultant. Similarly, findings by (Mohammed & Mohammed, 1999) indicate owners administration as the most important delay category. They cite settlement of claims, slow decision making, delay in the process of making progress payments and excessive bureaucracy as very important causes of delay by the owner. On the other hand, owners considered early planning and design as a most important category that often leads to a change in scope at execution stage. Delays can lead to negative effects such as law suits between owners and contractors, increased costs, loss of productivity and revenue and contract termination (Tumi, Omran, & Pakir, 2009).



#### **2.3.4. Environment supply chain risks influencing the relationship between supply chain risks and Performance**

General environmental uncertainties correspond to factors that affect the business context across industries. They include political instability, macro-economic uncertainties, social uncertainties and natural uncertainties (Miller, 1992). Political instability can result from a war, revolution, inconsistent government policies and coup d' et at, or other political turmoil. Macroeconomic instability may take the form of general price inflation or movement in relative prices of inputs and consumer goods. Social uncertainty results from the difficulties inherent in predicting the likelihood of collective action and may occur in contexts characterized by social unrest, riots, demonstrations or small scale terrorist movements.

Kaliba, *et al* cited by Apolot, Alinaitwe, & Tindiwensi, (2011) concluded that cost escalation of construction projects in Zambia were caused by factors such as inclement weather, environment protection and mitigation costs, strikes, technical challenges and inflation. They concluded that high cost of capital, inflation and political instability were among the five most important causes of delay of Uganda's public sector projects. Semple, Hartman, & Jergears, (1994) asserted that the most important causes of claims where increase in scope, weather - restricted access, and acceletaration. On the other hand, several studies (Odeh & Batteineh, 2002; Frimponga, Oluwoyeb, & Crawfordc, 2002; Assaf & Hejji, 2006) ranked external factors lowest and as not important to owners, consultants and contractors. Mohammed & Mohammeg (1999) observed that while site and environment conditions were cited least important by clients, they were considered as very important by contractors as causes of delay.

Ministry of Works and Transport (2010) mentioned the lack of a definitive government policy and strong institutional framework as major causes of a fragmented and unsupported construction industry in Uganda. Basheka & Tumutegyereize (2010) similarly concurred that the lack of policy led to informal sector mentality within the industry, with no focus on work continuity among local contractors, leading to curtailed growth. Enshassi, Al-Hallaq, & Mohamed (2006), in a study on causes of contractor business failure similarly found that the highest three business failure causes for contractors in Palestine were absence of construction regulations, award of contract to the lowest price and national slump in the economy. The same study ranked delay in collecting debt from donors, border closure, segmentation of Gaza strip and high cost of materials as key political risks. Other studies (Mohammed & Mohammed, 1999) also stressed the role of the government tendering system in poor performance of contractors through systems that award the lowest bidder, who may be unqualified and unable to fulfill their obligation such as completing the project in time.

#### **2.4. Summary of literature review**

Risks faced by contractors relate to particular phases of the construction process and are experienced at different levels, that is at the operational (site execution) level, at control level (management) and at inter organizational level (between the firms and client or firm and customers). Operation level risks seem to be rooted in cash flow constraints due to lack of access to finance, low profit margins and payment difficulties from client organizations. With insufficient finance, contractors are unable to hire staff with required skills to manage and control the construction phase of the contract.

At control level, firms lack planning and control procedures that can facilitate timely corrective action. There is poor coordination among staff, leading to poor information flow

within the firm. Little emphasis is put in the maintenance of finance and accounting records and therefore variation may occur only to be realized when it is too late.

At inter organization level, risks seem to stem from the relationship between the client and contractor as well as the efficiency of design consultants. Delay in progress payment, late reviewing and approving of design documents by the owner, change orders, mistakes and discrepancies in design documents, rigidity of the consultant and slowness in decision making by the consultant are among the sources of risk at this level.

Lastly, the general environment in which contractors operate is a source of risk owing to economic factors such as inflation, economic slump as well as unfavorable policies. In inflationary economies price swings can drive input market risks leading to cost overruns in projects. Unfavorable policies such as award to the lowest bidder may compel contractors to underquote their services and there by abandon the contracts before completion. Additionally, political unrest can paralyze work because sites in troubled areas cannot be accessed.

## **CHAPTER THREE: METHODOLOGY**

### **3.1. Introduction**

This chapter presents the methodology that was used in the study. The scope of the research included building and civil works contractors operating in Sembabule district local government. Given this scope, a questionnaire was distributed to a random sample of 54 contractors and interviews were held with contract supervisors within the client organization. The study utilized both qualitative and quantitative approaches to collect analyze and interpret the data. The following sections outline the research design, the study population, sample size and selection, data collection instruments and methods adopted for the study.

### **3.2. Research design**

The study employed a case study design. A case study examines a phenomenon in its natural setting and has the advantage of employing multiple methods of data collection to gather information from one or a few entities (Benbasat, Goldstein, & Mead, 1987). Case studies are also more suitable for the exploration, classification and hypothesis development stages of the knowledge building process which is akin to this study. While several studies (Katende, Alinaitwe, & Tindiwensi, 2011; Apolot, Alinaitwe, & Tindiwensi, 2011; Basheka & Tumutegereize, 2010) focused on success factors for construction projects, no study had been carried out with the perspective of supply chain risks. As such the study of supply chain risks with regard contractors especially in Uganda was still in its infancy; therefore the case study design was appropriate.

### **3.3. Study population**

The study population comprised of various categories of contractors and project supervisors as illustrated in Table 1.

**Table 1: Population of the respondents in the area of study**

Category	Number of respondents	Unit of analysis
Contractors	54	SME contractor firm
Designated project supervisors	16	SME contractor firm
Total Population	70	

Source: Sembabule District Contract Register

The population targeted for this study comprised contractors who were prequalified for the provision of works to Sembabule district and designated project supervisors in the Works, Procurement and Administration departments in Sembabule District. Particular interest was given to the firms that were actively involved in construction works between 2008 and 2011, since construction activities during this period were seen to be much higher than in the previous years, owing to the influx of donor funding into the district for infrastructure development.

### 3.4. Sampling size and selection

The sample size for each category of respondents was determined using the table developed by Krejcie and Morgan (1960). No calculations were required for use of the table and the researcher simply considered the population given in the table and its corresponding sample size, as shown in Table 2.

**Table 2: Sample of Respondents as determined from Krejcie & Morgan (1960)**

Category	Population	Sample	Selection Technique
Contractors	54	48	Simple Random Sampling
Contract supervisors	16	16	Purposive sampling
Total	70	64	

Source: Sembabule District Contract Register

Stratified sampling technique was utilized to select respondents. The population was divided into homogenous categories or strata namely; contractors and designated contract supervisors. Simple random sampling was used for the selection of contractors while purposive sampling was used to select contract supervisors. Contract supervisors were selected purposively basing on their knowledge and experience in the management of the construction process.

### **3.5. Data collection methods**

The study utilized both qualitative and quantitative methods of data collection. Sample survey method was used for the collection of quantitative data while interview method was used for the collection of qualitative data from key respondents.

The advantage of sample survey was that it was a cost effective and time saving method to collect views on a wide range of issues from respondents and these could be easily compared. Face to face interviews on the other hand were found to be a good way to gather information from respondents because they allowed free elaboration of responses and provided the interviewer the opportunity to probe responses for deeper contextual information. These enriched the findings and provided context to the quantitative data obtained through the sample survey method.

### **3.6. Data collection instruments**

The following data collection tools were utilized for the study.

#### **3.6.1. Questionnaires**

Self-administered questionnaires were utilized for collection of quantitative data. The questionnaires were filled in the presence and under the guidance of the researcher. In this way, clarifications could be made to the respondents wherever necessary, to ensure coherent

responses. This also contributed to a high response rate because it saved time and could be completed at one go. However, it was challenging and time consuming to achieve appointments with all of the respondents.

The questionnaire comprised three sections namely; background information, which requested general information about the respondent, sections on risk factors and performance level - which required closed responses regarding independent and dependent variables on a five point scale ranging from strongly disagree (1) to strongly agree (5). Closed ended questions were convenient because they could easily be coded, analyzed and compared through quantitative approaches. They could also be easily comprehended by the respondents.

### **3.6.2. Interview guide**

The interview guide comprised open-ended questions that were posed to the respondents to solicit for in-depth responses. The responses were recorded down by the interviewer in the space provided in the guide. The questions were organized to capture responses on independent and dependent variables considered in the study. The exercise followed a specific order with each respondent going through the same questions.

### **3.7. Quality control**

Quality control comprised measures that were taken to ensure that the questionnaire, test, observation or any measurement procedure produced the same results on repeated trials as well as ensuring that the instrument measured what it purported to measure.

#### **3.7.1. Validity**

Validity is concerned with the extent to which an instrument measures what it is intended to measure. The tool was tested for validity by computing the Content Validity Index, which was the ratio of approved questions for the questionnaire to the total number of questions

originally proposed. These final questions were arrived at through opinions of subject experts on the suitability of the questions in measuring the variables of the study. Results are indicated in the table below:

Originally proposed responses	45
Approved response questions	37
$CVI = \frac{\text{Approved Responses}}{\text{Proposed responses}}$	82.2%

### 3.7.2. Reliability

Reliability is concerned with the ability of an instrument to measure a given construct consistently. Cronbach alpha provides a measure of internal consistency of a test or scale and is expressed as a number between 0 and 1. Internal consistency describes the extent to which all the items in a test measure the same concept or construct (Tavakol & Dennick, 2011). A low value of alpha may imply low number of questions, poor interrelatedness between items or heterogeneous constructs, while a very high alpha may suggest that items are redundant as they are testing the same question but in different guise. While several studies have put acceptable Cronbach alpha between 0.7 and 0.9, (Nunnally & Bernstein, 1994; Bland & Altman, 1997), Amin, (2005) supports 0.5 to be an acceptable value of Cronbach alpha.

A test group of 10 respondents were requested to fill the questionnaire and their responses were tested using the Statistical Package for Social Scientists. Table 3 shows the results of Cronbach alpha for the questionnaire tool used in the study.

**Table 3 Computation of Cronbach alpha for the questionnaire tool**

Variable	Alpha	N of Items
Operational risk	0.485	7
Control risk	0.569	7
Supply Chain risk	0.473	7
Performance	0.568	12
$\sum \text{Alpha}$	2.095	
<b>Average=<math>\sum \text{Alpha}/4</math></b>	<b>0.52375</b>	

**Source: Extracted from field data; Key: N=Number on items per variable; n=Number of Variables**



### **3.8. Procedure for data collection**

The researcher obtained an introductory letter from the School of Management Science at Uganda Management Institute, legitimizing the researcher's access to respondents. The researcher then sought permission from the Chief Administrative Officer, Sembabule District for access to information regarding registered contractors with the district. The researcher then administered questionnaires to the target group who were contractors and designated contract supervisors. After the data was collected, it was processed, analyzed and the researcher came up with a written report.

