

**SUPPLY RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF FLOWER
EXPORT FIRMS IN UGANDA: A CASE STUDY OF UGANDA FLOWERS
EXPORTERS ASSOCIATION**


**BY
BATTE AARON GODFREY
14/U/12873/GMSC/PE**

**A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS
OF SCIENCE IN SUPPLY CHAIN MANAGEMENT OF
KYAMBOGO UNIVERSITY**

NOVEMBER, 2016

DECLARATION

I, Aaron Godfrey Batte, declare that this dissertation entitled “*Supply Risk Management And Financial Performance of Flower Export Firms in Uganda: A Case Study of Uganda Flowers Exporters Association*” is my own original work submitted for the award of Masters of Science in Supply Chain Management of Kyambogo University and that, to the best of my knowledge, it contains no material previously published by another person nor material which have been accepted for award of any other degree of any university, except where due acknowledgments have been considered within the text.

Signature:.....


Date: 2/12/2016.....

BATTE AARON GODFREY
14/U/12873/GMSC/PE

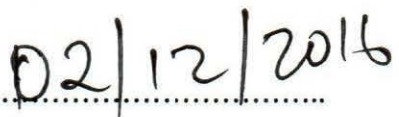
APPROVAL

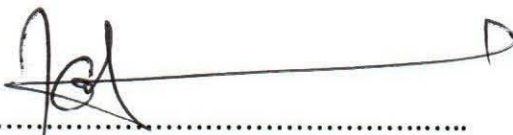
This is to certify that the dissertation carried out by Aaron Godfrey Batte under the title *“Supply Risk Management and Financial Performance of Flower Export Firms in Uganda: A Case Study of Uganda Flowers Exporters Association”* was carried out under our supervision and is now ready for examination by the Board of Examiners as a requirement for the award of a Master’s of Science in Supply Chain Management of Kyambogo University.

Certified by:

Signed:.....

DR. CHARLES NDANDIKO
PRINCIPAL SUPERVISOR

Date:.....

Signed:.....

MR. CHARLES KALINZI
SUPERVISOR

Date:.....

DEDICATION

I dedicate this research to the Almighty God who always blesses me in all my endeavors and to my parents Mr. Segujja Munagisa Godfrey, my brothers and sisters who have always encouraged me.

ACKNOWLEDGMENT

I would like to take this opportunity to thank Almighty God for His guidance, care and providence which enabled me to undertake this dissertation.

I wish to express my profound appreciation to Kyambogo University guidance in this graduate programme of the Masters of Science in Supply Chain Management. It is an opportunity I will forever cherish.

I am grateful to Dr. Charles Ndandiko and Mr. Charles Kalinzi my supervisors. Your counsel was very valuable. I am highly indebted to the lecturers in the Graduate School, School of Management and Entrepreneurship, more especially; Dr. Stephen Kasumba - Dean of School of Management and Entrepreneurship, Dr. Wambembe –Dean Graduate School, Dr. Peter Obanda-Head of department –Procurement and Logistics management, among others for their encouragement, guidance, knowledge and teaching me. Thanks for the great work done.

I further extend my sincere gratitude to my wife Mrs. Shallone Namanya Batte for her guidance, support and encouragement throughout my life.

I thank all my colleagues for their countless contribution and courageous work towards completion of my course works, presentations and discussions without which knowledge and skills would not be acquired appropriately.

In the same respect, I wish to extend my unreserved gratitude to the staff of Uganda Flowers Exporters Association because they were able to attend to me despite their busy schedules. I thank all respondents for their unusual co-operation towards my study.

Finally, I appreciate my employer St. Francis Chaplaincy – Makerere University and the Diocese of Kampala- Church of Uganda, for granting me some days off to carry out my field work. This has greatly contributed towards the completion of this dissertation.

May the Almighty God bless you all!

TABLE OF CONTENTS

DECLARATION	ii
APPROVAL	iii
DEDICATION	iv
ACKNOWLEDGMENT.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES	viii
CHAPTER ONE	1
INTRODUCTION.....	1
1.0 Introduction.....	1
1.1 Background to the study	1
1.2 Statement of the problem.....	6
1.3 Objectives of the study.....	7
1.4 The specific objectives.....	7
1.5 Research questions.....	7
1.6 Scope of the study	7
1.6.1 Subject scope	7
1.6.2 Geographical scope.....	8
1.6.3 Time scope.	8
1.7 Significance of study.....	8
1.8 Definitions of key terms.....	9
CHAPTER TWO	11
LITERATURE REVIEW.....	11
2.0 Introduction.....	11
2.1 Overview of key variables.	11
2.1.2 Financial performance.....	20
2.2 Conceptual Frame Work	26
2.3 Theoretical Review	27
2.4 The relationship between Supply Risk Identification strategies and Financial Performance	29
2.4 The relationship between Supply Risk Measurement techniques and Financial Performance	34
2.5 The relationship between Supply Risk Mitigations strategies and Financial Performance	37
2.5 Literature Review Summary.....	42
CHAPTER THREE	43
METHODOLOGY	43
3.1 Introduction.....	43
3.2 Study design.....	43
3.3 Study population	43
3.4 Sample size and sample size determination.....	44
3.5 Sources of data	44
3.6 Data Collection Instruments	45
3.7 Reliability and validity of the Instrument	45
3.9 Data collection procedure	47

3.12 Data Analysis	47
3.13 Ethical considerations	48
3.15 Limitations of the study.....	49
CHAPTER FOUR.....	50
DATA PRESENTATION, INTERPRETATION AND ANALYSIS OF RESULTS.....	50
4.0 Introduction.....	50
4.1 Response Rate.....	50
4.2 Background Information of the Respondents	50
4.3 Supply Risk Identification strategies and financial Performance of Uganda Flowers Exporters Association	53
4.4 Supply Risk measurement techniques and financial performance of Uganda Flowers Exporters Association	57
4.5 The Relationship between supply risk mitigation strategies and financial performance...	62
CHAPTER FIVE	70
DISCUSSION, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	70
5.0 Introduction.....	70
5.1 Discussion of the Major findings.....	70
5.2 Summary of the major findings	77
5.3 Conclusions.....	79
5.4 Recommendations.....	80
5.5 Areas for further research	82
APPENDICES.....	90
Appendix A: Questionnaires For Staff Of Uganda Flowers Exporters Association	90
Appendix B: Interview Guide For Management Of Uganda Flowers Exporters Association	95

LIST OF TABLES

Table 4.1: Gender Distribution	50
Table 4.2: Age distribution of the Respondents.....	51
Table 4.3: showing the Education Level of the employees at Uganda Flowers Exporters Association.....	51
Table 4.4: Length of Service at Uganda Flowers Exporters Association	52
Table 4.5: Positions/Responsibility held.....	52
Table 4. 6: Supply Risk Identification strategies and financial Performance of Uganda Flowers Exporters Association	53
Table 4. 7: Relationship between Supply Risk Identification strategies and financial performance	55
Table 4. 8: Relationship between supply Risk measurement techniques and financial performance	57
Table 4. 9: Relationship between supply Risk measurement techniques and Financial Performance	60
Table 4. 10: The relationship between supply risk mitigation strategies and financial performance of Uganda Flowers Exporters Association	62
Table 4. 11: Relationship between supply risk mitigation strategies and Financial Performance of Uganda Flowers Exporters Association.....	65
Table 4. 12: The Financial Performance of Uganda Flowers Exporters Association.....	67

LIST OF ACRONYMS

BIA	:	Business Impact Analysis
FMEA	:	fuzzy based failure mode and effect analysis
GARCH	:	Generalized Autoregressive Conditional Heteroskedasticity
ISO	:	International Organization for Standardization
JIT	:	Just-In-Time
RBV	:	Resource-Based View
SCOs	:	Small Company Owners
SCRM	:	Supply Chain Risk Management
SWOT	:	Strength Weaknesses and Opportunities
UFEA	:	Uganda Flower Exporters Association

ABSTRACT

The study assessed the relationship between “*Supply Risk Management and Financial Performance of Flower Export Firms in Uganda: a Case Study of Uganda Flowers Exporters Association*”. This was guided by the following specific objectives to; establish the relationship between supply Risk Identification strategies on the financial performance of flower export firms, determine the relationship between supply risk measurement techniques on the financial performance of flower export firms and to examine the relationship between supply risk mitigations strategies on the financial performance of flower export firm. The methodology adopted a case study research design. Data collected and used include both primary and secondary data which was collected by use of self-administered questionnaires and an interview guide. The findings of the study revealed there was a strong positive correlation between supply Risk Identification strategies strategy and financial performance of flower export firms. The study findings were that the supply risk management (supply Risk Identification strategies, supply risk measurement techniques supply risk mitigations strategies) had a positive effect on financial performance of flower export firms in Uganda. Failure to adequately identify supply risks increased exportation flower risk which was found to be between (38%-51%) in the period 2011 and 2013 of the sales volume exported to Holland, UK and Japan mainly. This consequently reduced growth of revenue earning from exportation by 25% in the financial year ended 2015/2016. Results based on made losses at a declining rate whereas from 2014 to 2015 losses hiked severely till 2016 with the root mean square value of 0.0192. The performance graph also reveals the model relationship as $Y = 26364x$, this is the rate at which Uganda Flowers Exporters Association makes losses per annum and regression trend line indicating, $R^2 = 0.0192$.

The study concludes that, there is Relationship between supply Risk Identification strategies, supply risk measurement techniques, supply risk mitigations strategies and financial performance ($r = 0.303$; $p > 0.035$, < 0.05). The study results therefore show that supply Risk Identification strategies, supply risk measurement techniques supply risk mitigations strategies have a positive effect on Financial Performance of Ugandan Flowers Exporters. This is explained by the positive correlation co-efficient between the two variables ($r = 0.303$). Low levels of supply Risk Identification strategies; supply risk measurement techniques supply risk mitigations strategies make Financial Performance difficult for flower firms. There is a strong relationship between supply Risk management and Financial Performance of flower export firms ($r = 0.052$; $p > 0.73$, < 0.05). It was concluded that supply chain risks affect organization performance in the event they materialize and therefore there was need for organization to identify risk exposure, analyze the risk exposure and have in place mitigation plans for the risk identified within their supply chain. The study recommends that, there is therefore the need for the Ugandan export industry to develop an integrated supply risk management system which ensures a systematic and comprehensive approach to managing supply risks across the sector. This makes the floricultural industrial activities to become more varied. Management will therefore need a portfolio view of all the various supply risks and developing a strategy to manage them with the view of benefiting from diversification effects. Such an integrated approach can help senior management realize the relationships between the various supply risk exposures as well as their multidimensional effect on the exportation sector. The study suggests that further research should be conducted to investigate the relationship between Risk Management and Entrepreneurial Development and examine how supply risk management practices influence sales volume of Uganda’s export industry.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter consists of the background of the study, statement of the problem, purpose of the study, objectives, definition of key terms, the scope of the study, justification, significance of the study, and theoretical/conceptual frame work.

1.1 Background to the study

1.1.1 Historical Perspective

Risk management is relatively recent corporate function. Historical milestones are helpful to illustrate its evolution. Modern risk management started after 1955. Since the early 1970s the concept of supply risks management evolution. Modern risk management started after 1955, since the early 1970s, the concept of supply risk management evolved considerably. Notably risk management has become less limited to market insurance coverage, which is now considered a competing protection tool that complements several other risk management activities. After world war 11, large companies with diversified portfolios of physical assets began to develop self – insurance against risks, which they covered as effectively as insurers for many small risks, self-insurance covers the financial consequences of an adverse event or losses from an accident (erlich & becker.1972:Dionne & eekhoudt. 1985).

Quinn (2006) refers to risk as catastrophic events, which could probably change situations. According to Paulson (2005) risk is any event with negative economic consequences. Christopher & Lee (2004) define risk is an effect of external events such as terrorist attacks that can negatively impact changes in business strategy. By definition, Tang (2006) linked supply chain risk to the uncertainty of occurrence of an event that could affect one (or more) partner or link within the supply chain and that could influence (in a negative sense) the achievement of company's business objectives. Risk has been defined as an operational as well as a disruption risks (Tang, 2006), however no distinguish were between them. According to Kersten et al., (2006) risk (in firm's operation) is the damage assessed by its probability of occurrence caused by events within firms, its supply chain or its environment affecting the business process of at least one actor in the firms' supply chain. Risk has been also being linked to inflow of typical

supply chain network. Supply risk usually refers to the occurrence of uncertainties that may halt the inward flow of the supply chain (Harland et al., 2003; Zsidisin 2003; Tang 2006a).

According to Zsidisin et al. (1999) supply risk is the transpiration of significant and/or disappointing failures with inbound goods and service.

According to Juttner et al, (2003) supply chain risk is a variation in the distribution of possible supply chain outcomes, their likelihood and their subjective value.

Harland et al. (2003) for instance, discuss several definitions of risks and conclude that supply risk is associated with the chance of danger, damage, loss, injury or any other undesired consequences. Many types of quantitative analysis have been revealed, but they are mostly based on two factors (1) likelihood of the risky event occurring and (2) severity when the event does occur. Therefore, this research again define risk as a function of likelihood and severity (i.e. Risk = f (Likelihood, Severity)). Risk or uncertainty is ever-present and varied within agriculture and its supply chain. These risks emerge from a range of external and internal factors of the supply chain environment. Therefore, an agriculture supply chain could be defined as a complex system (Bryceson & Smith, 2008), made of complex organizations involved in a number of processes and activities (Christopher, 2005) that collaborate strategically in one or more areas to meet a certain expected performance. Hence just like any other supply chain risk, an agricultural supply chain risk is defined in this paper as any eventual variation in agricultural supply chain activities that are associated with undesirable consequences that negatively affect the desired supply chain performance.

1.1.2 Theoretical Review

1.1.3 Agency theory is concerned with the study of problems that arise when one party, the principal, delegates work to another party, the agent (Lassar & Kerr ,1996). The unit of analysis is the metaphor of a contract between the agent and the principal. Previous studies employing agency theory as the theoretical frameworks have used "coordination efforts" (Celly & Frazier, 1996), "control" (Anderson & Oliver. 1987), and "management" (McMillan .1990) as the unit of analysis. In this research, the purchasing organization (flower auction firms in Netherlands)is the principal and the supplier(Uganda flowers exporters association) is the agent.in this case the purchasing organisations are the Netherlands auction firms and the agent is Uganda flower exporter association who is the supplier. Variables that influence the contract between the

principal and the agent include information systems, outcome uncertainty, risk aversion, goal conflict, programmability, outcome measures, and relationship length. In examining supply risk, this study adopts the efforts of the purchasing organization to manage suppliers as the unit of analysis.

The management of risk can be categorized by outcome- and behavior-based contracts (Choi & Lassar & Kerr, 1996). In the context of inbound supply, outcome-based management efforts reflect the extent that purchasing organizations of flowers emphasize results which are quality of flowers, quick delivery and constant supply of the demand requested. Complete reliance on outcome-based efforts signifies an exclusive concern with bottom-line results, regardless of how suppliers achieve them (Choi & Liker, 1995). As uncertainty becomes insignificant, an agency theory perspective supports outcome-based supply risk management efforts as appropriate (Eisenhardt, 1989). Supply is more efficiently managed without unnecessary intervention into supplier operations on the part of the purchasing organization.

The literature supports that one way to achieve the desired outcome of reducing the impact of detrimental supply events without intervening with supplier operations is through the use of buffers. Although not explicit in agency theory, buffers are used to shield the organization from the negative effects of a damaging event, (Pagell & Krause, 1999). The use of buffers provides a short-term solution to problems of supply risk, and focuses predominately on outcomes by reducing the impact of supply risk events. Extensive use of buffers may be cost prohibitive to the purchasing organization in the long run due to increased inventories, potential obsolescence, and reduced opportunities to enjoy the economies of scale available from a reduced supply base.

When supply uncertainty becomes a significant factor, the application of agency theory suggests that the purchasing organization (Netherlands flower auction firms) embrace management efforts that reduce the probability and/or impact of a detrimental event on the supply firm. The appropriate risk reduction strategies can be categorized as behavior-based management efforts or buffer-oriented methods to shield the organization from detrimental events.

Behavior-based management efforts focus on processes, emphasizing "tasks and activities" that lead to a reduction in supply risk (Logan, 2000). The improvement of processes associated with inbound supply is long-term oriented. Efforts to manage suppliers require substantial human and

financial resources and close communications in order to improve processes and, subsequently, reduce the chance that a risk event occurs (Celly & Frazier, 1996).

1.1.4 Conceptual review

According to Chopra *et al*, (2004) risk in the concept of supply chains maybe associated with the production/ procurement process, the transportation/shipment of goods, and or the demand markets. In today's volatile era with flower businesses and, more specifically, flower supply chains becoming increasingly global, the industrial environment is heavily affected by uncertainty, which can potentially turn into unexpected disruptions. Economic and political turmoil, socio-cultural changes, highly fragmented and demanding behavior of consumers, rapid development and changeover of products, have seriously modified the economic and industrial environment in which companies act, bringing out new issues related to assuring the continuity of the business against potential disruptive events. Given the supply chain different risk faced in each segment and these affect the flower supply chain. Moreover, one of the key factors contributing to disrupting supply chains is the focus on lean supply chains in academia and industry during the 90s. Zero-inventory and just-in-time movement of goods became the dominant model that increased the sensitivity of supply chains. Little issues quickly become big issues. In addition, supply chains have become more global, increasing the order to delivery cycle times by a factor of four or five. This acts to amplify the potential of a disruption and the impact. Outsourcing has also become the dominant model, increasing the forces driving disruptions such as other customers competing for volume and attention, information flow issues, mistrust, win-lose negotiations, financial stress, misalignment of interests and goals. These have increased the likelihood of a disruption exponentially.

As a common term to designate the likelihood of occurrence of such events we use the word risk: Risk is a concept that has applications in everything we do. It has several components, not the least of which is the lack of knowledge about the events that may impact us and our ability to manage them. In order to understand risk, we first need to define and decompose it, specifically as it pertains to the supply chain. Under these statements, a common sense definition of risk – acknowledged by the International Organization for Standardization (ISO, 2002) – mainly deals with two of its essential components: *losses* (along with related amounts) and *uncertainty* of their

occurrence. Another similar definition given by Culp (2001) states that risk can be defined as any source of randomness that may have an adverse impact on a person or a corporation. In the financial industry, *operational risk* is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events New Basel Capital Accord, (2006).

1.1.5 Contextual Review

Uganda Flower Exporters Association (UFEA) was established in 1995 and has evolved into a strong Association consisting of 15 flower farms. UFEA is an internationally recognized body which has been able to access funding from Development Partners for capacity building and Industry development. The Floriculture Industry has played a major role in poverty eradication and bringing in foreign exchange revenue. Flower exports include Valentino, Sonrysa, Belle Rose, Red Calypso, Tucam, Viva!. By the end of 2008. Rose production consists of sweetheart roses which have small heads and are better adapted to the Ugandan climate. The other type is the intermediate roses which have bigger heads. Chrysanthemum cuttings production is by Fiduga, Van Zanten and Waggagai flower farms, while potted plants are produced by Florema a subsidiary of Waggagai. These are produced for mother companies in Netherlands namely, Roto, Carns, Fides Holland, and Sierex. Uganda's floriculture experienced a drastic drop in sales due to increasing competition, supply disruptions and an export ban by the European Union. The information from the Uganda Flower Exporters Association (UFEA) -- an umbrella body of 15 companies -- shows that the rose segment of the sub-sector is the most affected. Uganda's floriculture exports mainly comprise roses and chrysanthemum cuttings. UFEA statistics show that, Uganda exported 6,810 tons of flowers, down from the 7,364 tones recorded -- an 8.1 per cent drop. During this period, the revenue earned from the exports went down by 18.8 per cent; the country realized \$46 million, and this figure was down to \$38.7 million. This is worrying for a sub-sector that directly employs over 8,500 people, 80 per cent of them women. The strong dollar, market variations and the lower rose prices in Europe are making it very difficult to grow roses in Uganda." This shows supply risks associated with export of flowers. The industry also faces competition from international exporters. "Our competitors' have preference on intermediate and T-hybrid roses which have accumulate a good price yet Uganda's niche is sweetheart roses, high demand for a quality flower and compliance to international standards,

something which has made doing business expensive as it exerts extra costs on the input and high labor turnover between 35 per cent to 40 per cent of total production costs.

According to Uganda Flower Exporters Association Report, (2015) shows decrease in total volume of flower exports and revenue earned as illustrated in table below

Particulars	Actual			Projections			
	2013	2014	2015	2016	2017	2018	2019
Total Export volume (000 metric tonnes)	7634	6810	6267	6500	6800	7000	7500
Roses	4988	4759	4174	4355	4556	4690	5025
Chrysanthemums	2646	2051	2093	2145	2244	2310	2475
Export price fob (USSKgs)							
Roses	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Chrysanthemums	11	11	11	11	11	11	11
Total Export earnings value (US\$ million)	46	39	27.5	32	37	41	43
Number of established flower firms	14	14	14	14	14	14	14

1.2 Statement of the problem

From the table it shows that export volume of flowers in 2013 was 7634 and it reduced in 2014 to 6810 by 840 tones which is 8.24%. In 2014 export volumes were 6810 and which reduced 2015 to 6267 by 543 tones which is 5.43%. The export earnings in 2013 were \$46 million and 2014 it reduced to 39 million which is 7%. And in 2015 export earnings reduced to 27.5million from 39 million in the previous year 2014, this decreased by 0.115%. This decrease in flower export volumes and earnings has been alluded to supply disruptions and poor quality. Despite of various mitigating measures like supply risk transfer, supply risk reduction and supply risk avoidance, flower export firms in Uganda continue to complain of poor financial performance of market variation on the European market.

It's upon this background that the researcher conducted a study basing on the variables that determine the relationship between supply risk management and financial performance of flower export firms.

1.3 Objectives of the study

The general objective

To establish the relationship between supply risk management and financial performance of Uganda flowers exporters association.

1.4 The specific objectives

The study was guided by the following objectives;

- i. To establish the relationship between supply risk identification strategies and financial performance of Uganda flowers exporters association.
- ii. To determine the relationship between supply risk measurement techniques and financial performance of Uganda flowers exporters association.
- iii. To examine the relationship between supply risk mitigations strategies and financial performance of Uganda flowers exporters association.

1.5 Research questions

The researcher explored the following research questions;

- i. What is the relationship between supply risk identification strategies and financial performance of Uganda flowers exporters association?
- ii. What is the relationship between supply risk measurement technique and financial performance of Uganda flowers exporters association?
- iii. What is the relationship between supply risk mitigation strategies and financial performance of Uganda flowers exporters association?

1.6 Scope of the study

1.6.1 Subject scope

The study focused on the relationship between supply risk management and financial performance of export firms under UFEA. Specifically, the study explored whether supply Risk Identification strategies, risk measurement techniques and risk mitigation strategies have an effect on sales volume, profitability and market share of flower export firms.

1.6.2 Geographical scope

The study was carried out on flower export firms under UFEA. These firms were targeted because they are under one umbrella organization, UFEA and therefore have more standardized procedures for recording their business transactions. Given the fact that their organization is responsible for agitating for fair business policies from government, these firms are more inclined to provide in-depth information on their performance challenges resulting from supply risks.

1.6.3 Time scope.

The study covered the period between 2013-2016 when Uganda' export volumes became very unstable in Europe. UFEA annual reports (2013-2016) also indicated that flower export firms under her oversight experienced issues significant performance challenges due to foreign exchange instability and demand variations. Therefore, the researcher will consider data from the firms with this time period.