### **3.9. Data analysis**

#### **3.9.1. Quantitative data analysis**

Data collected from the field was first of all sorted, edited, coded and entered into in the computer using SPSS software. This package helped the researcher to present data by generating tables, graphics and frequency tables. At univariate level, SPSS helped the researcher generate descriptive statistics such as means and standard deviations. Correlation analysis was carried out to investigate the nature of relationship between supply chain risks and performance and thereafter, a regression analysis was carried out to determine the extent to which supply chain risk influenced performance of Small and Medium Contractors in Sembabule District.

#### **3.9.2. Qualitative data analysis**

Qualitative data was obtained through the use of the interviews and documentary review that were thoroughly sorted, classified and categorized into the various variables. The presentation of the above qualitative results was made in verbatim statement to support findings from the quantitative analysis and conclusions were drawn.

### **3.10. Measurement of variables**

There were variables measured at nominal, ordinal and interval ratio levels depending on the items in the instrument. Nominal scale was largely used to measure the demographic characteristics of the respondents, the ordinal scale was using a five point likert scale of Strongly Agree (5), Agree (4), Not sure (3) and Disagree (2), Strongly Disagree (1), (Ahuja, 2001) maintains that this type of scale is often referred to as a “Likert Scale,” named after one of its originator, Likert.

**CHAPTER FOUR:  
PRESENTATION, ANALYSIS AND INTEPRETATION OF RESULTS**

**4.1. Introduction**

This chapter presents the findings from the field in pursuit of the objectives of the study. A questionnaire was used to assess the perception of respondents on the factors affecting the performance of Small and Medium Enterprises Contractors. The questionnaire was divided into four parts, the first part requested for the background information of the respondents, the second part focused on the risks affecting performance in the order of operational, Control and Supply chain network risks, while the last part solicited views on performance based indicators as related to time, cost and quality performance. The chapter gives socio-demographic findings, descriptive statistics, correlation and regression analyses, tests of the hypotheses of the study and a record of qualitative results.

**4.2. Response rate**

Self-administered questionnaires were used to solicit responses from majority of contractors while some were sent out through e-mail and filled in electronically and later sent back to the researcher. Interviews were held to solicit responses form key respondents pertinent to the process of contractor management. Table 4 shows the response rates achieved by the researcher.

**Table 4: Response rate**

Category	Sample size	Responses Received/Interviews Held	Category Response Rate
Contractors	48	43	89.5%
Contract supervisors	16	9	56.3%
Total	64	51	79.6%

Source: Extracted from field data

Table 4 shows that a total of 43 out of 48 questionnaires issued to directors of construction firms were filled, representing (89.5%) response rate under this category. This is attributed to the fact that the questionnaires were mostly self-administered. Respondents preferred a quick interview to being requested to fill in and return forms at a later time. This opportunity helped the researcher explain the questions to the respondents for clarity.

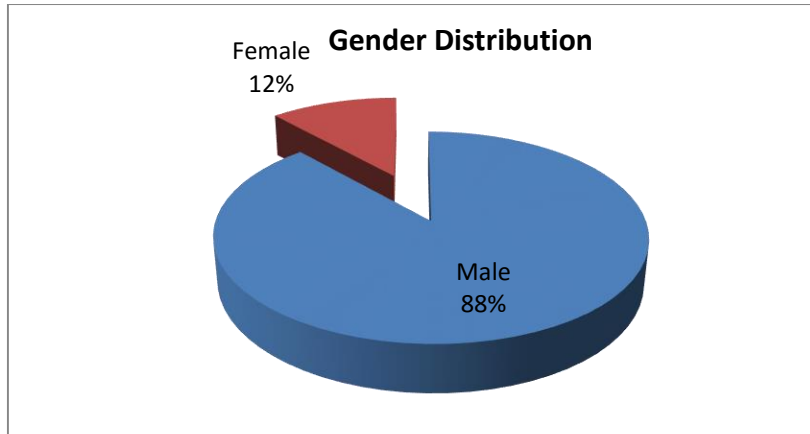
Additionally, interviews were held with 9 out 16 targeted contract supervisors representing (56%) response rate under this category. The low response under this category was due to the fact that some of the targeted respondents were engaged when contacted and did not offer the researcher the opportunity to be interviewed. Therefore a total 51 responses were received out of a sample of 64 targeted, representing an overall response rate of (79.6%) which is considered internationally acceptable since it's above the 50% rate (Mugenda and Mugenda, 2003). The response rate further shows that over 50% of the targeted sample size participated in the study.

### **4.3. Results on the background characteristics of respondents**

The study assessed the gender of respondents, their level of education, their experience in the construction industry as well as their predominant method of execution of work.

#### **4.3.1. Gender**

The question sought to find out the gender distribution of players in the construction sector in Sembabule district, as shown in fig 2

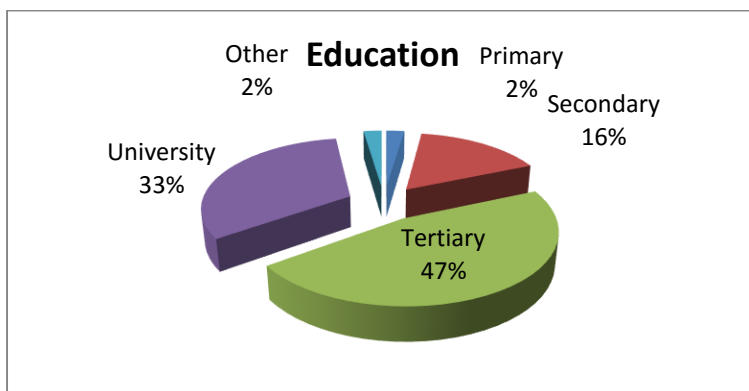


**Figure 2: Gender distribution of respondents as extracted from field data**

Figure 2 indicates that the majority of construction firms (88%) were run by male directors while only (12%) were run by female directors. This shows that women were less attracted to the seemingly technical field of construction, probably due to the impression that construction is the domain for males. It also reflects the historical fact that fewer women pursue science based professions such as engineering and construction. It is likely that the industry has been deprived of potential women workforce at all levels, which reduces the likelihood that unique needs of women are addressed within the industry.

#### **4.3.2. Level of education**

The study assessed the level of education of the respondents in regard to whether they had accessed primary, secondary, tertiary or university level of education, as illustrated in Fig.3.

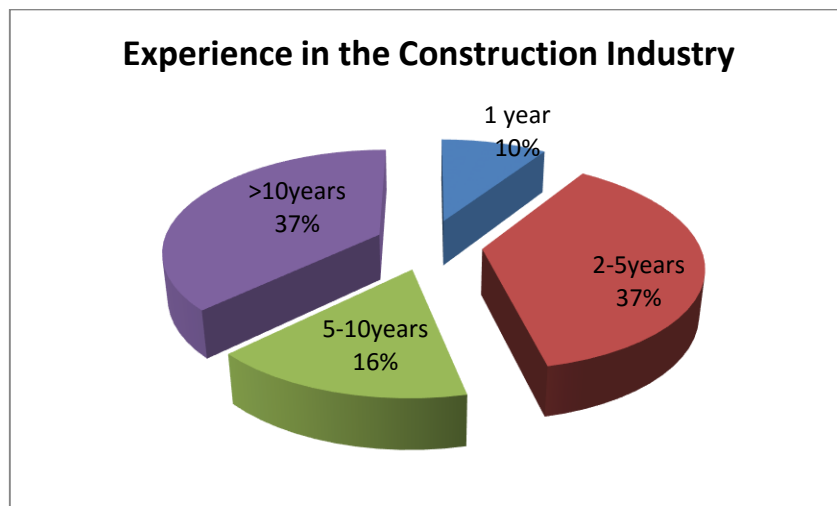


**Figure 3: Level of education of respondents extracted from field data**

From figure 3 above, majority of respondents (47%) received tertiary level technical education while (33%) had university degrees. A smaller proportion (16%) had secondary level education while only (4%) had primary or no level of formal education attained. Due to the system of prequalification that demands that contractors have minimum education and training qualification, majority of the contractors have either tertiary or degree level qualification. Education background is critical to performance of a contractor with regard to proper interpretation of contractual documents and management of contracts and is therefore a sieving criterion for the appointment of contractors to the prequalified list.

#### 4.3.3. Experience of the firm in the construction industry

This section solicited responses about the period the contractor had spent in the industry while participating in active construction work. The period spent in the construction field was a reflection of the level of experience gained which in turn impacts on the performance of a particular respondent. This is illustrated in the figure 4 below.



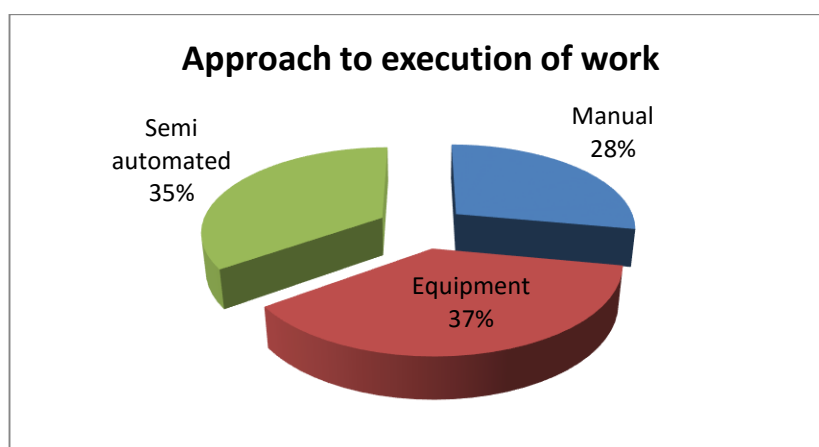
**Figure 4: Experience in the construction Industry extracted from Field Data**

From figure 4, it can be observed that majority of respondents (37%) had 2-5 years or more than 10 years of experience in construction. Only (16%) had an experience ranging between 5-10 years while new entrants were the minority at (10%). The contractors in the one (1) year

category were the least, mainly because it is difficult to establish oneself as a contractor due to the high capital requirements and yet also the cost of securing work is high due to the statutory requirements. The categories of 2-5 years and over 10 years of experience had the most contractors because the contractors at these stages have acquired major prerequisites such as capital and experience that enable them to be favored for contractual opportunities. There is a marked drop between the contractors in the 2-5 year category (37%) and 5-10 year category (16%), which reflects the fact that that only a few Small and Medium firms survive beyond their 5<sup>th</sup> anniversary. Many firms collapse due to a multitude of impeding factors both within their internal and external environment.