1.7 Significance of study

The study improved the knowledge base on the contribution of supply risk management practices and human capital components within the market on the performance of export firms. Investors and practitioners may use the findings to adopt optimal business plans for competitive performance in term of profits and sales volume.

The research contributed to the knowledge of demand variations, forecasting and risk management. The practices of Ugandan firms in relation to supply risk management w brought to the fore. This will motivate more firms to give due attention to supply risk management and adopt more effective techniques to help salvage themselves from the increasing supply risk exposure as the effects are becoming a global phenomenon. The export firms gained from this as they design mitigation networks and strategies for the European market.

The study findings stimulated more research on the subject of supply risk as the flower markets activities and trading pick up in Europe (more firms being listed). The findings may also augment the limited body of empirical literature on supply risk exposure of firms in Sub Saharan Africa. The results of this study will serve as a useful guide to corporate managers, financial managers and investors on the degree of export and the need to effectively manage firm risk exposures.

1.8 Definitions of Key Terms

This section presents an operational definition of key terms. The terms are defined the way they are used in the study.

Risk management:

As indicated by Becker (2003) Risk management are practices or actions used by a business to prevent, control or deal with the uncertainties.

Supply chain risk:

According to Zsidisin (2003) the probability of an incident associated with inbound supply from individual supplier failures or the supply market occurring, in which its outcomes result in the inability of the purchasing firm to meet customer demand or cause threats to customer life and safety.

Supply chain risk management:

According to Jüttner et al. (2005) The identification and management of risks for the supply chain, through a coordinated approach amongst supply chain members, to reduce supply chain vulnerability as a whole.

Supply Risk identification:

Stewart, (2007) indicates that Supply Risk Identification strategies are practices by the firms to identify risk factors that are likely to have greater effect on profitability.

Supply Risk measurement techniques:

These are techniques used by the firm to ascertain the magnitude and other potential negative effects that are likely to result from certain business risks.

Supply Risk mitigations:

Based on Pickford (2000) views, Risk mitigations are business management practices that a firm implement to stop risks from adversely affecting the profitability and other operations of a firm.

Financial Performance

Eshna (2012) is the degree to which financial objectives being or has been accomplished and is the process of measuring the results of a firm's policies and operations in monetary terms.

Sale volume

The quantity or number of products sold or services provided by a company in a particular period of time

Market share

Refers to a company's portion of sales within the entire market in which it operates. This metric indicates a company's size within its market.

Profitability

According to Stewart, (2007), Profitability is the extent to which a firm achieves success in its objectives of increasing sales volume and market share. It is also the extent to which the firm is able to prevent failures and the uncertainty in achieving the overall objective of the firm.

CHAPTER TWO LITERATURE REVIEW

2.0 Introduction

This chapter explores review of related literature as advanced by different scholars and authors in relation to the study objectives spelt out in the previous chapter. The information is a combination of extracts, paraphrased statements from textbooks, pamphlets, journals, magazines, websites, publications and other official reports related to Supply Risk management and financial performance.

2.1 Overview of key variables.

2.1.1 Supply Risk Management

Quinn (2006) refers to risk as catastrophic events, which could probably change situations. According to Paulson (2005) risk is any event with negative economic consequences. Christopher and Lee (2004) define risk is an effect of external events such as terrorist attacks that can negatively impact changes in business strategy. By definition, Tang (2006) linked supply chain risk to the uncertainty of occurrence of an event that could affect one (or more) partner or link within the supply chain and that could influence (in a negative sense) the achievement of company's business objectives. Risk has been defined as an operational as well as a disruption risks (Tang, 2006), however no distinguish were between them. According to Kersten et al., (2006) risk (in firm's operation) is the damage assessed by its probability of occurrence caused by events within firms, its supply chain or its environment affecting the business process of at least one actor in the firms' supply chain. Risk has been also being linked to inflow of typical supply chain network. Supply risk usually refers to the occurrence of uncertainties that may halt the inward flow of the supply chain (Harland et al., 2003; Zsidisin 2003; Tang 2006a).

According to Zsidisin et al. (1999) supply risk is the transpiration of significant and/or disappointing failures with inbound goods and service.

According to Juttner et al, (2003) supply chain risk is a variation in the distribution of possible supply chain outcomes, their likelihood and their subjective value. *Harland et al. (2003) for instance, discuss several definitions of risks and conclude that supply risk is associated with the chance of danger, damage, loss, injury or any other undesired consequences. Many types of quantitative analysis have been revealed, but they are mostly based on two factors (1) likelihood

of the risky event occurring and (2) severity when the event does occur. Therefore, this research again define risk as a function of likelihood and severity (i.e. Risk = f (Likelihood, Severity). Risk or uncertainty is ever-present and varied within agriculture and its supply chain. These risks emerge from a range of external and internal factors of the supply chain environment. Therefore, an agriculture supply chain could be defined as a complex system (Bryceson & Smith, 2008), made of complex organizations involved in a number of processes and activities (Christopher, 2005) that collaborate strategically in one or more areas to meet a certain expected performance. Hence just like any other supply chain risk, an agricultural supply chain risk is defined in this paper as any eventual variation in agricultural supply chain activities that are associated with undesirable consequences that negatively affect the desired supply chain performance. Therefore, supply risk management are activities done by the firm to avoid loses due to risks associated. it involves identify the type of risks and sources in the supply chain, measuring them or assessing them and mitigating them.

Agricultural Supply Chain Risk Sources

After the careful exploration of the definitions of risk in general in addition to supply chain risk and agricultural supply chain risk in viewpoint, it is prudent to categories the sources of these risks in order to put in place sound risk managerial policies. The categories of supply chain risk/uncertainty are often regarded as “supply chain risk sources”. In the flower supply chain, risk can emerge either from internal or external environment of the supply chain. Chiefly amongst them are risk sources such as weather/natural disasters related as well as biological and environmental related. Others are market related risks, logistical and infrastructure related risk, political related risk, policy and institutional related risk, financial related risk and operational managerial related risks (Jaffee et al., 2010). All these risk affect the flower industry in Uganda in one way or another. All these affect the flower supply chain which is refracted in the financial performance of firms. Looking at the seedling and grafting of flowers again there some risk associated to the process which are detrimental to the supply chain of flowers this include damage of the seeds in the grafting process, as well as transporting the seedling from the seed bed to the firms and in the process many are damaged. Land on the shores of Lake Victoria is salty and sandy and this affects the flower growth, so many firms are incurring cost associated with use of fertilizers which makes the flower farming costs high.

Weather/ Natural Disasters Related Risk

Niemira (2005) argues that weather influences sales primarily through its effect on economic activity. Broader and more systematic studies (Starr-McCluer 2000) document a significant impact of weather on retail sales at an aggregate level, although the primary effect may be that of shifting demand earlier or later. In agricultural supply chain, weather related risk such as periodic deficit and/or excess rainfall or temperature, hail storms and strong winds often affect agricultural supply chains (Jaffee, et al., 2010). This hamper the transportation of flowers in Uganda due to the poor road infrastructure hence affecting the quality, lead time and supply. In many regions extreme weather related risks have constant threat to societies in general and to firms in particular (Helferich & Cook, 2002). Rainfall shocks, and in particular drought, has been revealed to have significant and persistent effects on economic well-being (Maccini & Yang, 2009). These weather-related risks are mostly associated with yield reductions, but also can affect the quality of products and disrupt the flow of flowers. In addition, these weather-related risks might impact logistics along the flower supply chain because of disruptions in transport, communications and energy services (Jaffee, et al., 2010). Given the poor road infrastructure this affects the transportation of flowers which creates delays in the flower supply chain hence supply disruption and poor quality which affects the financial performance of flower firms in Uganda.

The inherent dependency of flower supply chain on the vagaries of weather such as rainfall is high. This leads to production risk which is one of the most important risk associated with weather related issues (Hardaker et al., 2004). This could consequently affect raw materials like seed breeding and producers (farmers) ability to repay debt due to financial stress. Weather conditions affect greater share of flower business (agri-business) activities in parts of Uganda display high sensitivity of agricultural to fluctuations in rainfall (Benson & Clay, 1998). Due to weather risks flower farms have also ventured into irrigation which is expensive in the long run due to the high costs of energy and fuel to run the generators.

Biological and Environmental Related Risk

Biological and environmental risks affecting agricultural supply chains are ubiquitous and varied. These biological risks are usually associated with a very specific geographic location in the short-term, but can move through the entire supply chain (Jaffee, et al., 2010).

Biological related risks are mostly associated with malfunctions of gene expression and diseases. Baltussen et al. (2006) identified disease risk are highly among flower farming. Which calls for use of chemical spraying and this is hazardous to human being, these chemicals are expensive and require specialized personnel and protective gear. According to Meuwissen et al. (2001) and Huirne et al. (2007) attribute high scores production risk to disease risk. Palinskas & Szekely (2008) show that contagious diseases represent the highest – scoring risk in crop farming followed by production risks. The presence of certain flower pests or diseases may impinge upon international market access, not only for the farmers and firms immediately affected but perhaps for the entire agricultural chain. They can also have systemic impacts on decision-making and productivity and market options (Jaffee,et al., 2010). Land on lake shores is sandy and salty which affects the production of flowers many flowers farms have embarked on use of fertilizer which in the long run are expensive.

The environment in which agricultural supply chains operates can determined the performance of the chain. Meuwissen et al. (2001) & Huirne et al. (2007) point to high importance of strict hygienic rules for output risk reduction. Environmental degradation could adversely affect (future) productivity, worker health, or downstream market access. As more and more commodity supply chains now feature the tracking/recording of raw materials back to their original sources, downstream buyers can no longer claim that they don't know how these raw materials are produced (Jaffee,et al.,2010). The adverse environmental foot print of some production practices therefore constitutes a potential commercial and reputational risk for downstream processors and distributors. Given the farm land in is lacking some nutrients? Ugandan flower firms have been using fertilizers which are expensive in using in the long run. This has affected the cost of flower farming UFEA (2013).

Market Related Risks

Flower supply chain just like any supply chain is associated with market related risk. These risks basically reside in demand and supply variations. Demand related risks result from supply disruptions emerging from downstream supply chain operations (Juttner, 2005). This includes on the one hand supply disruptions in the physical distribution of flower products to the end-customer with particular issues being transportation operations (McKinnon, 2006) and the

distribution network. Demand side risks can originate from the uncertainty surrounding the random demands of the customers (Nagurney et al., 2005). Literature proves that demand uncertainties such as demand volatility are still the major problem discussed (Agrell et al., 2004; Sodhi, 2005; Zhang 2006; Ding et al., 2007).

In the flower supply chain, demand related risks/volatility emerges as a result of a number of factors. Chiefly among them are (1) fluctuations in demand that impact domestic or international prices of inputs and/or output, (2) Changes in market demands for quantity and/or quality attributes, (3) changes in flower safety requirements, (4) changes in market demand for timing of product delivery as well as (5) changes in supply chain reputation and dependability (Jaffee, et al., 2010). The above demand related risks lead to supply disruptions in flower supply chain. Supply Disruptions occur here from a mismatch between a company's projections and actual demand (forecast error) as well as from poor supply chain coordination. An important issue in this context, affecting forecast quality and therefore demand-side disruptions, is the bullwhip effect, which is characterized by an amplification of demand volatility in the upstream direction of the supply chain this affects the financial performance of firms inters of profits earned, market share on the global market and sale volumes.

Lee et al. (1997) analyzed this detrimental effect and identified delayed and distorted information, sales promotions, order batching, price fluctuations and rationing, or shortage gaming as major causes. Other factors intensifying the bullwhip effect are over-reactions, unnecessary interventions, second guessing, and mistrust (Christopher & Lee, 2004).

Supply related risks are various events that affect the continuity of the supplier and result in the temporary or permanent termination of the buyer-supplier relationship. For instance, the threat of financial instability of suppliers could lead to supplier default, insolvency, or Flower export firm's bankruptcy (Wagner & Johnson, 2004). Supply related risks include production capacity constraints on the supply market, quality problems, technological changes, and product design changes. *Journal of Management and Strategy* (2014)

Fitzgerald (2005) links poor quality to incapability of the supplier to produce according to the standard demanded this was highlighted in the Uganda flowers exporter association where the

European union had a ban on the flower products from Uganda due to poor quality. Moreover, Murphy (2007) illustrates quality problem with products safety and contamination in China. Logistical and Infrastructure Related Risk flower supply chains increasingly face risks related to logistics and infrastructure that affect the availability and timing of goods and services, energy and information. Ugandan flower firms recently were ban due to the quality of flowers they were exporting to Europe and this affected their production and earnings.

According to Jaffee, et al. (2010), failures in logistics are transmitted through the agricultural supply chain and could impact product quality and traceability as well as decision-making. Effective logistics and technologies are critical success factors for both manufacturers (producers) and retailers (Brimer, 1995; Tarantilis et al., 2004).

Effective logistics requires delivering the right product, in the right quantity, in the right quality, to the right place, at the right time, for the right cost (Aghazadeh, 2004). These leads to positive impact on the success of the partners in the supply chain (Brimer, 1995). Logistics/ infrastructure related risks are closely related driving decisions on product lines and input use, which can affect future production, processing, marketing decisions, commercial strategies and bargaining power (Jaffee,et al., 2010). The multi - complex nature of flower supply chain networks require well plan and design logistics to allow effective and efficient operation to interconnect the numerous nodes. Risks relating to transportation include rising energy cost, labour shortage due to un skilled personnel in the area of flower, port congestion capacity constraint, service reliability reduction (Hauser, 2003; LaLonde, 2004, 2005).

When logistics activities need to cross international borders, custom delays (Hauser, 2003) and long queues from tighter security (LaLonde, 2005) are also common phenomena that affect logistics services. Information Technology (IT)-related problems are inclusive in logistics/ infrastructural risk and are highly relevant to supply chain management since many supply chain management functions build on information processing and sharing. Organizations have become increasingly technology-dependent and, consequently, vulnerable to IT problems or breakdowns (Chopra & Sodhi 2004). Due to the logistical issue flower firms in Uganda have to incur costs related to cold transporting trucks that can effectively keep the flowers better. This in the long run has led to high costs associated with high prices of fuel.

Political Related Risk

Political risk is a major concern for companies in a wide range of industries. Globally, flower supply chain in general is subjected to political risks when the multi complex network extends over country borders. A recent European union gave a ban to Ugandan flower firms from exporting which affected the export volumes and earning. Uganda flower export association (2015) indicated that more than half of all organizations believe that political risk will be the most important constraint on investment in emerging markets. In the same study, however, most of those organizations indicated they have no way of measuring political risk and do not integrate it into their approach to risk management (World Flower export firms 2009).

Cudahy et al. (2008) view political risk from the perspective of the sourcing country's political instability. Ksoll, Macchiavello & Morjaria (2009) in conducting a survey on Kenyan flower grower-exporters, showed that the December 2007 post-electoral conflict reduced cut flower exports by 24% overall, and by 38% for firms located in conflict areas, mainly through displacing workers. Whereas the authors could not provide evidence to suggest that the conflict affected export volumes in the areas not affected by the conflict nor the sensitivity of competitor countries behavior for the EU market their evidence showed that the conflict did change Kenyan exporters' behavior. Specifically, shipments were more consolidated and exported less frequently, while security expenses increased Ksoll, Macchiavello & Morjaria (2009).

Stalk (2006) view outsourcing risk to China has little to do with the politics of import restriction, but that the main concern now are political barriers to port expansion. Checa et al. (2003) emphases that risks are associated with administration transition in a government. Policy and Institutional Related Risk Policy and institutional (Regulatory, legal and bureaucratic) risks have major impact on the structure of the flower supply (Jaffee,et al., 2010). Forms of regulation policy adopted in developing countries have shifted over time (Minogue, 2005). Following the apparent success of market liberalization programs in some developed countries, and the evidence of the failure of state-led economic planning in developing ones (World Flower export firms, 1995), the role of state regulation was redefined and narrowed to that of ensuring an undistorted policy environment in which efficient markets could operate. It has been suggested

that market failures may be more pronounced, when the case for public regulation is stronger, in developing countries (Stiglitz, 1998).

According to Hendricks & Singhal (2003, 2005a, 2005b) supply chain disruptions can be associated with the actions or decisions of authorities. Administrative barriers (customs, trade regulations) may restrict the design and influence the operative performance of supply chains. Legal changes are often sudden and difficult to anticipate and substantially increased transportation costs. Unpredictable and untimely changes in import tariff rates, adhoc restrictions on private importation and the quest of firms to meet environmental requisites, frequently get involved in more complex supply chains and incur higher supply chain costs. During the first half of 2007, the Zambian government position on maize exports changed three, Journal of Management and Strategy 2014 (Zinyama, 2007). Lie wise the frequent strikes caused by the different multiparty have affected the image of Uganda on European market which had some effects on the global market.

Dorosh et al., (2009) mention export ban, large import close and open boarder as some of government policies on food. The frequent and unexpected change in policies surrounding flower supply chain could increase the risk along the chain.

Financial Related Risk

Financial flow in flower supply chain plays a major role in the complex network of organization that drives the entire supply chain to a desirable outcome. Without access to finance, productivity and market access suffer from constraints such as a) working-capital to finance production costs, including the purchase of improved flower seeds and insurance to protect investments from climatic fluctuations, b) investment capital for mechanization and other production, cold storage, and processing technology, and c) trade finance to help traders get a container to its destination. In general financial related risk leads to the inability to settle payments and improper investments. Several research have attributed the financial risk to factors such as financial handling and practice, financial strength of supply chain partners exchange rate risk looking at the Uganda currency that has been depreciating from the dollar and euro currencies, etc. Financial handling and managing has been a major problem in flower supply chain. Hartle-Urquhart (2006) discusses the risk arising from the way in which financial flows are managed

and handled. Several researches have shown that the vulnerability of the financial strength of supply chain members could easily affect the entire supply chain (Peck et al., 2003; Tang, 2006b).

Hendricks & Singhal (2005) report the vulnerability of financial flow and the long term effect associated with supply chain disruptions. They reveal that the affected firms' stock prices could be negatively influenced before the disruption announcement is made, whereas during the post announcement period, the firm's stock prices may have positive or negative development depending on their corrective actions. Exchange rate is another arm of finance that boost supply chain risk. Li et al. (2001) discuss the exchange rate risk and propose when to switch suppliers on the basis of the exchange rate risk.

The World Flower export firms (2008) reported an evolutional change in agro- food sector. Despite the changes in agriculture and agribusiness, the typical offer for financial products and services for agricultural and rural production has been deficient and not particularly innovative; financial intermediaries still lack much depth in rural areas, and producers, especially smallholders, are still underserved. Conventional thinking is that the agricultural sector is too costly and risky for lending. Yet, major Flower export firms in the sector such as Rabo Flower export firms and Banorte, large financial institutions in the Netherlands express the view that flower supply is profitable if producers are well integrated into a viable value chain (Shwedel, 2007).

Operational and Managerial Related Risks

There are numerous managerial and operational issues facing flower supply chain management. Some of the issues discussed in earlier are related in agricultural operation and managements includes inventory management of perishable products (Nahmias (2011), farm planning (Lowe & Preckel, 2004), food distribution management (Akkerman et al., 2010). Agricultural operation and management risks are closely associated with human judgment and response such as errors in action and inaction, commission and omission and it directly affect a single chain participant, but could also be transmitted through the entire supply chain (Jaffee, et al., 2010). Managerial and operational related risks are part and parcel of decision-making from farms to firms. These risks are mostly associated with productivity reductions, and low quality of flower, and

unreliable delivery. There may be operational failures by one entity which spillover to losses (or lost market access) to many others and (Jaffee, et al., 2010)

2.1.2 Financial performance

There are several types of financial performance indicators which include market share, sale volumes, profits earned which measure a firm's ability to meet its short-term financial obligations; leverage ratios which measure ability to meet long-term obligations; profitability or operating ratios which measure the success of a company's operating performance; activity or efficiency ratios which indicate how effectively a company uses and controls its assets (Foster, 1986). Dukhuizen et al. (2001) analyzed risk management strategies in which risks are shared with others to find out whether such strategies provide opportunities for farmers to deal with the new risks with which horticulture is confronted in Netherlands. A survey of attitudes towards risk sharing of farmers was carried out. In a mail questionnaire, survey was carried out among 2700 farmers. The survey included questions about the socio-economic characteristics of the farmers, and about their perceptions of the importance of various sources of risk and risk management strategies including both on farm strategies and strategies in which risks are shared with others. Perceptions were measured on Likert-type scales ranging from one for not relevant to five for very relevant. Linear regression was also used to test whether the respondents who perceived a particular type of risk as more important also assigned more importance to strategies to manage this risk. Such relationships were tested for the perception of price risks and price risk management strategies, the perception of personal risks and personal insurance, and the perception of production risks and business insurance. The author found that risk-sharing strategies provide opportunities for dealing with the new and the old risks with which horticulture farming are confronted with. Theoretically, risk-sharing tools are in principle advantageous to both individual farmers and society as a whole. Empirically, farmers already perceive risk sharing strategies especially insurance as important strategies to manage risks.

2.1.3 Supply risk identification

Stewart, (2007) indicates that Supply Risk Identification strategies are practices by the firms to identify risk factors that are likely to have greater effect on profitability.

Supply Risk Identification strategies might begin with brainstorming sessions, developing a risk register, having previous risk assessments, surveys, or still other efforts to identify and list potential risks within supply-chain processes. Reference works that can help with identifying risks include those from the British Standards Institution, which offers a code of practice for risk management, and from the ISO, which offers a compendium of risk assessment techniques. A business-impact analysis can help a firm evaluate the threats a firm might face and their consequences. Such analysis might start with a “worst-case” scenario focusing on the business process that are most critical to recover and how they might be recovered remotely. A business-impact analysis should identify critical business functions and assign a level of importance to each function based on the operational or financial consequence. It should also set recovery-time objectives and the resources required for these.

Zsidisin & Smith (2005) highlight the importance of early supplier involvement (ESI) for new product development by referring to a case study of Rolls Royce. The importance of interaction is well known in innovation research, ESI underlines interaction early in the design cycle of importance to risk management and risk reduction. ‘With better exchange of information comes knowledge of the situations surrounding the dynamics of a supply relationship, and with that knowledge comes greater potential for detecting, averting, and managing supply risk’ (Zsidisin & Smith, 2005) The problem variables these authors identify and how to deal with them are the following: Manage Legal liabilities through determining intellectual property rights during initial agreements and Effecting sharing of expertise. Control Supplier capacity constraints by ensuring supplier production flexibility during pre-selection and Share future demand forecast information immediately with suppliers to improve the planning process.

Supply chain management has become a major part of companies’/firms management systems due the numerous benefit associated to supply chains in today’s’ business environment. However, although such supply chain design changes and supply chain management initiatives have great potential to make operations leaner and more efficient in a stable environment, they simultaneously increase the fragility and vulnerability of supply chains to disruptions (Craighead, Blackhurst & Handfield 2007; Zsidisin, & Melnyk 2005).

Several research have indicated the prevalent of disruptions to firms and its supply chain due to the unstable environment and the negative consequences of supply disruptions to firms (Chopra

& Sodhi, 2004; Coleman, 2006; Hendicks & Singhal, 2005; Wagner and Bode, 2008). Therefore, with the inborn of risk to modern supply chain, there is the need to single out and solve risks issues in supply chain management to achieve higher performance.

2.1.4 Supply risk measurement

Supply Risk measurement is associated with the probability of an event occurring and the significance of the consequences (Harland et al., 2003). In the past decade, a number of risk assessment methods have emerged, especially for supply risk measurement; these are classified according to the risks which include macro and micro risk assessments.