#### 4.3.4. Predominant approach to execution of construction work

This section required the respondent to state their predominant mode of execution of work. Given that contractors specialize in different fields, they may require alternate modes for execution of work. For example, a contractor engaged in building works may go for more labor based methods because of the limited scope of works while one engaged in road and valley tank construction will require equipment in order to execute their works. Each of these approaches may attract different types and magnitude of risk. The pie chart in figure 5 below shows the distribution of approaches among the respondents.



**Figure 5: Approach to execution of work extracted from field data**

From the figure above, the majority (63%) of the respondents use either manual (28%) or semi-automated (35%) methods while (37%) of the respondents are engaged in purely equipment based approach. Labor based or semi-automated methods are utilized by majority due to the low capital requirements necessary. This is preferred because most small construction enterprises do not have sufficient financial resources to invest in equipment purchase that is normally capital intensive.

The contractors under the semi-automated category usually hire equipment to perform critical operations and use labor for a substantial part of their works. The fact that equipment are required for critical operations means that contractor failure to access equipment or the hire of defective equipment has a large potential negative impact on the progress and quality of works. Additionally, any delay or poor utilization culminates into larger overheads that diminish profits for such companies. The lack of equipment also affects the speed with which contracts can be executed as contractors use slower labor intensive approaches to work execution.

#### **4.4. Results on performance of SME construction firms**

The following section gives the description of results as regards to performance of Small to Medium Contractors. In a contract, performance is deemed to be the fulfillment of an obligation, in a manner that releases the performer from all liabilities under the contract or the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. Performance was measured based on three statements of time, cost and quality where under several indicators were listed.



#### 4.4.1. Description of results on Time Performance

Table 5 shows results obtained regarding the statements on time performance. Time performance measures provided an indication of the contractor’s ability to complete allocated work on the contract in an efficient and timely manner. Responses were recorded on a five point scale ranging from strongly disagree (1) to strongly agree (5) from a set of questions. The mean response and standard deviation for each of the questions is stated and thereafter an analysis is made in the table below.

**Table 5: Responses to statements on Time performance**

Statements on Time performance	Percentage Responses (%)					Mean	Std. dev.
	SD	D	N	A	SA		
Timely completion of projects	20.9	41.9	4.7	27.9	4.7	<b>2.53</b>	<b>1.241</b>
Regular submission of updated project schedule to supervisors	7.0	48.8	0.0	39.5	4.7	<b>2.83</b>	<b>1.167</b>
Prompt communication of compensation events to client	2.3	18.6	7.0	55.8	16.3	<b>3.65</b>	<b>1.044</b>
Management meetings to review project progress	0.0	16.3	7.0	60.5	16.3	<b>3.77</b>	<b>0.922</b>

Source: Field data

The majority of respondents, (62.8%) disagreed to the statement on timely completion of projects while only thirty two point six percent (32.6%) agreed that they complete projects on time. Most respondents attributed delayed completion to difficulty in processing payments for completed works. Delayed payments affect the cash flow of contractors, which slows down the rate of execution.

Regarding regular submission of updated project schedule to supervisors, (55.8%) of the respondents disagreed to the statement while (44.2%) agreed. Contractors lack staff to monitor their contracts and also have difficulty in communicating changes in project schedule to their supervisors, due to the lack of appropriate tools. Once an initial baseline schedule is submitted, little is done to update it during the execution. This means that factors that may

affect the project duration are never captured or planned for. As such timely corrective action is not taken. This ultimately leads to a delay in completion of a project.

About the communication of compensation events to the client through regular feedback, (72.1%) of the respondents agreed to the statement while (20.9%) disagreed to the statement. Compensation events are major disruptions to project execution that have an effect on the final project schedule and give the contractor a right to claim compensation. Their timely resolution is important to avoid significant variation to the anticipated project duration. Contractors are each assigned a supervisor from the district and this makes it easy for them to report such events promptly.

On holding management meetings to review project progress, (76.8%) of the respondents agreed to the statement while (16.3%) disagreed. Contractors hold informal meetings with their staff especially during the site inspections. Meetings facilitate communication and resolution of issues that arise during the project execution process and in this way, site conflicts are minimised.

#### **4.4.2. Description of results on cost performance**

Cost performance referred to the ability of a contractor to complete the allocated work efficiently and within the anticipated budget. Cost performance is reflected by the matching of expenditure to budget, ability to accumulate profit, ability for the business to attain its intended purpose as well as financial stability. Contractors were questioned for responses to the above indicators. The results are presented in Table 6.

**Table 5: Responses to statements on Cost performance**

Statements on Cost performance	Percentage Responses (%)					Mean	Std. dev.
	SD	D	NS	A	SA		
Matching of actual expenditure to budget	11.6	69.8	7.0	11.6	0	<b>2.19</b>	<b>0.794</b>
Profitable construction undertakings contributing to company growth	2.3	16.3	4.7	72.1	4.7	<b>3.60</b>	<b>0.903</b>
Ability for the business to meet business purpose through construction	2.4	11.9	9.5	57.1	19.0	<b>3.79</b>	<b>0.976</b>
Financial stability	7.0	25.6	9.3	55.8	2.3	<b>3.21</b>	<b>1.081</b>

Source: Field data

Regarding the question of matching expenditure to budget, the majority of respondents, (81.4%) disagreed to the statement while (11.6%) agreed. Contractors' failure to perform works within anticipated budget is attributed to the high cost of production. Some of the construction sites are located in remote and inaccessible locations leading to high transport costs. Additionally required material inputs may be scarce at some project locations implying long haulage distances. Other factors that contribute to cost overrun include the unavailability of skilled labor force, which implies that they have to ferry workers to project sites. Lastly, under budgeting of projects on the side of the client could also be a factor contributing to cost overrun. Districts do not carry out detailed preliminary studies for works and so fail to capture unique aspects of a project, which could have an impact on project costs. Most times standard unit prices are used and these may not be adjusted to suit unique project characteristics.

On the question of profitability of the construction undertakings, (76.8%) of the respondents agreed that their business is sound and profitable while (18.6%) disagreed to the statement. The number of contractors operating in the district is few and this creates high demand for their services. Because of this they enjoy the opportunity of large business volumes and therefore high turnover, which translates to profit.

Regarding the statement probing whether the SMEs have been able to achieve their business purpose through construction, majority of the respondents, (76.1%) agreed to the statement while (14.3%) disagreed. The large number of respondents in agreement to the statement reveals the perceived potential of the construction industry which attracts a number of small firms as a business entry point. Most contractors are making a profit and have reason to continue providing services within the sector. This explains the stiff competition for work within the industry due to the multitude of contractors engaged in the provision of construction services.

On the statement regarding whether the firms have achieved financial stability (58.1%) agreed to the statement while (32.6%) disagreed. This is attributed to the fact that most contractors lack adequate working capital and thus have to depend on funding from the client for the execution of their work. Unfortunately, funds from the client may either delay to be disbursed or even be inadequate for the proposed works. This is worsened by the fact that contractors do not have easy access to bridge financing from formal financial institutions like banks. Internally, the firms also lack proper financial controls to ensure that funds are well utilized and also saved. This leads to a weak financial base and thus, the instability.

#### **4.4.3. Description of results on quality performance**

Quality performance measures provided an indication of the contractor's ability to execute work in accordance to the design specification and to the expectation of the intended beneficiaries. The statements measured the extent to which the contractor has produced work that is free from defects and minimizing incidences of rework. Responses were recorded on a five point scale ranging from strongly disagree (1) to strongly agree (5) from a set of questions. The mean response and standard deviation for each of the questions is stated and thereafter an analysis is made in table 7.

**Table 7: Responses to statements on quality performance**

Statements on Quality performance	Percentage Responses (%)					Mean	Std. dev.
	SD	D	NS	A	SA		
Expression of satisfaction by beneficiaries	0.0	0.0	4.7	58.1	37.2	<b>4.33</b>	<b>0.566</b>
Construction products free of defects	4.7	25.6	9.3	51.2	9.3	<b>3.35</b>	<b>1.110</b>
Construction products meet desired functionality	0	0	2.3	86	11.6	<b>4.09</b>	<b>0.366</b>
Adherence to specifications	2.3	2.3	7.0	48.8	39.5	<b>4.21</b>	<b>0.861</b>

Source: Field data

Findings from Table 7 indicate that majority of respondents (95.3%), agreed to the statement that beneficiaries express satisfaction for works executed. Contractors attributed satisfaction to timely project completion. Government operates in a time based regime where all projects should be accomplished on time. Satisfaction of the client was key in ensuring continued business and therefore contractors endeavor to complete projects assigned in order to secure future business for their enterprises.

On construction of products free from defects, (60.5%) percent of the respondents agreed to the statement while (30.3%) disagreed. Defects free work is attributed to supervision that is rigorously carried out by the client's team in conjunction with the contractor. Additionally, the contract always specifies a fee to be retained after completion of the contract for rectification of defects. This motivates contractors to avoid producing defective work, which if produced, may later affect their payments negatively.

Regarding the statement requesting responses as to whether facilities constructed meet desired functionality, (100%) of the respondents agreed that their products meet the desired functionality as intended at design. This is because projects are based on standard designs that are strictly followed during the construction. The designs are the basis for payment and

this leads to compliance by the contractors to produce facilities in conformity with the design specifications.

Regarding the statement about adherence to specifications, (88.3%) of the respondents agreed to the statement, while (4.6%) disagreed. Compliance to specifications is a prerequisite to payment for works completed. Therefore contractors endeavor to produce their works as close as possible to the specifications in order to secure their payments from the district.

#### **4.5. Results on operational risks affecting performance of construction SMEs**

The following section shows a descriptive summary, correlation, regression analysis, qualitative findings and test of Hypothesis of results Operational Risks and performance. Operational Risks are emanating from uncertainties at site execution level during project implementation.

##### **4.5.1. Descriptive results of operational risks and performance**

Table 5 indicates a summary of the results obtained as regards the statements about operational risks affecting performance. Respondents were questioned about seven indicators within the operational phase regarding labor availability, stability of input costs, access to lines of credit and stability of labor costs, among others. Responses were received on a 5 point scale from Strongly Disagree (1) to Strongly Agree (5). The mean response and standard deviation per indicator are also displayed in the table.