Supply risk measurement has attracted much attention. Supplier evaluation and selection problem while considering a variety of supply risks, such as *poor quality* (Talluri & Narasimhan, 2003; Talluri et al., 2006), *late delivery* (Talluri & Narasimhan, 2003; Talluri et al., 2006), *uncertain capacity* (Kumar et al., 2006; Viswanadham & Samvedi, 2013), *dispersed geographical location* (Chan & Kumar, 2007), *supplier failure* (Kull & Talluri, 2008; Ravindran et al., 2010; Ruiz-Torres et al., 2013), *supplier's financial stress* (Lockamy III & McCormack, 2010), *supply disruption* (Wu & Olson, 2010; Meena et al., 2011), *poor supplier service* (Wu et al., 2010; Chen & Wu, 2013), *suppliers' risk management ability and experience* (Ho et al., 2011), and *lack of supplier involvement* (Chaudhuri et al., 2013). A wide range of quantitative methods have been proposed to deal with this problem, including mathematical programming and data envelopment analysis (DEA) approaches (Talluri & Narasimhan, 2003; Kumar et al., 2006; Talluri et al., 2006; Ravindran et al., 2010; Wu and Olson, 2010; Wu et al., 2010; Meena et al., 2011), multi-criteria decision making and AHP approaches (Chan & Kumar, 2007; Blackhurst et al., 2008; Kull & Talluri, 2008; Ho et al., 2011; Chen & Wu, 2013; Viswanadham & Samvedi, 2013), Bayesian networks (Lockamy III & McCormack, 2010), decision tree approach (Ruiz-Torres et al., 2013), and fuzzy based failure mode and effect analysis (FMEA) with ordered weighted averaging approach (Chaudhuri et al., 2013).

In addition to the above supply risks, some other supply risks have also been analyzed and assessed, such as second-tier supply failure (Kull & Closs, 2008), offshore sourcing risk (Schoenherr et al., 2008), unreliable dual sourcing network (Iakovou et al., 2010), supplier non-

conformance risk (Wiengarten et al., 2013), supplier incapability (Johnson et al., 2013), and supplier unreliability (Cheong & Song, 2013).

Different from the above approaches focusing on the assessment of supply risks, the following supply risk assessment methods and models. Zsidisin et al. (2004) examined tools and techniques that purchasing organizations implement for assessing supply risk within an agency theory context. They indicated that purchasing organizations can assess supply risk with techniques that focus on addressing supplier quality issues, improving supplier processes, and reducing the likelihood of supply disruptions. Ellegaard (2008) applied a case based methodology to analyze the supply risk management practices of 11 small company owners (SCOs). They confirmed that the 11 studied SCOs applied almost the same supply risk management practices, which can be characterized as defensive. Wu & Olson (2008), used simulated data to compare three types of risk evaluation models: chance-constrained programming, DEA, and multi-objective programming models. Results from three models are consistent with each other in selecting preferred suppliers. Azadeh & Alem (2010) benchmarked three types of supplier selection models under certainty, uncertainty and probabilistic conditions, including DEA, Fuzzy DEA, and chance-constrained DEA. Results from three models are also consistent with each other with respect to the worst suppliers.

Supplier evaluation and selection has attracted the most attention in this category. Many of these scholars focus on conceptual model development and demonstration using simulated data (Chan & Kumar, 2007; Ravindran et al., 2010; Wu and Olson, 2010; Wu et al., 2010; Meena et al., 2011; Viswanadham & Samvedi, 2013; Ruiz-Torres et al., 2013). Thus, the use of real data to test the efficacy of these methods is still missing. Moreover, some of these articles have other technical limitations. For example, Talluri & Narasimhan (2003) & Talluri et al. (2006) only utilized a single input measure in the DEA analyses. Kull & Talluri (2008) assumed current supplier capabilities will remain unchanged into the future. Lockamy III & McCormack (2010) assumed that all suppliers are willing to share their accurate and reliable risk profile data with their customers. Ruiz-Torres et al. (2013) assumed all the input parameters and supplier characteristics to be deterministic.

2.1.5 Supply risk mitigation

According to Chopra & Sodhi ,(2004) there are many means available to control risks within supply chains A fundamental strategy would be to try to do a great job in the fundamental supply chain performance measures of consistent fulfillment of orders, delivery dependability, and customer satisfaction. Of course, many effective organizations have failed when faced with changing markets or catastrophic risks outlined in the last section as external risks. Some strategies proposed for supply chains are reviewed

Chopra et al, (2004) developed a matrix to compare relative advantages or disadvantages of each strategy with respect to types of risks. Adding capacity would be expected to reduce risk of needing more capacity of course, and also decrease risk of procurement and inventory problems, but increases the risk of delay. Adding inventory is very beneficial in reducing risk of delays, and reduces risk of disruption, procurement, and capacity, but incurs much greater risk of inventory-related risks such as out-dating, spoilage, carrying costs, etc. Having redundant suppliers is expected to be very effective at dealing with disruptions, and also can reduce procurement and inventory risk, but can increase the risk of excess capacity. Other strategies had no negative expected risk impacts (increasing responsiveness, increasing flexibility, aggregating demand, increasing capability, or increasing customer accounts), but could have negative cost implications. From a single organization view, Miller, (1992) distinguishes five generic strategies companies undertake in order to mitigate risk, four of which can be adapted to supply chain contexts: (1) avoidance, (2) control, (3) cooperation and (4) flexibility

Avoidance

Avoidance occurs when risks associated with operating in a given product market or geographical area are considered to be unacceptable Miller, (1992) from a supply chain perspective, avoidance can be related to products/geographical markets and/or supplier and customer organizations. A company could drop specific products, suppliers or geographical markets if supply is seen to be unreliable.

To avoid risk, remove requirements that represent uncertainty and high risk. Avoidance includes trading off risk for performance or other capability, and it is a key activity during requirements analysis. Avoidance requires understanding of priorities in requirements and constraints.

Control

Companies may seek to control contingencies from the various risk sources, rather than passively treat uncertainties as constraints within which they must operate Miller, (1992). Control is the deliberate use of the design process to lower the risk to acceptable levels. Requires the disciplined application of the systems engineering process and detailed knowledge of the technical area associated with the design. Control techniques are plentiful and include: Multiple concurrent designs to provide more than one design path to a solution, Alternative low-risk design to minimize the risk of a design solution by using the lowest-risk design option.

Cooperation

Compared with control initiatives, cooperative responses involve joint agreements, rather than unilateral control, as a means of achieving uncertainty reduction Miller, (1992). From a supply chain perspective, the focus is on joint agreements among organizations in the supply chain to improve supply chain visibility and understanding, to share information on exposures to specific risk sources and finally, to prepare joint business continuity plans.

Cooperation is the deliberate acceptance of the risk because it is low enough in probability and/or consequence to be reasonably assumed without impacting the development effort. Key techniques for handling accepted risk are budget and schedule reserves for unplanned activities and continuous assessment

Flexibility

Unlike the strategic moves of control, which attempt to increase the predictability of contingencies from the various risk sources, flexibility increases responsiveness while leaving the predictability of factors unchanged Miller, (1992). One supply chain example is postponement, where companies delay the decision to make, configure, label or ship a product to a particular destination. Postponement reduces their dependence on forecasts and increases the ability to respond to variability or even disruptions in demand. A second supply chain example is multiple sourcing, which one manager classified as the traditional form of managing risk through spreading Supply organizational issues, through providing clarity of supplier management structures and Obtaining knowledge of suppliers at both corporate and plant levels. One general rule that probably is applicable to most procurement projects is that potential risks in any phases

of the procurement life cycle should be identified early or ahead of the actual execution of a procurement project (Zsidisin & Smith, 2005 and Osipova, 2008).

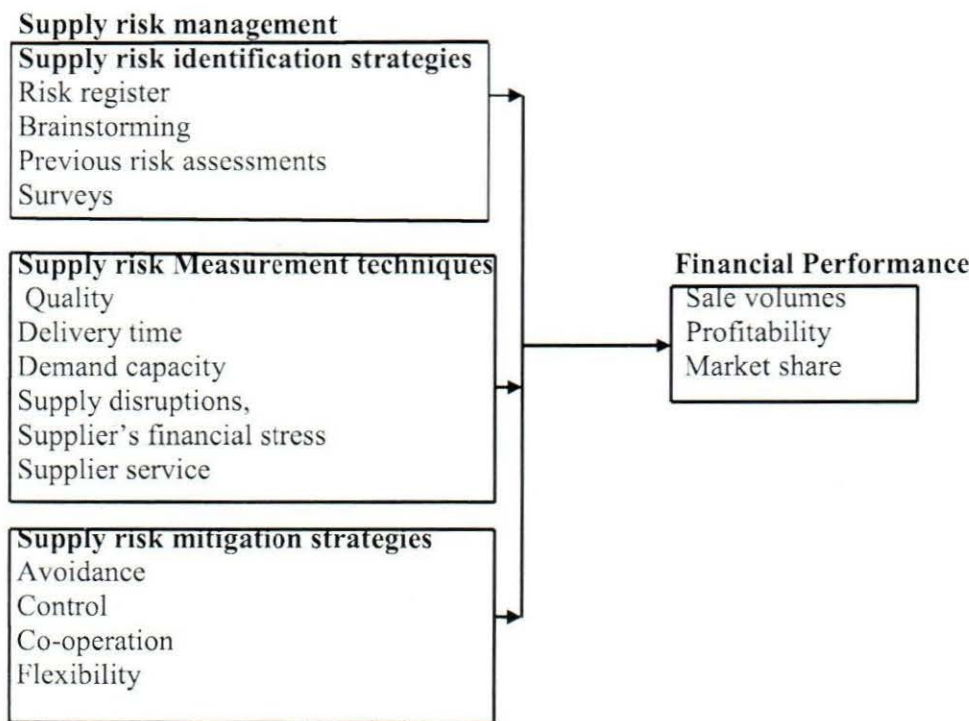
2.2 Conceptual Frame Work

The figure 2.1 gives a graphical conceptual representation of the variables of study and how they relate to each other. The independent variable was supply risk Management practices while the dependent variable was financial performance of export firms. The Extraneous variables were the export tax and customs laws in business environment in which export firms operate.

Figure 2.1 conceptual frame work on supply risk management and financial performance.

INDEPENDENT VARIABLE

DEPENDENT VARIABLE



Source: Adapted from Shapiro (2006) and Stewart, (2007) and modified by the researcher

The above conceptual frame work is based on Shapiro (2006) and Stewart (2007) theories.

According to Stewart (2007), the business environment the world over is full of risks. Flybjerg (2008) & Minshkin, (2001) suggest that these supply risks increase if the business is on the global market. The value of a company's profitability increases as the market prices rises. This

therefore implies that a company's profitability fluctuates because of fluctuations prices but If these supply risks are not effectively anticipated and prepared for they can significantly lower profitability of business. Therefore, Shapiro, (2006) advises that businesses should prepare for and control these supply risks through risk identification, measurement and mitigation strategies so that their sales volume, market share and profitability are not affected. Becker, (2003) adds that risk management practices should be backed by good managerial skills and entrepreneurial intellectual capability. The success of risk management practices finally depends on the customs laws and Export taxes.

2.3 Theoretical Review

2.3.1 Agency Theory

Agency theory is concerned with the study of problems that arise when one party, the principal, delegates work to another party, the agent (Lassar & Kerr 1996). The unit of analysis is the metaphor of a contract between the agent and the principal under the flower industry, the principal is the purchasing Netherlands auction flower firms and the agent is the Uganda flowers exporters association who are the agents. Previous studies employing agency theory as the theoretical frameworks have used "coordination efforts" (Celly & Frazier, 1996), "control" (Anderson & Oliver, 1987), and "management" (McMillan, 1990) as the unit of analysis. In this research, the purchasing organization is the principal (Netherlands auction flower firms) and the supplier (Uganda flowers exporters association) is the agent. Variables that influence the contract between the principal and the agent include information systems, outcome uncertainty, risk aversion, goal conflict, programmability, outcome measures, and relationship length. In examining supply risk, this study adopts the efforts of the purchasing organization to manage suppliers as the unit of analysis.