**Table 8: Results to statements on operational risks affecting performance**

Statements on Operational Risks	Percentage Responses (%)					mean	Std. dev.
	SD	D	N	A	SA		
My firm has capacity to estimate material requirements for projects undertaken	4.7	11.6	0.0	53.5	30.2	<b>3.93</b>	<b>1.100</b>
My company checks the quality of material inputs before they are utilized	0.0	9.3	2.3	53.5	34.9	<b>4.14</b>	<b>0.861</b>
Required labor is readily available at project sites within the district	7.0	20.9	4.7	55.8	11.6	<b>3.44</b>	<b>1.161</b>
My firm has access to lines of credit to finance construction projects	0.0	32.6	11.6	34.9	20.9	<b>3.44</b>	<b>1.161</b>
Prices of material inputs are relatively stable in the district	44.2	34.9	9.3	7.0	4.7	<b>1.93</b>	<b>1.121</b>
Prices for hiring labor are relatively stable in the district	7.0	44.2	9.3	39.5	0.0	<b>2.81</b>	<b>1.052</b>

Source: Field data

Findings from Table 8 indicate that majority of the respondents, (83.7%) agreed to the statement of the firm having the capacity to estimate material requirement inputs during construction operation, while (16.3%) disagreed. Material shortage due to poor estimation can lead to delay and cost overruns at implementation stage. The capacity to estimate correctly is attained through experience as well as training, which most of the contractors have. It minimizes disruption of work flow that may occur due to stock outs or the expenses associated with storage of excessive inventory.

On the statement of Capacity to detect faulty material inputs, (88.4%) of respondents agreed to the statement while (11.6%) disagreed. Most contractors are proficient in simple material inspection methods like visual inspection. The testing methods used in rural areas are largely visual, subjective and simple in nature. This is because services from material testing laboratories cannot be accessed and are very expensive yet the contracts do not allow enough funds for material testing purposes. Contractors rely on their experience in the selection of material inputs. Material selection is driven more by cost rather than quality criteria. It must

be noted that contractors are less aware of modern scientific testing methods and so sometimes material selection may be subjective depending on the person who does it.

On the statement of availability of labor manpower to execute contracts, (67.4%) agreed with this statement while (32.6%) disagreed. Rural labor is available most of the time, except for certain areas where due to cultural practices such as cattle keeping, communities would rather tend to their animals than do manual work. Availability of labor or lack of it may also be linked to seasons especially in communities that predominantly grow crops. However, agreement to this statement means that the risk of construction work being stalled due to labor shortage is low. With sufficient labor force, contractors are able to have relatively stable productivity on their sites, leading to timely completion of work.

Regarding the question of access to lines of credit to finance construction activities, majority (55.8%) of the respondents agreed to have access to credit facilities while (32.6%) disagreed. Contractors obtain financing through micro credit institutions that have now been set up in the district. The inclination towards micro credit institutions is associated with SME weak capacity to meet stringent requirements by the banks because they lack the necessary collateral as well as financial records to evidence their financial performance. Conditions for financing from micro credit institution are softer although borrowing rates are normally very high. As such the contractors are faced with challenges of high cost of capital.

On steady prices of inputs, the majority of respondents (79.1%) disagreed while only (11.7%) agreed to the statement. Unstable input prices are caused by general environment conditions such as inflation. Additionally, some projects are carried out in remote sites leading to higher overheads than anticipated, especially where access roads are in poor state. In other cases materials within the project area may not meet the quality criteria, meaning that a contractor needs to incur extra costs to access good quality materials from remote sources. Price swings



also sometimes occur due to unexpected shortages in critical input resources such as fuel, cement and steel on the market. Such shortages cannot be forecasted and could occur during the project execution period. This factor is made worse due to the fact that sometimes projects are underestimated by district authorities due to poor planning or centrally imposed budget constraints.

On the stability of labor costs, slightly over half (51.2%) of the respondents interviewed disagreed with the statement while (39.5%) agreed with the statement. High labor costs bear more pressure to the contractors and lead to a tendency of contractors ferrying workers from one site to another in a bid to reduce costs. Such uncertainties have a negative impact on the productivity of contractors labor force. A lot of time and money are wasted in establishing an economically sustainable workforce at the sites and this affects performance. Ferrying workers also diminishes opportunities for participation and skills transfer to members of the beneficiary communities where these projects are executed and also have an impact on beneficiary ownership because they are less involved in the projects.

#### **4.5.2. Correlation between operational risk and performance**

A correlation analysis was carried out to investigate the nature of the relationship between operational risk and performance. The correlation was carried out at 95% confidence interval. Results are shown in table 9.

**Table 9: Correlation of Operational Risk and Performance**

		Performance
Operational risk	Pearson Correlation	0.120
	Sig. (2-tailed)	0.444
	N	43

Findings from table 9 above show that there is a positive relationship between operational risks and performance  $r(42) = 0.12$ . However, the relationship is not statistically significant  $p=0.444 > 0.05$  at 95% confidence interval. This means that operational risks do not significantly influence performance of SME construction projects and therefore, any efforts to minimize operational risks would not significantly lead to an improvement in performance.

#### **4.5.3. Regression analysis of operational risks and performance**

Table 10 and 11 show the results of the regression analysis of operational risk and performance carried out at 41 degrees of freedom and at confidence level of 95%.

**Table 10: Coefficients table for relationship between operational risk and performance**

Model		Unstandardized		Standardized		
		Coefficients		Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	3.199	.347		9.229	.000
	Operational risk	.081	.104	.120	.772	.444

a. Dependent Variable: Performance

The results in Table 10 further confirm the correlation results in Table 9, where it was found that operational risk did not significantly predict performance of contractors,  $b=0.12$ ,  $t(41) = 0.772$ ,  $p=0.444 > 0.05$ . This therefore means that operational risks do not significantly affect the variations in performance of SME construction firms, but rather, their performance could be attributed to other factors, other than operational risks.

**Table 11: Analysis of variance between operational risk and performance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.075	1	0.075	0.597	.444 <sup>a</sup>
	Residual	5.142	41	0.125		
	Total	5.217	42			

a. Predictors: (Constant), Operational risk

b. Dependent Variable: Performance

From the analysis of variances carried out in table 11 above, it was observed that the extent to which operational risk explained performance of contractors was not statistically significant,  $R^2=0.014$ ,  $F(1, 41) = 0.597$ ,  $p=0.444 > 0.05$ . Therefore operational risks did not affect performance of contractors.

#### **4.5.4. Hypothesis one**

The first hypothesis stated that “Operational risks had an effect on performance of contractors in Sembabule district”. The hypothesis was converted into a null hypothesis for the purpose of testing and it therefore read “Operational risks do not have an effect on the performance of SME construction firms in Sembabule District”. After testing the hypothesis, the researcher found that operational risks did not affect the performance of SME construction firms in Sembabule District. Therefore the alternate hypothesis was rejected and the null hypothesis was adopted.

#### **4.5.5. Qualitative findings of operational risks affecting performance**

The following section presents qualitative findings the researcher made through holding interviews with key respondents that had specific experience in the management of contractor delivery.

Respondents highlighted the critical aspect of insufficient capital to kick start projects by Small to Medium contractors as a major factor affecting contractor performance. One of the key informants noted;

“The district does not offer advance payment for contracts due to previous experience of default of contractors after being given advance fees for works. This is a constraint to new contractors with low financial capacity and leads to delay of commencement of works.”

It should be noted that contractors are required to provide securities in form of bank guarantees, if they are to be advanced with funds. It is expensive and administratively cumbersome to secure bank guarantees for small contractors as was emphasised by one of the respondents;

“Banks require that you deposit an equal amount of money for advance security and yet as a contractor I don’t have these funds in the first place. Previously, insurance securities were sufficient but they are no longer considered valid for most government contracts”

The difficult financing conditions impact on both timely execution of works and quality, because the contractor is not in position to hire staff with required training to undertake the works.

Respondents also indicated late payments as a major cause of delays to progress of contractors' work. Delayed payments paralyze contractor operations as contractors are forced to continually demobilize and remobilize their site, which increases the operational cost.

“Because funds are sometimes not disbursed in a timely manner we are forced to halt works before completion. It costs a lot of money to maintain workers on a site without activity and still more resources to reestablish the site when funds become available”.

Districts depend on government transfers for the execution of civil works. The rate at which these funds are released sometimes may not match with that at which the project is executed. As such in the event that a contractor completes work when funds are not available, they have to wait for payment. Even though the contract stipulates the period within which payment should be made, this is not adhered to in most instances.

Relatedly, contractors seem not to have many options in access to cheap loans to finance construction projects. One of the respondents noted;

“Contractors lack adequate and fair lines of credit facilities to undertake sizable works satisfactorily. Most banks are charging high interest rates to loans and these are difficult to access due to the stringent conditions imposed”

The high interest rates lead to reduced profits and are worsened by the fact that payments are delayed by the district due to late central government transfers. Were funds are availed; they may not be able to cover sizable part of the works that warrants payment. With uneven cash flow, projects are prone to failure. Additionally, due to the stringent conditions banks place on accessing construction loans, contractors tend to borrow from less formal sources such as micro credit institutions and individual money lenders. These institutions levy exorbitant interest rates, which increases contractor overheads.

The lack of funds is worsened by the fact that some companies take on too much work at the district. There seems to be no mechanism to check to ensure that the companies have the capacity to execute the said work as vested interests may be involved in their selection.

“You find that owing to vested interests, a single contractor may be awarded many of contracts beyond their capacity. This spreads their operations so thin that they cannot have meaningful impact on any of the projects they are executing.”

The award of multiple contracts increases the level of risks at all strata of contractor organization because it stretches the resource envelope in terms of material, human and financial resources. Ultimately the contractor will execute some of the contracts with the hope that the payments that accrue can be utilized to fund other contracts. Any disruption in the projects that are expected to be a source of working capital to the contractor lead to further disruptions in the rest of contracts that the contractor had to implement.

Respondents also highlighted contractor failure to understand or information included in the contract. They fail to understand their obligations under the contract and may breach it in complete ignorance of terms thereby included. One key informant revealed thus;

“Interpretation of the contractual content is a problem as contractors are not able to comprehend documents such as bills of quantities, specific and general conditions of contract and have to depend on district officials for interpretation.”

Contractors don't take time to internalize clauses of the contract. As such they fail to understand the roles and obligations of different parties within the contract. As such, if breaches occur on either the contractor or the client side, they will go untreated. This sometimes leads to emergence of conflicts between the client and the contractor which may disrupt the works at the operational stage. The understanding of contracts was underscored by one of the respondents who mentioned;

“Understanding of the interrelationships between the players in the contract management process such as contractor, supervisor and client plays a big role. If one party does not understand this, it affects implementation. At institutional level, if the different players to the contract do not play their part, the contract will not perform.”

Failure to interpret documents is a source of risk that affects the entire project cycle in terms of quality (failure to comprehend specifications), cost (failure to quote appropriately for the works) and Time (failure to execute work within the stipulated timeframe). This lack of capacity to interpret contractual documents can be attributed to the lack of trained staff within SMEs that occurs because they do not have the resources to sustain a permanent technically qualified work force. Additionally, capacity gaps in contract management and a poorly enforced regulatory framework contribute to the laxity displayed by contractors because they perceive that nothing will be done to them even when the contract terms are breached. This ultimately affects project performance.

The critical lack of qualified personnel at all levels of administration both within the firm and at the field level affect contractor performance.

“Contractors do not employ competent professionals to enable them prepare competitive documents and same applies to implementation to enable proper management of the contracts. In most cases they fail to supply the right people for the job because they cannot afford to pay them.”

The failure to employ personnel may be attributed to the lack of finances required to maintain permanent staff in an environment where access to work is highly competitive and unpredictable. As such, employees are mostly hired on temporary terms when work is available and disbanded during periods when there is no work. One respondent observed,

“It is very difficult to maintain staff in these small companies. The moment they gain experience, they leave for better opportunities. Most times funds are not available to sustain permanent staff.”

With a volatile work force, chances for organizational development are hampered as experienced staff that would otherwise contribute to better firm performance is forfeited to firms that are in a better position to pay better wages.

#### 4.6. Results on control risks and performance

The following section shows a descriptive summary, correlation, regression analysis and test of hypothesis of results on Control Risk and performance. Control risks are escalated by failure of management systems of enterprises. Respondents were requested for responses over seven indicators increasing control risk exposure of small to medium enterprises.

##### 4.6.1. Description of results of control risks and performance

The table 12 below indicates a summary of the responses obtained as regards the statements about Control risks affecting Performance. Percentage responses are shown based on the 5 point scale from Strongly Disagree (1) to Strongly Agree (5). Additionally the mean and standard deviations for each of the statements is indicated and the table is thereafter explained.

**Table 12: Responses to statements on control risks affecting performance**

Statements on Control Risks affecting performance	Percentage Responses (%)					mean	Std. dev.
	SD	D	N	A	SA		
Contracts are executed according to approved schedule	4.7	32.6	2.3	46.3	14.0	<b>3.33</b>	<b>1.210</b>
Control mechanisms like budgeting are applied to projects undertaken	7.0	23.3	2.3	51.2	16.3	<b>3.47</b>	<b>1.222</b>
During project execution the project schedule updated regularly to reflect existing situation	2.3	23.3	7.0	51.2	16.3	<b>3.56</b>	<b>1.098</b>
Administrative reviews are made evaluate financial performance of contracts undertaken	4.7	11.6	2.3	55.8	25.6	<b>3.86</b>	<b>1.082</b>
Qualified staff are engaged on contracts undertaken	2.3	9.3	0.0	60.5	27.9	<b>4.02</b>	<b>0.938</b>
Staff are assigned clear roles and responsibilities	4.7	7.0	2.3	58.1	27.9	<b>3.98</b>	<b>1.012</b>
Functional organizational structure in place	4.7	14.0	16.3	41.9	23.3	<b>3.65</b>	<b>1.131</b>

Source: Field data



Findings from Table 12 show that more than half (60.5%) of the respondents agreed with the statement of executing work according to an approved project schedule, while (37.3%) disagreed. An approved work schedule is a coordination tool that helps all parties involved on a project to monitor and to make early identification of deviations that may impact on its timely completion. As a prerequisite, firms are compelled to prepare and submit work schedules alongside their bid for works. This explains why majority of respondents were in agreement to this statement.

On the statement inquiring whether firms utilize cost control mechanisms like budgeting for their projects, majority (67.5%) agreed with the statement while (30.3%) disagreed. Controlling cost is considered to be of cardinal importance to the contractors and so they budget for their work to ensure that they do not complete work outside financial limits of the project. This is attributed to the fact that most contractors have a good academic background, which enables them to utilize such management practices to their advantage. The respondents who disagreed to the statement mentioned that they found making budgets to be of no importance because projects are under budgeted in the first place. They cited that they face cost overruns even if they do detailed budgeting for their works.

As regards the statement on regularly updating the project schedule during the course of execution of the contract, majority of contractors (67.5%), indicated that they revised their schedule to take into account unforeseen events as a means of early warning, while (25.6%) do not update their project schedule. Revision of the project schedule enables the early identification of deviations and enables corrective action to be taken on time. Revisions are possible because of the site meetings that are conducted during project execution. During these meetings, issues and problems are raised and if these are such that they may affect the schedule, they are indicated as adjustments to the baseline schedule.

On the question requesting responses on whether contractors hold meetings to evaluate performance, a large number of contractors (81.6%) agreed with the statement while only (16.3%) disagreed with the statement. Meetings are held both at the management level as well as in the field during the construction phase. Meetings are a major mechanism of coordination for SME construction companies because they are not difficult to conduct. Meetings are a means of harmonizing targets, enabling information flow as well as addressing issues arising from monitoring visits. Contractors conduct meetings during their routine site inspections. The major drawback of this is that owing to poor record keeping practices, little or no documentation in terms of minutes are maintained by SME construction companies.

Regarding employment of staff with relevant qualifications, majority of respondents (88.4%) agreed to the statement while only (11.6%) disagreed. Technically qualified personnel are regarded vital for the successful project execution. Contractors rely on competent staff for the execution of their projects. The high number of respondents in agreement shows the critical importance contractors attach to having the right staff for the job. Relevantly qualified staff helps to minimize construction mistakes, which are always very costly to rectify or could lead to rejection by the client, consequently denying them payment.

On the statement of whether staffs have clear roles and responsibilities, majority of respondents (86%) agreed, while only (11.7%) disagreed. This is attributed to the nature of small to medium companies that have a small management, normally comprising the business owner and close associates, who coordinate a larger field team. Clear roles and responsibilities are important because they minimize conflict between the parties executing a project and are a prerequisite to coordination. The fact that there is clear assignment of roles means contractors are capable of effectively coordinating and controlling their works through their teams and this contributes to good performance of works.

Regarding the statement of whether the contractors have a functional organization structure, the majority of the respondents (65.2%), agreed with the statement while only (18.7%) disagreed. The above revelation shows that despite having clear roles and responsibilities (86%) as found above, fewer contractors (65.2%) have formal management structures as tools for management in their organizations. This could be attributed to the costs associated with maintenance of permanent staff in small organizations. Due to the limited cash inflows, fewer contractors are able to maintain a critical mass of operations staff. This means that management and delegation of responsibility are a challenge.

#### 4.6.2. Correlation between control risks and performance

Table 13 shows the results of a correlation analysis that was carried out to investigate the relationship between Control Risks and overall performance of SME construction firms. The relationship was tested for significance at 95% confidence level through the establishment of the significance value that was compared with the limit of 0.05.

**Table 6: Correlation of Control Risks and Performance**

		Performance
Control Risk	Pearson Correlation	.448**
	Sig. (2-tailed)	.003
	N	43

Source: Field data

Findings from table 13 above show that there is a moderate and positive relationship between control risks and performance  $r(42) = 0.448$ . Further, the relationship is statistically significant  $p = 0.003 < 0.05$  at 95% confidence interval, which means that control risks significantly influence performance of SME construction firms. This therefore shows that any improvements by way of minimizing the control risks would result into an improvement in performance of SME construction firms.

#### 4.6.3. Regression analysis control risk and performance

Table 14 and 15 below shows the results of the regression analysis of control risk and performance carried out at 41 degrees of freedom and at confidence level of 95%.

**Table 7: Coefficients table for the relationship between control risk and performance**

Model		Unstandardized		Standardized		
		Coefficients		Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.387	.339		7.048	.000
	Control Risk	.291	.091	.448	3.212	.003

a. Dependent Variable: Performance

Source: Field data

From table 14 it was found that control risk significantly predicted performance of contractors,  $b=0.448$ ,  $R^2=0.20$ ,  $t(41) = 3.212$ ,  $p=0.003 < 0.05$ . This confirms the earlier computed Pearson correlation coefficient results. Therefore, considering the standardised coefficients, control risks affected the variations in performance by a magnitude of 0.448 units. The  $R^2=0.20$  further meant that control risks predicted 20% of the changes in SME construction firms' performance.

**Table 8: Analysis of variances, control risk and performance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.049	1	1.049	10.314	.003 <sup>a</sup>
	Residual	4.169	41	.102		
	Total	5.217	42			

a. Predictors: (Constant), Control Risk

b. Dependent Variable: Performance

From the analysis of variances carried out in table 12 above, it was observed that control risk significantly explained performance of contractors,  $F(1, 41) = 10.314$ ,  $p=0.003 < 0.05$ . This implied that control risks had an effect on performance of contractors.

#### **4.6.4. Hypothesis two**

The second hypothesis stated that “Control risks had an effect on performance of contractors in Sembabule district”. The hypothesis was converted into a null hypothesis for the purpose of testing by which it read “Control risks do not have an effect on the performance of SME construction firms in Sembabule district”. After testing the hypothesis, the researcher found that control risks had an effect on performance of SME construction firms in Sembabule District. Therefore the null hypothesis was rejected and the alternate hypothesis was adopted.

#### **4.6.5. Qualitative findings of control risks affecting performance**

The following section presents an account of the qualitative findings on control risks affecting performance of contractors in Sembabule district.

Small to medium contracting firms have got weak management structures with a greater emphasis on execution and less on managerial practices such as record keeping, accounts to mention but a few. Transactions are most times carried out without documentation and it becomes difficult to track expenses incurred. One respondent was quoted to say;

“Contractors, especially the small and many in the medium category, tend not to calculate their operations before venturing into projects leading to undertaking projects which may not be profitable to them”

The lack of trained staff coupled with the lack of funds to attract and retain them makes contractors unable to undertake managerial tasks such as accounting and book keeping. Consequently, they are not in position to assess their financial position, which further limits their access financial services due to lack of financial records.