The management of risk can be categorized by outcome- and behavior-based contracts (Choi and Lassar & Kerr,1996). In the context of inbound supply, outcome-based management efforts reflect the extent that purchasing organizations emphasize results. Complete reliance on outcome-based efforts signifies an exclusive concern with bottom-line results, regardless of how suppliers achieve them (Choi & Liker, 1995). As uncertainty becomes insignificant, an agency theory perspective supports **outcome-based** supply risk management efforts as appropriate (Eisenhardt, 1989). Supply is **more efficiently** managed without unnecessary intervention into

supplier operations on the part of the purchasing organization. Where Netherlands firms intervene in the transportation of flowers.

The literature supports that one way to achieve the desired outcome of reducing the impact of detrimental supply events without intervening with supplier operations is through the use of buffers. Although not explicit in agency theory, buffers are used to shield the organization from the negative effects of a damaging event, (Pagell & Krause, 1999). The use of buffers provides a short-term solution to problems of supply risk, and focuses predominately on outcomes by reducing the impact of supply risk events. Extensive use of buffers may be cost prohibitive to the purchasing organization in the long run due to increased inventories, potential obsolescence, and reduced opportunities to enjoy the economies of scale available from a reduced supply base.

When supply uncertainty becomes a significant factor, the application of agency theory suggests that the purchasing organization who are the flower auction firms in the Netherlands embrace management efforts that reduce the probability and/or impact of a detrimental event on the firm. The appropriate risk reduction strategies can be categorized as behavior-based management efforts or buffer-oriented methods to shield the organization from detrimental events.

Behavior-based management efforts focus on processes, emphasizing "tasks and activities" that lead to a reduction in supply risk (Logan, 2000). The improvement of processes associated with inbound supply is long-term oriented. Efforts to manage suppliers require substantial human and financial resources and close communications in order to improve processes and, subsequently, reduce the chance that a risk event occurs (Celly & Frazier 1996).

2.3.2 The Resource-Based View

The origin of the Resource-Based View (RBV) can be traced back to the seminal work of Penrose, (1959) of 'the theory of the growth of the firm'. Penrose viewed the firm as a set of unique internal resources through which firms are differentiated from each other and are able to excel. Rubin (1973) supported Penrose's view in that the firm consists of a bundle of resources. Which are land, human resource and finances. In this case flower firms in Uganda require large pieces of land and land is expensive to purchase, but also given the flower farming need skilled labour this is crucial how the flower firms deal with their resources to have a competitive

advantage over others. Wernerfelt (1984) was the first to introduce a complete work on the RBV in which he also supported the view of Penrose that the firm consists of a bundle of unique resources. Nevertheless, the RBV was not popular until the early 1990s as several scholarly works were introduced intensively such as those of Prahalad & Hamel (1990), Barney (1991), Grant (1991), Rumelt (1991), Hamel and Prahalad (1994) & Collis & Montgomery (1995) cited in (Abushaikha, 2014).

Despite the debate in strategic management represented by the RBV and Porter's Theory about the sources of firms' competitiveness, both views agree that it is generating a 'competitive advantage' that makes a firm outperform another (Barney, 1991). Hence, it is essential at this stage to clarify what is meant by a competitive advantage as a key concept in this area. Barney (1991) defined a competitive advantage and usefully distinguishes it from a sustained competitive advantage. "A firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors. In this case a flower firm is said to have a sustained competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy". Hence, a competitive advantage emerges from exploiting the unique characteristics or resources of the firm to come up with a value that no other firm (or few other firms) in the same flower industry it possesses. If this value can be protected over a long period of time, then it becomes sustainable, cited in (Ismail Abushaikha, 2014). apart from land acquisition and use flower firms to have a competitive advantages over other competitors on the global market need to have green houses to plant flowers and have them irrigated so that their production is boosted even when the weather conditions are favorable , use of resources to have cold rooms and trucks to transport flowers in the good condition to avoid poor quality .

2.4 The relationship between Supply Risk Identification strategies and Financial Performance

Stewart, (2007) indicates that Supply Risk Identification strategies are practices by the firms to identify risk factors that are likely to have greater effect on profitability. Supply Risk Identification strategy is the first step in the SCRM process. It involves the identification of risk

types, factors, or both. They are different methods developed which are qualitative or quantitative methods for identifying potential supply chain risks, such as the analytic hierarchy process (AHP) method (Tsai et al., 2008), a supply chain vulnerability map (Blos et al., 2009), and a conceptual model (Trkman & McCormack, 2009). Another group of researchers focused on risk factor identification using the AHP (Gaudenzi & Borghesi, 2006) and the hazard and operability analysis method (Adhitya et al., 2009). Some other scholars proposed qualitative tools to identify both risk types and risk factors, such as a qualitative value-focused process engineering methodology (Neiger et al., 2009) and a supply chain Supply Risk Identification strategies system, based on knowledge-based system approach (Kayis & Karningsih, 2012).

There are many ways to identify and categorize risks, and each organization has its own way for developing its risk register: a list of identified risks with their importance rating. Possible reasons include helping us to understand the distinctions among these risks and to prioritize different risk mitigation investment decisions. According to Garvin and Levesque (2006) there are different ways of Supply Risk Identification strategies including identifying critical uncertainties in scenario planning. In identifying risks, supply chain researchers have used the terms uncertainty and risk interchangeably although economics researchers have attempted to narrow risk to only those situations where possible outcomes can be assumed to follow a known probability distribution. All these help to improve the financial performance of a flower firm.

Developing an initial risk register, which is a one-time effort, is necessary to identify baseline risks which help a firm in identifying risks in the flower supply chain hence mitigate them and have its profits increased and the market share. Too many organizations start a risk management program without knowing what threats the organization faces, or what consequence a supply disruption would have. As a result, they focus too much protecting against the wrong threats or too little protecting against threats that matter. Worse, they may fail to anticipate important threats, or fail to recognize the consequence an apparently minor threat may have an impact on the financial performance of a firm.

Supply Risk Identification strategies might begin with brainstorming sessions, previous risk assessments, surveys, or still other efforts to identify and list potential risks within supply-chain processes. This helps firms to avoid losses associated to risks by identifying risks, firm is able to improve on its financial performance. Reference works that can help with identifying risks

include those from the British Standards Institution, which offers a code of practice for risk management, and from the ISO, which offers a compendium of risk assessment techniques. A business-impact analysis can help a firm evaluate the threats a firm might face and their consequences. Such analysis might start with a “worst-case” scenario focusing on the business process that are most critical to recover and how they might be recovered remotely. A business-impact analysis should identify critical business functions and assign a level of importance to each function based on the operational or financial consequence. It should also set recovery-time objectives and the resources required for these. To give leverage to flower firms in reducing risk which affect their financial performance.

Zsidisin & Smith, (2005) highlight the importance of early supplier involvement (ESI) for new product development by referring to a case study of Rolls Royce. The importance of interaction is well known in innovation research, ESI underlines interaction early in the design cycle of importance to risk management and risk reduction. ‘With better exchange of information comes knowledge of the situations surrounding the dynamics of a supply relationship, and with that knowledge comes greater potential for detecting, averting, and managing supply risk’ (Zsidisin & Smith, 2005 which helps firms to produce the right product and design for their customer hence improve its financial performance. Manage Legal liabilities through determining intellectual property rights during initial agreements and Effecting sharing of expertise. Control Supplier capacity constraints by ensuring supplier production flexibility during pre-selection and Share future demand forecast information immediately with suppliers to improve the planning process which later improves its financial performance.

Supply chain management has become a major part of company’s/firms management systems due the numerous benefit associated to supply chains in today’s’ flower business environment. However, although such supply chain design changes and supply chain management initiatives have great potential to make operations leaner and more efficient in a stable environment, they simultaneously increase the fragility and vulnerability of supply chains to disruptions (Craighead, Blackhurst & Handfield 2007; Zsidisin, & Melnyk 2005).

Several research have indicated the prevalent of disruptions to firms and its supply chain due to the unstable environment and the negative consequences of supply disruptions to firms (Chopra

& Sodhi, 2004; Coleman, 2006; Hendicks & Singhal, 2005; Wagner & Bode, 2008). Therefore, with the inborn of risk to modern supply chain, there is the need to single out and solve risks issues in supply chain management to achieve higher financial performance.

Risks management in supply chain is allied with cost, therefore before firms engage in such an expensive venture, there is the need to specify the type of industries to manage the risk and to identify the risks source that lead to the chains' disruptions. By identifying the risk, participant in supply chain could effectively manage the risks to minimize its' total cost which includes reducing future loss and damage. Although, the benefits of an effective managed risk in supply chain to firms and national economies as a whole are well elaborated, not much research focus on agricultural supply chain risk. Meanwhile agricultural industries continuous to contributes to Gross Domestic Product (GDP) of many developing countries such as Ghana (Ghana statistical service, 2012) and contributes appreciably to developed countries (Kinsey 2001).

The role played by agriculture industries in Ghana's Gross Domestic Product (Ghana statistics 2012) and the possible detrimental effect of risks associated with supply chain management (Hendricks & Singhal, 2005; Lee et al. (1997) call for investigations into risk to aid in effective management of the chain. The agricultural industry contributes about 38% of the country's GDP annually. Ghana operates global agricultural supply chain (Ghana statistics , 2012). The complexity of the system-wide network of the agricultural supply chain just like any other supply chain coupled with the perish ability nature of produce involved in chain as well as the pressure on agricultural firms operating in an unstable environment to meet global competitive market could expose the chain to numerous risks (Martha & Subbakrishna, 2002; Chopra & Sodhi, 2004; Coleman, 2006; Hendicks & Singhal, 2005).

According to Wagner and Bode, (2008). It's prudent to investigate the risk sources that could possibly affect the agricultural supply chain Probing agricultural supply chain risk could go a long way to enable the chain's participant to manage the risk effectively which could increase the performance of the chain. Akcaoz et al. (2003) carried a study to identify groups of fanners in horticulture who differ in their risk sources and risk management strategies. From the findings of the research, risk sources were labelled as environmental, price, catastrophe, input costs, production and technological, political, finance, personal, marketing, health and social security.

The dimensions of risk strategies were found to be diversification, off-farm income, marketing, planning, financing and security.

Kiptui, (2008) carried out a study to investigate the impact of real exchange rate volatility on exports of horticulture and tea. He used relative prices which are a measure of competitiveness and foreign incomes capturing foreign economic activity. From this source they obtain the world non fuel commodity prices, which together with export prices, are used to derive relative prices (being export prices divided by world non-fuel commodity prices) for both commodities. The results indicate the existence of long-run relationships and, show that real exchange rate volatility has significant negative effects in the short-run and that the foreign income and relative price variables remain highly significant. Therefore, there is need to pay greater attention to exchange rate volatility by effectively monitoring movements in the exchange rate and designing management strategies to minimize the effects on horticulture products.

This study is relevant to flower industry in that it shows how financial risk management strategies can be used and integrated to enhance performance and value of a firm Gursoy et al. (2007) examined the impacts of some of the internal strategic factors on financial success to identify the performance-enhancing internal strategic factors likely to enable flower companies in horticulture to gain competitive advantage. In order to be able to have healthy financial performance, managers need to identify those internal strategic factors and develop strategies and action plans to improve the performance in those areas. The theory further suggests that there might be a few internal strategic factors like risk identification and strategies likely to enhance the financial performance of companies and/or enable them to perform better than their competitors and the market average by giving them a sustained competitive advantage. It is crucial for managers to identify those performance-enhancing internal strategic factors and strategies to outperform competitors and to improve financial performance in their flower firms. Nartea et al. (2008) explored the potential for risk reduction by farmer's in horticulture industry through the diversification of their farm asset portfolios to include financial investments such as ordinary industrial shares, government bonds and Flower export firm's bills. Low correlations between rates of return on farm and these financial assets suggest that significant reduction of income variability might follow their inclusion in farmers' portfolios.