Contractors fail to control their works effectively because of the lack of functional organizational structures. In most instances, tasks for staff are not clear and predetermined, leading to role conflict, as one of the respondents shared;

“There is minimal delegation of duties and at times they fail to deploy technically competent staff at the site leading to poor performance. Contractors mostly run one man companies with no office, no staff and no systems to control production in terms of cost and quality and they remain static failing to advance in capacity despite many years in the field of construction.”

These factors are driven by the need to sustain the profit margin in the face of an adverse environment. The meager funds allowed on projects may not allow for the deployment of adequate staff to ensure proper project execution. With such a management scenario the production process is often bogged with wastage of resources as contractors fail to manage cash flows and work output, leading to poor performance.

Poor communication skills also contribute to contractors’ failure to execute contracts effectively. Districts are bureaucracies that depend entirely on written communication prior to action. One respondent revealed thus;

“Sometimes contractors cannot draft simple communications with regard to the contract. They have to depend on the supervisors to draft funds request letters and payment certificates. They fail to communicate effectively to the client and this can cause delay in payment consequently slowing down the progress of works”.

Poor communication contributes to delay of works as well as conflict between contracting parties. This affects implementation.

#### **4.7. Results on supply chain network risks and performance**

The following section shows a descriptive summary, correlation, regression analysis and test of Hypothesis of results on Supply Chain Risk and performance. Supply Chain Risks mainly arise as a result of the sub optimal interactions between the enterprise and principal or partner organizations during the course of project execution.

#### 4.7.1. Description of results of supply chain network risks and performance

Respondents were requested for their views on the seven indicators that were used to measure Supply Chain risk network risks of small to medium enterprises. Percentage responses are shown based on the 5 point scale from Strongly Agree to strongly disagree. Additionally the mean and standard deviations for each of the statements is indicated in table 16 below

**Table 9: Responses to statements on Supply Chain risks affecting performance**

Statements on Supply Chain Risks affecting performance	Percentage Responses (%)					Mean	Std. dev.
	SD	D	N	A	SA		
Are project design drawings clear and easy to interpret during construction	2.3	4.7	0.0	46.5	46.5	<b>4.30</b>	<b>0.887</b>
Are payments for works completed made in a timely manner	23.3	37.2	2.3	32.6	4.7	<b>2.48</b>	<b>1.295</b>
Does the client interfere with project execution	9.3	30.2	9.3	46.5	4.7	<b>3.07</b>	<b>1.163</b>
Do local authorities support contractor activities during project execution	23.3	30.2	4.7	37.2	4.7	<b>2.7</b>	<b>1.319</b>
Do you maintain a good working relationship with suppliers	2.3	2.3	0.0	69.8	25.6	<b>4.19</b>	<b>0.588</b>
Do you have easy access to sites where projects are located	11.6	53.5	11.6	20.9	2.3	<b>2.49</b>	<b>1.032</b>
Do you receive timely corrective advise from supervisors	4.0	4.7	2.3	58.1	34.9	<b>4.23</b>	<b>0.718</b>

Source: Field data

Findings from the table 16 above indicate that majority of respondents, (93%) agreed that project design drawings are clear and easy to interpret during construction, while (7%) disagreed. This is attributed to the fact that there are standard drawings that have been developed and normally passed on from line ministries for most projects executed at the district. Additionally, many of the contractors have tertiary level technical training that facilitates their understanding of technical drawings. Contractors also employ staff during the execution of projects with the training and capacity to interpret these drawings.

On the question of timely payment for works completed, a majority of respondents (60.5%) disagreed with the statement while (37.3%) agreed. Delay of payments may be attributed to local government bureaucracy and inefficiency in the client's administrative system. Payments have to be processed by several parties and they will sometimes be blocked if a critical member of the chain does not provide timely input. On the other hand, some contractors fail to provide the necessary paper work that can initiate the payment. This is caused by the lack of administrative staff with the expertise to prepare logical fee notes for the works completed. Sometimes contractors have to depend on district supervisors to raise their demand certificates and this also contributes to delay.

On the question of whether the client or his agents interfere with the construction process, majority of respondents (51.2%) agreed to the statement while (39.5%) disagreed. This is attributed to the fact that some members of the client organization have a pecuniary interest in contracts and will disrupt their progress as a way of compelling the contractor to give them a share of the financial proceeds. Contracts may be deliberately delayed especially if the contractor has not complied with under table requirements demanded by managing bureaucrats.

Regarding whether local authorities support contractor activities during project execution, majority of the respondents (53.5%) disagreed with the statement while (41.9%) agreed. Local leaders in some areas take advantage of their positions to disrupt the works by mobilizing the communities against the contractors operating in their areas. At times the communities are not clear about what is expected from them. So instead of playing an oversight role, they meddle in the activities of the contractor, leading to unnecessary delays. Additionally, the contractors and their staff fail to communicate effectively with the community and this break down of communication leads to community strikes against projects, which may disrupt the project.



Regarding the maintenance of collaborative relationships with suppliers, the majority agreed with this statement at ninety five point four percent (95.4%), while four point six percent (4.6%) disagreed. Maintenance of good relationship was observed to be a critical factor to the success of small to medium enterprises. The high score of this indicator reveals the importance of collaborative relationships in a harsh business environment where the ability to access credit or deferred payment facilities gives a competitive edge to firms that have built such mutually beneficial relationships.

On the issue ease of access to sites where projects are located, majority of respondents (65.1%) disagreed to the statement while (23.2%) agreed. Poor access is attributed to the poor state of district and community access roads. Due to the meager releases for road rehabilitation and maintenance, most roads have degenerated to impassable status. The situation is worsened during the rainy seasons when rivers burst their banks, cutting off entire communities. Impassable roads lead to higher cost of transportation and diminish the profits of contractors.

As regards timely corrective advice from supervisors, the majority of respondents (93%) agreed with the statement while (8.7%) disagreed. This is attributed to the fact that the Public Works department is well staffed and thus has capacity to provide adequate supervision for the construction projects being undertaken. Support in form of timely advice is critical to the good performance of contractors because it minimizes the magnitude and cost of erroneous construction.

#### **4.7.2. Correlation between supply chain network risks and performance**

The table 17 shows the results of a correlation analysis that was carried out to investigate the relationship between Supply Chain network risks and overall performance of SME

construction firms. The relationship was tested for significance at 95% confidence level through the establishment of the significance value that was compared with the limit of 0.05.

**Table 10: Correlation of supply chain network risks and performance**

**Correlations**

		Performance
Supply Chain	Pearson Correlation	.362*
network Risks	Sig. (2-tailed)	.017
	N	43

\*. Correlation is significant at the 0.05 level (2-tailed).

Findings from table 17 show that there is a moderate but positive relationship between supply chain network risks and performance  $r(42) = 0.362$ . The relationship is statistically significant  $p = 0.017 < 0.05$  at 95% confidence interval. This means that supply chain network risks significantly influence performance of SME construction firms and therefore, any efforts to improve the supply chain network by minimizing the risks there in, would result into a significant improvement in performance of SME construction firms.

**4.7.3. Regression analysis of supply chain network risk and performance**

Table 18 and 19 below shows the results of the regression analysis of control risk and performance carried out at 41 degrees of freedom and at confidence level of 95%.

**Table 11: Coefficients table for the relationship between supply chain network risk and performance**

		Coefficients <sup>a</sup>				
Model		Unstandardized		Standardized		
		Coefficients		Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	2.595	.353		7.349	.000
	Supply Chain network Risk	.258	.104	.362	2.487	.017

a. Dependent Variable: Performance

Source: Field data

From table 18, it was found that supply chain network risks significantly predicted performance of contractors,  $b=0.362$ ,  $R^2=0.13$ ,  $t(41)=2.487$ ,  $p=0.017<0.05$ . Considering the  $R^2=0.13$ , showed that supply chain risk predicted performance by 13%.

**Table 12: Analysis of variances, supply chain network risk and performance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.684	1	.684	6.184	.017 <sup>a</sup>
	Residual	4.534	41	.111		
	Total	5.217	42			

a. Predictors: (Constant), Supply Chain network Risk

b. Dependent Variable: Performance

Source: Field data

From the analysis of variances carried out in table 16 above, it was observed that supply chain risk significantly explained performance of contractors,  $F(1, 41) = 6.184$ ,  $p=0.017<0.05$ . This implied that supply chain risk had an effect on performance of contractors.

#### **4.7.4. Hypothesis three**

The third hypothesis stated that “Supply Chain network risks have an influence on performance of SME Construction firms in Sembabule District”. The hypothesis was converted into a null hypothesis for the purpose of testing by which it read “Supply chain network risks do not have an effect on the performance of SME construction firms in Sembabule district”. After testing the hypothesis, the researcher found that supply chain network risks had an effect on performance of SME construction firms in Sembabule District. Therefore the null hypothesis was rejected and the alternate hypothesis was adopted.

#### **4.7.5. Qualitative results on supply chain network risks affecting performance**

The following section presents an account of the qualitative findings on supply chain network risks affecting performance of contractors in Sembabule district. Supply chain network risks refer to interruptions to effective flow of information in the contractor- client, contractor-supplier relationships that consequently affect the works.

Majority of small contractors depend on the government as their biggest source of business. However, government systems governing procurement of works are largely bureaucratic and to the least, time inefficient, leading to elongated lead times. One of the respondents observed the delay and shared thus;

“There is time delay between the request for tender and actual implementation of the contracts leading to risk of price escalation beyond originally quoted price by contractors”

Late start of projects increases the risk and impact of price escalation of inputs. This diminishes the profits of contractors and as such they are forced to compromise on the quality of the deliverables of the contract. The fact that government remains their sole employer forces them to be compromised into entering unfavorable contracts that often go bad, leading to project failure.

A critical source of risk is related to the annual budget estimates for projects based on which project finances are allocated, as one respondent revealed;

“Projects are poorly estimated because the district lacks funds to carry out detailed preparatory needs assessment studies to establish accurate project requirements.”

Traditionally, most of the funds were tied to the actual implementation, ignoring the design and preparatory stages of the project. This leads to the under budgeting of interventions and consequently, poor quality of works, as noted through the words of one respondent;

“Projects are estimated based on budget ceilings without due regard to actual market trends. There is also pressure to achieve output targets regardless of actual unit cost of inputs which leads to underfunding of projects”

This situation is worsened by government procurement procedures that favor award to the lowest bidder. Contractors are forced to underquote their prices in a bid to win contracts but later fail to execute them to completion because the funds are not sufficient. Consequently, they abandon their sites midway of execution after they realize that they are headed for financial loss.

Corruption within the local governments is yet another supply chain network factor affecting contractor performance. Contractors use up substantial financial resources that would otherwise be used for the job as they lobby for public works.

“At times the companies awarded contracts are favored after paying substantial amounts in facilitation payments to government officials. They then become complacent in sticking to contract conditions because they have justification that some money has been paid for this purpose,” one of the respondents revealed.

Expenditure on lobbying activities eats into project budgets and later contractors are forced to recoup these costs by compromising on the quality of the work. The unfair competition also drives out competitive firms, creating a monopoly that motivates opportunism among contractors.

The poor access to sites, coupled with the lack of transport facilities in districts however, makes site inspection very expensive and prohibitive, as one respondent shared;

“The poor road network in the villages increases our cost of doing business. Most transporters are reluctant to ferry materials to remote sites because their trucks break down or may incur accidents”

Poor access to sites increases overhead costs and makes supervision of works costly. Contractors try to minimize these costs by limiting project site visits, which leads to poor quality of work as laborers are left unsupervised.

Additionally, the contract management process is slowed due to bureaucracy, requiring a number of stakeholders to assent every single payment. Local government payments go through a number of stages prior to approval and yet “*there is no mechanism in place to track the progress of payment documents within the district*” which accounts for most of the delays. Delay in payments leads to elongated lead times of project delivery and increases the risk of cost overruns as projects are delayed sometimes beyond their stipulated period.

Unclear or incomplete project documents lead to unclear understanding of requirements by the contractor and consequently, erroneous work. In other cases, they are simply misinterpreted by contractors. One respondent mentioned that;

“Contractors fail to internalize the different aspects of the contract such as bills of quantities, special conditions of contract, drawings and specifications and fail to utilize these documents to direct their work.”

This is attributed to the insufficient knowledge of contract management and the myopic focus on a few elements of the contract, such as the bills of quantities, with less regard to the bigger picture of the entire contract.

In conclusion, institutional incapacitations contribute significantly to the emergence of supply chain network risk, contributing to delay, demotivation of contractor effort, leading to poor quality as well as escalation in project costs.

## **CHAPTER FIVE:**

### **SUMMARY, DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

#### **5.1. Introduction**

The purpose of the study was to assess the influence of supply chain risks on performance of SME Contractors in Sembabule District-Uganda. This chapter of the study gives a summary of the key study findings; discusses the results from the preceding chapters, conclusions are derived from the discussions and later recommendations are made.

#### **5.2. Summary of findings**

The following sub section presents a summary of the findings made in the study.

##### **5.2.1. Operational risks affecting performance**

The study found that there was a positive relationship between operational risk and performance. However, the relationship was not statistically significant at 95% confidence interval. The hypothesis of the study regarding the first objective was that “operational risks had an effect on performance of contractors in Sembabule District”. The hypothesis was converted into a null hypothesis, “operational risks do not have a significant effect on performance of contractors in Sembabule District”. After testing the hypothesis, the null hypothesis was adopted while the alternate hypothesis was rejected, since the results had shown that operational risks did not significantly influence performance of SME construction firms.

##### **5.2.1. Control risks affecting performance**

The study found that there was a positive relationship between Control Risk and performance. The relationship was found to be statistically significant at 95 % confidence interval. A regression analysis carried out showed that control risks predicted performance by 20%, while the rest was contributed by other factors. The second hypothesis of the study was



that “Organization control risks had an effect on performance of SME construction firms in Sembabule District”, which was later converted into the null hypothesis and tested. Results of the hypotheses test showed that there organizational control risks significantly affected performance of SME construction firms, and therefore, the null hypothesis was rejected while the alternate hypothesis was adopted

### **5.2.3. Supply chain network risks affecting performance**

The study found that there was a positive relationship between supply chain network risks and performance. The relationship was found to be statistically significant at 95% confidence interval. A regression analysis carried out showed that the extent to which supply chain network risks predicted performance were 13%, while the rest was attributed to other factors. On testing the hypothesis, the alternate hypothesis “supply chain network risks have an influence on performance of SME construction firms in Sembabule District” was adopted while the null hypothesis was rejected.

## **5.3. Discussion of findings**

The following subsection looks at the discussion of results objective by objective.

### **5.3.1. Operational risks affecting performance**

The finding of the study that operational risks do not significantly affect performance of contractors was cross referenced with those from other scholars in other environments and it was found that there was agreement. Vrijhoef & Koskela, (2005) in their study on the peculiarities of construction raised the argument that structural elimination of peculiarities in construction production processes does not necessarily resolve problems of waste in construction production systems. Peculiarities of construction are mostly present in the construction phase of the project development process. Similarly, in their study of the factors hindering development of the construction industry in Uganda, Katende, Alinaitwe, &

Tindiwensi (2011) ranked complexity of work and nature of work in the industry as the 13<sup>th</sup> and 15<sup>th</sup> out of 23 factors identified.

Frimponga, Oluwoyeb, & Crawfordc, (2002) also concluded that among 5 major factors contributing to delay of ground water projects in developing countries, technical factors and escalation of material prices were lowest ranked at 4<sup>th</sup> and 5<sup>th</sup> respectively. An assessment of causes of delay in Malaysian projects (Sambasivan & Soon, 2007) similarly ranked operational factors such as shortage of materials, labor supply, equipment availability and failure, lack of communication among parties and mistakes during the construction stage as the lower five out of 10 major factors contributing to delay.

While construction phase is the most risky phase of the project evolution, Vrijhoef & Koskela (2005) attribute waste in the construction industry to the interdependency largely interrelated with causes in other stages. This is similar to the findings of the present study. For example, the impact of unstable prices for inputs or even labor, that is experienced at operational stage is amplified if prior project preparation does not take into account site specific project factors. Schaufelberger, (2003) cited by Wong & Thomas, (2010) similarly asserted that among the primary causes of subcontractor business failure were lack of early warning measures, increase in project scope, poor billing procedures, failure to evaluate project profitability and poor use of accounting systems. Contractors, owing to the lack of project management expertise often fail to anticipate the risks accurately and are thus unable to account for them accurately in the project cost. Findings indicated (84%) of the respondents disagreed to the statement that their expenditure matched budgetary estimation during project execution.

Additionally, poor preparation on the side of the client especially with regard to funds availability, can lead to delayed payments and consequent halting of operations, leading to

the failure of even the best prepared contractor. Essentially, most local contractors depend on clients' finances to run their contractual operations. Any disruption in provision of funds will therefore negatively affect their performance. Several studies (Chilipunde, 2010; Mohammed and Mohammed, 1999; Frimponga et al, 2002) attested to the significant effect of payment difficulties from agencies on performance of Small to Medium construction firms. It must be noted that payment delay can also be caused by poor contractor billing procedures or the failure for contractors to effectively communicate their requirements to the client. This is linked to the inability of contractors to hire rightfully skilled staff to manage their projects effectively.

The implication of these findings is that attempting to improve contractor performance by focussing at the operational or project execution stage presents little opportunity for improvement of contractor performance. The challenges being faced by contractors are structural problems resident within their business systems and these often originate from other stages within the project cycle and are later manifested during the execution stage. The nature of the industry that often leads to emergence of temporary organisations, bringing together different organisations to achieve common objectives creates uncertainty and risk within the operational phase.

### **5.3.2. Control risks affecting performance**

This study set out to examine the extent to which control risks influenced performance of SME construction firms. Control risks were those risks associated with poor internal management and control practices. The finding of the study that control risks affect performance of contractors was cross referenced with those from other scholars in other environments and it was found that there was agreement.

In a study of causes of construction delay (Odeh & Battaineh, 2002), consultants and contractors agreed that reluctance of contractors to use scheduling techniques and to update schedules on a regular basis was a major delay factor. In this study, the researcher found that while majority (67.5%) contractors agreed to updating their project schedules regularly, fewer respondents (44.2%) submitted updated schedules to project supervisors. A work schedule is only relevant if it is updated in order to inform future actions of project players. It also facilitates the early identification and resolution of issues which contributes to a realization of the desired project objectives. It was interesting to note that despite the fact that respondents agreed to preparing schedules, the majority (62.8%) interviewed admitted to failing to complete projects within the time allocated, pointing to the lack of effectiveness of the utilization of the updated work schedules. Assaf & Hejji, (2006) found that ineffective planning, scheduling by the contractor and poor site management were common causes of delay as perceived by both consultants and contractors. This is supported by findings of Makgati & Thwala, (2009) that lack of effective management during the early stages was a major cause for business failure for small to medium sized contractors in South Africa.

It was interesting to note that while majority of the contractors (67.5%) responded positively to utilising cost control mechanisms like budgeting for their projects, still a majority (81.4%) disagreed to having their expenditure match their budget. The researcher expected that use of cost control measures would be matched with better budget performance but this was not the case. While contractors agree in principle to the utilisation of cost control mechanisms, these mechanisms are not utilised effectively, probably due to lack of skilled personnel to handle these tasks. This relates to the findings of Makgati & Thwala, (2009) that performance of small to medium contractors is constrained by that the lack of financial management; entrepreneurial, and contractual and managerial.

This study found that while majority (86%) of contractors agreed to assigning clear roles and responsibilities, fewer contractors (65.2%) agreed to having functional organisation structures making delegation of roles difficult. This was mainly attributed to the lack of funds to pay qualified artisans and staffs to work on their projects. It was also attributed to the lack of business management skills in areas of human resource management leading to low productivity and high turnover of skilled staff.

There was a marked consensus that one of the most critical aspects to internal control by small to medium contractors is through the employment of qualified staff on their projects (mean 4.02, standard deviation 0.938). Contractors realise the need to hire qualified staff but are constrained due to the lack of adequate cash flows to retain these staff in their enterprises for long. It must be noted though that the skills most sought for by contractors are technical skills and to a lesser extent business management skills. Most small construction firms are one man companies where the owner plays management role and hires field staff who are qualified to undertake the construction work. Therefore there is less emphasis on business management practices such as record keeping, financial accounting and reporting that are critical to proper enterprise functionality. Several studies (Chitkara, 2006; Enhassi et al, 2006; Assaf & Hejji, 2006) have linked contractor performance to lack of early warning measures, poor billing procedures, poor use of accounting systems and poor financial reporting, all that fall within the area of business management.

### **5.3.3. Supply chain network risks affecting performance**

The finding of the study that supply chain network risks affect performance of contractors was cross referenced with those from related studies and it was found that there was agreement.