2.4 The relationship between Supply Risk Measurement techniques and Financial Performance

Supply risk measurement techniques are techniques used by the firm to ascertain the magnitude and other potential negative effects that are likely to result from certain business risks

Risk measurement is associated with the probability of an event occurring and the significance of the consequences (Harland et al., 2003). In the past decade, a number of risk assessment methods have emerged, especially for supply risk assessment; these are classified according to the risks which include macro and micro risk assessments.

Supply risk assessment has attracted much attention. Supplier evaluation and selection problem while considering a variety of supply risks, such as *poor quality* (Talluri & Narasimhan, 2003; Talluri et al., 2006), *late delivery* (Talluri & Narasimhan, 2003; Talluri et al., 2006), *uncertain capacity* (Kumar et al., 2006; Viswanadham & Samvedi, 2013), *dispersed geographical location* (Chan and Kumar, 2007), *supplier failure* (Kull & Talluri, 2008; Ravindran et al., 2010; Ruiz-Torres et al., 2013), *supplier's financial stress* (Lockamy III & McCormack, 2010), *supply disruption* (Wu and Olson, 2010; Meena et al., 2011), *poor supplier service* (Wu et al., 2010; Chen & Wu, 2013), *suppliers' risk management ability and experience* (Ho et al., 2011), and *lack of supplier involvement* (Chaudhuri et al., 2013).

Different from the above approaches focusing on the assessment of supply risks, the following supply risk assessment methods and models. Zsidisin et al. (2004) examined tools and techniques that purchasing organizations implement for assessing supply risk within an agency theory context. They indicated that flower firms can assess supply risk with techniques that focus on addressing supplier quality issues, improving supplier processes, and reducing the likelihood of supply disruptions. Ellegaard , (2008) applied a case based methodology to analyze the supply risk management practices of 11 small company owners (SCOs).

Demand risk assessment

The impact of demand volatility on inventory management (Ballou & Burnetas, 2003; Cachon, 2004; Talluri et al., 2004; Betts & Johnston, 2005; Sodhi, 2005; Xiao & Yang, 2008; Radke & Tseng, 2012). Some of them provide useful insights on safety stock reduction. Ballou & Burnetas ,(2003) compared a traditional inventory planning approach with one that is based on

filling customer demand from any one of several stocking locations, referred to as cross filling, while considering the dispersion of demand among stocking locations. It was revealed that cross filling can help reducing safety stocks. Talluri et al. (2004) developed a safety stock model and benchmarked it with existing models for managing make-to-stock inventories under demand and supply variations. Based on a case study at an over-the-counter flower firms, the proposed safety stock model performed well in terms of cost savings. Betts & Johnston (2005) presented the multi-item constrained inventory model to compare just-in-time (JIT) replenishment with component substitution under stochastic demand. The analysis showed that JIT replenishment is more effective than component substitution because of less investment in safety stock.

Some scholars analyze the impact of demand visibility and bullwhip effect on supply chain performance. Smaros et al. (2003) they used a discrete-event simulation model to show that a partial improvement of demand visibility can improve production and inventory control efficiency. Reiner & Fichtinger (2009) developed a dynamic model to evaluate supply chain process improvements under consideration of different forecast methods. They pointed out that dampening of the order variability decreases the bullwhip effect and the average on-hand inventory but with the problem of a decreasing service level. Sucky, (2009) suggested that the variability of orders increases as they move up the supply chain from retailers to wholesalers to manufacturers to suppliers. He concluded that the bullwhip effect is overestimated if a simple supply chain is assumed and risk pooling effects are present.

A common limitation of the above, is the proposed methods were not implemented in real industrial cases (Ballou & Burnetas, 2003; Smaros et al., 2003; Cachon, 2004, Betts & Johnston, 2005; Sodhi, 2005; Xiao & Yang, 2008; Reiner & Fichtinger, 2009; Sucky, 2009; Radke & Tseng, 2012). Lack of actual implementation and verification would make the potential users doubtful about the effectiveness and efficiency of the proposed methods. Besides, several of the above articles simplified the studied problems with stylized supply chains (Ballou & Burnetas, 2003; Smaros et al., 2003; Cachon, 2004).

Production risk assessment

Different methods were applied to assess different risks in different supply chains. Cigolini & Rossi (2010) proposed the fault tree approach to analyze and assess the operational risk at the

seed planting and grafting process primary transport, and packaging stages of flower supply chain. They concluded that different stages are affected by various operational risks according to the differences in firms. Therefore, each flower firms should be provided with a specifically conceived risk management process. Dietrich & Cudney, (2011) applied a Pugh method adaption to assess risk coupled with production readiness level for emerging technologies in a global flower supply chain. They revealed that executive management can evaluate the entire emerging technology portfolio more effectively with the proposed methodology. Tse & Tan (2011) constructed a product quality risk and visibility assessment framework using the margin incremental analysis for a toy manufacturing company. They argued that better visibility of risk in supply tiers could minimize the quality risk of flowers.

Cigolini & Rossi (2010) only focused on three stages of flower supply chain, while ignoring operational risk assessment at some other crucial stages (e.g., planting, grafting, and packaging and transportation). The risk assessment matrix proposed by Dietrich & Cudney (2011) is fairly simplistic as it is based on only three levels (i.e., “green”, “yellow”, and “red”). Tse & Tan (2011) neither quantified risks and their factors, nor proposed any mitigating actions for the identified production risk.

Financial risk assessment

There are four research studies on financial risk assessment. Two of them focused on specific financial risks. Tsai, (2008) modelled the supply chain related cash flow risks by the standard deviations of cash inflows, outflows, and net flows of each period in a planning horizon. They recommended the best policy of using asset-backed securities to finance accounts receivable as a means to shorten the cash conversion cycle and lower the cash inflow risk. Liu & Nagurney, (2011) developed a variational inequality model to study the impact of foreign exchange risk and competition intensity on supply chain companies that are involved in offshore-outsourcing activities. Their simulation results indicated that in general the risk-averse firm has lower profitability and lower risk than the risk-neutral firm.

On the other hand, two of the studies focused on generic financial risk. Franca et al. (2010) formulated a multi-objective programming model with the Six Sigma concepts to evaluate financial risk. They showed that the financial risk decreases as the sigma level increases. Liu and

Cruz ,(2012) studied the impact of corporate financial risk and economic uncertainty on the values, profits, and decisions of supply chains. They found that suppliers are willing to sacrifice some profit margins to gain more businesses from manufacturers with lower financial risk and with lower sensitivity to economic uncertainty. A common drawback with these approaches is that they focused on simulated data instead of using real case data.

Information risk assessment

Durowoju et al. (2012) used discrete-event simulation to investigate the impact of disruption in the flow of critical information needed in manufacturing operations on collaborating members. They revealed that the retailer experiences the most uncertainty in the supply chain while the holding cost constitutes the most unpredictable cost measure when a system failure breach occurs. In their study, a generic information technology risk was studied, and no risk factors were identified nor quantified.

2.5 The relationship between Supply Risk Mitigations strategies and Financial Performance

According to Chopra & Sodhi, (2004) there are many means available to control risks within supply chains A fundamental strategy would be to try to do a great job in the fundamental supply chain performance measures of consistent fulfillment of orders, delivery dependability, and customer satisfaction. Of course, many effective organizations have failed when faced with changing markets or catastrophic risks outlined in the last section as external risks. Some strategies proposed for supply chains are reviewed.

Chopra et al, (2004) developed a matrix to compare relative advantages or disadvantages of each strategy with respect to types of supply risks. Adding capacity would be expected to reduce risk of needing more capacity of course, and also decrease risk of procurement and inventory problems, but increases the risk of delay. Adding inventory is very beneficial in reducing supply risk of delays, and reduces risk of disruption, procurement, and capacity, but incurs much greater risk of inventory-related risks such as out-dating, spoilage, carrying costs, etc. Having redundant suppliers is expected to be very effective at dealing with supply disruptions, and also can reduce procurement and inventory risk, but can increase the risk of excess capacity. Other strategies had

no negative expected risk impacts (increasing responsiveness, increasing flexibility, aggregating demand, increasing capability, or increasing customer accounts), but could have negative cost implications. From a single organization view, Miller, (1992) distinguishes five generic strategies companies undertake in order to mitigate risk, four of which can be adapted to supply chain contexts: (1) avoidance, (2) control, (3) cooperation and (4) flexibility

Avoidance

Avoidance occurs when risks associated with operating in a given product market or geographical area are considered to be unacceptable Miller, (1992) from a supply chain perspective, avoidance can be related to products/geographical markets and/or supplier and customer organizations. A company could drop specific products, suppliers or geographical markets if supply is seen to be unreliable. To avoid risk, remove requirements that represent uncertainty and high risk. Avoidance includes trading off risk for performance or other capability, and it is a key activity during requirements analysis. Avoidance requires understanding of priorities in requirements and constraints. Flower firms trade off the distribution process and transportation to other firms and concentrate on the majors of the firms

Control

Companies may seek to control contingencies from the various risk sources, rather than passively treat uncertainties as constraints within which they must operate Miller, (1992). Control is the deliberate use of the design process to lower the risk to acceptable levels. Requires the disciplined application of the systems engineering process and detailed knowledge of the technical area associated with the design. Control techniques are plentiful and include: Multiple concurrent designs to provide more than one design path to a solution, Alternative low-risk design to minimize the risk of a design solution by using the lowest-risk design option. Through use of insurance firms are able to transfer risk hence controlling it.

Cooperation

Compared with control initiatives, cooperative responses involve joint agreements, rather than unilateral control, as a means of achieving uncertainty reduction Miller, (1992). From a supply chain perspective, the focus is on joint agreements among organizations in the supply chain to

improve supply chain visibility and understanding, to share information on exposures to specific risk sources and finally, to prepare joint business continuity plans.

Cooperation is the deliberate acceptance of the risk because it is low enough in probability and/or consequence to be reasonably assumed without impacting the development effort. Key techniques for handling accepted risk are budget and schedule reserves for unplanned activities and continuous assessment

Flexibility

Unlike the strategic moves of control, which attempt to increase the predictability of contingencies from the various risk sources, flexibility increases responsiveness while leaving the predictability of factors unchanged Miller, (1992). One supply chain example is postponement, where companies delay the decision to make, configure, label or ship a product to a particular destination. Postponement reduces their dependence on forecasts and increases the ability to respond to variability or even disruptions in demand. A second supply chain example is multiple sourcing, which one manager classified as the traditional form of managing risk through spreading Supply organizational issues, through providing clarity of supplier management structures and Obtaining knowledge of suppliers at both corporate and plant levels. One general rule that probably is applicable to most procurement projects is that potential risks in any phases of the procurement life cycle should be identified early or ahead of the actual execution of a procurement project (Zsidisin & Smith, 2005 & Osipova, 2008). The various kinds of process risks potentially arising during the life of the project need to be borne in mind when planning the procurement, developing the contract and managing the project.

Demand risk mitigation

Significant numbers of researches focus on demand risk mitigation and supply chain decision making under stochastic demand. The first group of researchers determined the optimal order placement and replenishment plan in order to minimize the impact of demand uncertainty. Various methodologies have been developed and applied, including automatic pipeline inventory and order based production control system algorithm (Towill, 2005), two-period financial model (Aggarwal & Ganeshan, 2007), buyer's risk adjustment model (Shin & Benton, 2007), multiple regression model (Hung & Ryu, 2008), simulation model (Schmitt & Singh, 2012), newsvendor model (Arcelus et al., 2012; Tang et al., 2012), and mathematical programming, such as

stochastic integer linear programming model (Snyder et al., 2007), mixed-integer stochastic programming model (Lejeune, 2008), stochastic linear programming model (Sodhi & Tang, 2009), and mixed integer nonlinear programming model (Kang & Kim, 2012).