Odeh & Battaineh, (2002) ranked client related factors to be the most important to both contractors and consultants. Contractors depend on client organisations for critical inputs such as project design drawings, which provide details of how the contractor should execute the project. Inaccurate data within the drawings can lead to production of facilities that are not fit for use thereby leading to rejected works and non payment. Additionally, contractor failure to interpret the drawings can lead to outputs that are off specification. The study found that majority of contractors could clearly understand and interpret project design drawings. This was a major enabling factor of good performance.

Maintenance of good working relationships with suppliers was found to be critical to good contractor performance. Collaboration is a driving force of effective supply chain management and performance. Contractors cannot optimise their operations until they understand the real time demands as well as the constraints of their suppliers. Most small contractors do not have sufficient working capital to finance their operations and therefore have to depend on suppliers for inputs on credit basis. Inputs will range from capital to material resource inputs critical to performance of the task. Therefore, a finance institution will not lend money to a firm whose financial records are in question or missing just like a materials supplier will not offer credit services if there are no means of recovering the moneys in case of default. Yet if the contractor does not receive this assistance, given their limited capital, it could mean delayed implementation and payment altogether. Several studies have revealed that today it is supply chains and not firms that compete.

Timely advice from supervisors is another enabling factor to performance of contractors. Normally as contractors start work there are discrepancies in contract documents that need to be resolved. If these are not resolved in time there is likely to be delay in commencement of works or even worse production of faulty deliverables. Without proper collaboration, several potential benefits such as improved customer responsiveness, increased flexibility for

changing market conditions, improved customer service and satisfaction, increased customer retentions cannot be realised. Assaf & Hejji (2006) found that client related factors such as late poor coordination and communication, presented profound bottlenecks to the performance of contractors in Saudi Arabia. Late advice means correction comes too late when deviations are beyond the level at which they can be rectified at minimum cost. Collaboration is therefore a driver for risk reduction especially at the operational level. Contractors should develop soft skills like team and relationship building that can enable them maintain open and beneficial relationships with all parties involved on the project. This would minimise the blockage of flow of information and in the long run reduce operational errors, which if they occur, can lead to several adverse effects to the detriment of the fragile construction enterprise.

#### **5.4. Conclusions**

The following section presented the conclusions drawn from the study

##### **5.4.1. Operational risks and SME construction firms' performance**

Operational risks do not affect performance of Small to Medium contractors in Sembabule District according to the study. The risks that manifest during the construction phase are originated in prior phases of the construction process normally due to client, consultant and contractor related factors. This conclusion has the implication that solutions to the problems within the construction sector have to consider a wider view that takes into account the entire parties involved in the project development process, both upstream and downstream of the contracting firm. Therefore according to the study, interventions targeted at the operational phase will have the least opportunity for change because most of the risks within the operational phase originate from other phases of the construction process.

#### **5.4.2. Control risk and SME construction firms' performance**

Control risks have got a profound impact on the performance of Small to Medium Contractors in Sembabule district. Therefore interventions targeted at strengthening contractor business management systems can have a great impact on the general performance level of contractors. According to the study control risks account for up to 20% of the performance of contractors. Adoption of improved managerial practices by small to medium contractors presents the biggest opportunity for improvement of contractor performance.

#### **5.4.3. Supply chain network risk and SME construction firms' performance**

Supply chain network risks also have an impact on the performance of Small to Medium contractors in Sembabule district. Contractors should focus on relationship management for better supply chain performance. While there are some bottlenecks to communication and linkages between parties, collaboration plays a big role in smoothening up these deficiencies. Therefore, building contractor capacities in soft skills such as communication, team building and relationship management can go a long way in improving the performance of Small to Medium contractor supply chains.

### **5.5. Recommendations**

The following sections present the recommendation of the study

#### **5.5.1. Recommendation with regard to control risk and performance of SME construction firms**

There is need to develop user friendly tools by which SME contractor organizations can monitor and evaluate their performance over a period of time. In this way they will be able to take conscious decisions to improve their performance rather than act reactively as matters arise.



Small to Medium Contractors need to focus on improving their practical management capacity through simple in-service trainings or mentoring for management staff. This could be in areas such as financial, communication, human resource, procurement and contract management. This will improve their capacity to analyze and interpret the different aspects of the business so as to avoid costly omissions that risk their bottom line.

Contractors need to recruit critical staff to enhance their operations. Contractor managers must adopt a delegation approach entrusting a big portion of the activities to their subordinates while concentrating on more strategic tasks to push the SMEs forward.

Contractors need to adopt the culture of maintaining business records so that their financial performance can be evaluated. In this way they could be able to qualify for funding through lending institutions in order to close the funding gap that was noted to be one of the factors responsible for the delays and other performance related challenges.

#### **5.5.2. Recommendation with regard supply chain network risk and performance of SME construction firms**

There is need for improved collaboration between contractors, their immediate suppliers as well as their customers, so as to improve customer responsiveness, flexibility to market needs and to increase customer satisfaction and retention. Contractors need to learn how to build and nurture relationships characterized by open lines of communication and feedback. This also goes with building trust through observance of commitments made and abiding by the terms stipulated in the contract agreement.

#### **5.6. Limitations of the study**

The study was limited due to the fact that it focused on only one district within the country which may have unique environmental conditions in terms of limited infrastructure, lack of

services and organizational constraints. Therefore it was difficult to ascertain the impact on performance with regard to the quality of goods and services offered by a project location.

Majority of contractors interviewed were operating in Sembabule district only and therefore lacked wide range experience from other regions of the country.

### **5.7. Contribution of the study**

While previous studies regarding contractor performance have focused on the construction phase of the project process, no study had been done to establish the relative impact of control and supply chain risks on performance in Uganda. This case study provides a point of departure for further studies, with wider geographical coverage of impacts of control and supply chain risks on performance of contractors in Uganda. These would inform policy makers on the most suitable entry points for improvement of contractor performance in the country.

### **5.8. Areas for further study**

This study has been carried out in a limited scope with localized environmental conditions mainly due to time and financial constraints. It would therefore be desirable to see how each of these factors affects performance for contractors operating in other regions with different environmental conditions.

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## APPENDIX 1: QUESTIONNAIR

Dear respondent, you are kindly requested to be part of this research work by expressing your views in this questionnaire. There are Three sections (A, B, and C) and the information required is purely for academic purposes. The research study is aimed at evaluating the influence of Supply Chain Risks on the performance of SME Contractors in Uganda with a focus on Sembabule District.

Your responses will be treated with utmost secrecy and shall be used for academic purposes. I shall be grateful to you for your cooperation.

Thank you very much

Denis Galabuzi

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### A) BACKGROUND INFORMATION

A1. Gender Male  Female

A2.Level of Education

1. Primary
2. Secondary
3. Tertiary/College
4. University
5. Other

A3. Experience of the organization in the construction industry

1 Year  2-5 Years  5-10 Years  +10Yrs

A4. Predominant approach to execution of construction work

Manual based Methods  Equipment based methods  Semi Automated

Kindly refer to the response key below

1. SA-Strongly Agree
2. A-Agree
3. NS- Not Sure
4. D- Disagree
5. SD – Strongly Disagree

**B) FACTORS AFFECTING PERFORMANCE OF SME CONTRACTORS**

	Items	Strongly disagree (1)	Disagree (2)	Not sure (3)	Agree (4)	Strongly agree (5)
B1	<b>Operational risks affecting performance of contractors</b>					
A	I have the capacity to estimate material requirements on site during construction					
B	My staff have the capacity detect faulty construction material inputs					
C	There is sufficient labor manpower to execute work on contracts					
D	I have access to lines of credit for construction projects					
E	Material cost price fluctuation do not frequently occur during the implementation stage of projects					
F	Labor for works can be sourced from the locality					
G	I experience relatively stable labor costs					
B2	<b>Control risks influencing performance of contractors</b>					
A	Execution of works is done according to an approved project schedule					
B	Cost control mechanisms like budgeting are employed during project execution					

C	Project schedule is updated regularly based on the existing site conditions					
D	We hold meetings to evaluate financial performance and guide future actions					
E	Staff supervising sites are qualified in civil engineering					
F	Personnel employed have clear roles and responsibilities					
G	My company has a functional organization structure based on which staffing is done					
B3	<b>Supply chain network risks Affecting performance of contractors</b>					
A	Project design drawings are clearly understood prior to execution of works					
B	Payments for works completed are effected in a timely manner					
C	There is minimal interference by the client and his agents during execution					
D	Local authorities do not interfere with contractor's work during project implementation					
E	I maintain a good relationship with my suppliers					
F	There is good road network that enables transportation of materials to construction sites					
G	Project supervisors provide timely and constructive advice during execution of construction projects					



**PART C: LEVEL OF PERFORMANCE**

	Item	Strongly disagree (1)	Disagree (2)	Not sure (3)	Agree (4)	Strongly agree (5)
C1	<b>Time performance</b>					
1	We do not experience delays in planned completion date					
2	An updated project schedule is regularly submitted to contract supervisors for approval					
3	I communicate compensation events promptly to project supervisors					
4	I hold management meetings with the project supervisors to review plans for remaining work					
C2	<b>Cost Performance</b>					
1	Our expenditure during execution matches with the original budget					
2	Our construction undertakings are profitable and enable company growth					
4	My organization has been able to meet its business purpose through construction works					
5	My organization has been able to achieve financial stability through construction activities					
C3	<b>Quality of product</b>					
1	Beneficiaries express satisfaction of facilities constructed by our company					
2	Our construction products are free of defects on completion					
3	Our construction products meet the desired functionality as originally planned					
4	Specifications in the contract are followed during execution of civil works					

**Thank you for your cooperation**

## APPENDIX 2: INTERVIEW GUIDE

Dear respondent, this research study is aimed at evaluating the influence of Supply Chain Risks on the performance of SME Contractors in Uganda with a focus on Sembabule District. You are kindly requested to be part of it by expressing your views in this interview.

Your responses will be treated with utmost secrecy and shall be used for academic purposes. I shall be grateful to you for your cooperation.

Thank you very much

Denis Galabuzi

### INTERVIEW GUIDE

- 1. From your experience with local contractors, can you comment on the operational challenges that affect their performance?**

- 2. How can these be alleviated to enable them perform better?**

- 3. Comment on the capacity of contractors to control their internal company environment (eg. Costs, human resource, machinery etc.?)**

**4. What challenges do they face in managing the internal affairs of small contractor organizations?**

**5. How can these challenges be solved?**

**6. Mention some industry wide challenges contractors face that hinder their performance in the course of running their businesses?**

**7. How can these challenges be reduced**

**8. How can these challenges be solved?**

**9. Comment on how contractors can improve their performance in terms of quality cost and Time**

**Thank you for your cooperation**