The second group of researchers analyzed the forecasting techniques to minimize demand risk. Guo et al. (2006) constructed a macro prediction market model, which can aggregate information about demand risk to achieve accurate demand forecast sharing in the supply chain. Datta et al. (2007) modified the forecasting technique called Generalized Autoregressive Conditional Heteroskedasticity (GARCH) to model demand volatility and better manage risk. Crnkovic et al. (2008) presented a simulation-based decision-support framework to evaluate and select alternative forecasting methods in uncertain demand environments. Sayed et al. (2009) presented an improved genetic algorithm to choose the best weights among the statistical methods and to optimize the forecasted activities combinations that maximize profit, which in turn, balance risk of over-stocking and stock outs.

The third group of researchers proposed the risk sharing contracts to minimize the loss due to uncertain demand. Chen et al. (2006), Xiao and Yang (2009), and Chen & Yano (2010) focused on two-tier supply chains, and proposed risk sharing contracts to minimize the loss of manufacturer (e.g., overproduction) and the loss of retailers (e.g., overstocking) under demand uncertainty (Chen et al., 2006; Xiao & Yang, 2009) or weather sensitive demand (Chen & Yano, 2010). Different from the above, Kim, (2013) studied a four-tier supply chain under dynamic market demands, and proposed the bilateral contracts with order quantity flexibility. It was revealed that demand fluctuation can be effectively absorbed by the contract scheme, which enables better inventory management and customer service.

Rao et al. (2005) showed that a firm can optimize expected profits by quoting a uniform guaranteed maximum lead time to all customers under demand uncertainty. Huang et al. (2009) presented a dynamic system model of manufacturing supply chains, which can proactively manage disruptive events and absorb the demand shock. Ben-Tal et al. (2011) applied a multi-period deterministic linear programming to generate a robust logistics plan that can mitigate demand uncertainty in humanitarian relief supply chains.

There are limitations associated with Rao et al. (2005) assumes that the lead time to all customers for all products are the same. Chen et al. (2006) & Guo et al. (2006) assumed that retail prices are exogenously set and are the same for all retailers. Snyder et al. (2007) assumed demand parameters are known with certainty. Shin & Benton (2007) did not consider all inventory variables, such as safety stock, service level, and reorder point. Hung & Ryu, (2008) used students as surrogates for the actual purchasing and supply chain managers in a supply chain experiment. Lei et al. (2012) assumed the relationship between demand and price is linear.

Production risk mitigation

Mitigation of various manufacturing risk factors, including quality risk (Kaya & Özer, 2009; Hung, 2011; Sun et al., 2012), lead time uncertainty (Li, 2007), random yield risk (He & Zhang, 2008), nonconforming product design (Khan et al., 2008), capacity inflexibility (Hung, 2011), and machine failures (Kenné et al., 2012). The methods used are longitudinal case study (Khan et al., 2008), newsvendor model (Li, 2007), linear programming model (Kaya & Özer, 2009), stochastic dynamic model (Kenné et al., 2012), P-chart solution model (Sun et al., 2012), unconstrained and constrained mathematical programming models (He & Zhang, 2008), and integrated methodology, combining analytic network process (ANP), fuzzy GP, five forces analysis, and VaR (Hung, 2011). There are limitations associated with some of the above articles. Li (2007) and Kenné et al. (2012) considered only one type of products in their models. He and Zhang (2008) and Sun et al. (2012) considered one supplier and one retailer in their analyses. Kaya and Özer (2009) assumed the demand function to be linear.

Transportation risk mitigation

There is only one study that we identified that relates to transportation risk mitigation. Hishamuddin et al. (2013) formulated an integer nonlinear programming model to determine the optimal production and ordering quantities for the supplier and retailer, as well as the duration for recovery subject to transportation disruption, which yields the minimum relevant costs of the system. Their results showed that the optimal recovery schedule is highly dependent on the relationship between the backorder cost and the lost sales cost parameters. They studied a simple two-tier supply chain with one supplier and one retailer, and assumed the demand to be deterministic.

Financial risk mitigation

Hofmann, (2011) discussed the concept of natural hedging in supply chains. They found that natural hedging of currency and commodity price fluctuations can reduce supply chain vulnerability. Raghavan & Mishra (2011) constructed a nonlinear programming model to show that if one of the firms in the supply chain has sufficiently low cash, a joint decision on the loan amount is beneficial for the lender and the borrowing firms than an independent decision. Lundin (2012) applied the network flow modelling to mitigate the financial risks in the cash supply chains. Their results showed that centralization from two to one central Flower export firms storage facilities led to unintended increases in transportation costs and financial risk. There are limitations associated with the above articles. Hofmann, (2011) used a brief literature review and a conceptual research design in their study. Raghavan & Mishra (2011) considered a simple two-tier supply chain with one manufacturer and one retailer. Lundin, (2012) only considered transportation and cash opportunity costs, while neglecting production and warehousing costs.

Information risk mitigation

Du et al. (2003) suggested companies to construct attribute correspondence matrices for databases so that they can share data with both upstream and downstream supply chain partners without leaking information to competitors. They only considered the vertical relationships of companies, while neglecting the horizontal relationships of new partners. Le et al. (2013) examined how data sharing has the potential to create risk for enterprises in retail supply chain collaboration, and proposed an association rule hiding algorithm to remove sensitive knowledge from the released database, and minimize the data distortion.

2.5 Literature Review Summary

In conclusion the risk that horticultural farmers and exporters face can be generalized into five categories that are production risk, price or market risk, financial risk, institutional risk and human or personal risk.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter covers the research design, study population, sampling design, sample size, sample area, data collection instruments, reliability and validity of data, sources of data, study variables, data collection procedures, data processing and analysis and limitations to the study.

3.2 Study design

A case study research design was used to get an in depth understanding of the relationship between supply risk management on financial performance of the export firms in Uganda. The type of research is quantitative. Quantitative research methods were used because they enable a structured statistical measurement of variables (Trochim, 2006). Data was collected using a questionnaire. Quantitative data was analyzed Using statistical methods. A case study method was employed because of its strength in allowing the researcher to concentrate on a specific situation and to identify, the various interactive issues affecting the research problem (Bell, 2004). State whether it was cross sectional or not.

3.3 Study population

The study population included all proprietors and managers of export firms under the oversight of Uganda flowers exporter association (UFEA) Therefore, the target population included 70 respondents who either serve as proprietors or managers of the firms. This was obtained from 15 flower exporting firms each providing 5 respondents.

3.4 Sample size and sample size determination

The Krejcie and Morgan (1970) guide was used to determine sample size. For a population of 14 flower exporting firms, Krejcie and Morgan (1970) suggested sample of 15 firms. In each firm a total of 05 respondents were selected. Therefore, the sample of 70 respondents comprising of Executives (proprietors), Senior Managers and Finance was selected to participate in the study.

The researcher purposively selected executives from the firms. This is because the study requires the knowledge of supply risk management meaning that only those employees have knowledge of managing supply risk were selected and allowed to participate in the study. Production manager was selected using simple random sampling. Simple random sampling provided equal chances of participation for all the respondents.

Categories	Population	Sample	Sampling technique
Executives	15	15	Simple Random
Senior managers	32	29	Purposive
Finance	19	13	Purposive
Production	19	13	Simple Random
Total	85	70	

3.5 Sources of data

Sources of data were classified into primary sources and secondary sources.

3.5.1 Primary data

This involves firsthand information that was got from the respondents by use of structured questionnaires and interviews that were self-administered to the members of UFEA.

3.5.2 Secondary data

This comprised of second hand information that involve reviewing of related literature from text books, journals, newspapers, web articles and other related literature like the UFEA records on supply risk.

3.6 Data Collection Instruments

3.6.1 Structured Questionnaire

One instrument, a structured questionnaire were used to collect data. According to Mellenbergh, G.J. (2008), a questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. The researcher designed structured questionnaires to successfully extract information from the targeted population. The questionnaires will be professionally drafted in a way that they included both the open and closed ended questions. The researcher used these questionnaires because they are easy to be administered and they take limited time.

3.7 Reliability and validity of the Instrument

3.7.1 Validity of the Instrument

In order to collect reliable and valid data, the researcher ensured that valid instruments are used. Instruments were made easy to complete so that respondents are motivated to provide honest responses. Arya et al. (2002a), say that a data collection instrument is valid when it actually measures what it claims to measure. In this research, content validity of the instruments will be measured. Bell (2004), affirms that respondents are more likely to honestly complete and return questionnaires they perceive as having relevant content. Therefore, the researcher ensured that all items in the questionnaire have face validity. The words that shall be used in both instruments will be simple clear and related to the research problem. Besides, the instruments will be made easy to complete and the total time needed to complete both instruments will be

limited to about 10 minutes. Furthermore, the questionnaire used simple to understand questions in order to avoid ambiguity and misinterpretation of items by respondents. Additionally, the statements were kept simple in order to avoid any response biases by leading the respondents to agree or disagree with the statement.

Finally, the layout of the questionnaire was condensed in two pages so that multiple pages will not act as a de-motivator for the respondents to comply with the surveys' most important requirement; the willingness of the respondents to respond in a motivated and genuine manner.

With regard to content validity the supervisor, evaluated the questionnaire for its content validity. As recommended by Amin (2005), items that were found ambiguous and those judged inappropriate were either eliminated or adjusted. In the content validity test, the validity of each item were evaluated on a scale for which 1 = relevant, 2 = quite relevant 3 = somehow relevant and 4 = not relevant.

The validity of the instrument was tested using the Content Validity Index (CVI). The CVI was measured using the formula:

$$\text{Content Validity Index (CVI)} = \frac{\text{Number of items declared valid}}{\text{Total number of items state the}}$$

$$\text{CVI} = \frac{\quad}{\quad} = 0.762$$

3.7.2 Reliability of Instruments

When an instrument is reliable, it yields consistent responses because it is interpreted well. If the desired variable is not measured reliably, the information obtained will not be correct and therefore not reliable (Joppe, 2000). Pilot data was conducted and used to measure and enhance the reliability of the questionnaire. Data from five business administrators was collected and entered in the Statistical Package for Social Sciences (SPSS) version 17. A Cronbach alpha coefficient test of reliability was calculated.

Table 1: Cronbach's Alpha coefficients for the pretested questionnaire

Variable	Anchor	Cronbach Alpha Coefficient
Risk identification Strategies	5 Point	.816
Risk measurement Techniques	5 Point	.775
Mitigation Strategies	5 Point	.724
Financial Performance	5 Point	.713

From the above table, Cronbach Alpha coefficients were above 0.7 meaning that the research instrument was both reliable. As such it was fit to use the data collected on the variables of the study to address the research questions.

3.9 Data collection procedure

Primary data was collected using a questionnaire as the major instrument of data collection. These instruments were administered to the study population which includes the export firms under UFEA. They were both closed and open ended questionnaires. It is the best instrument for getting qualitative data since they reflect the general opinion on the issues at stake in this research. For the case of quantitative data collection tool, the researcher used self-administered questionnaires during data collection that constitute of both closed and open ended questions.

For the case of qualitative data collection tool, the researcher employed an interview whereby face to face questions were asked to the respondents and their responses noted down by the researcher and research assistants.

3.12 Data Analysis

Data was analyzed using computer software package known as SPSS and the outputs were exported to Microsoft word and excel for presentation. The researcher used frequency tables and graphs using percentages to present data about Supply risk. Descriptive statistics was used to

describe the population sample with results reflected in percentage and frequencies. The researcher finally used regression to show the influence between the dependent and independent variables. Qualitative data was analysed using Content analysis of the subthemes of the study.

3.13 Ethical considerations

The researcher ensured that informed consent is adhered to, whereby the respondents participated in the study voluntarily after achieving an understanding of the relevance of the study and the risks involved.

The researcher ensured that the information obtained from the respondents is kept highly confidential and protected throughout its lifetime; and is only accessible to those authorized to access it in order to build trust and security that their privacy is protected.

The researcher ensured that respondents' right to privacy is maintained through seclusion from other people and their information kept from unwarranted publicity.

The researcher through an inquiry centered approach observed, classify the information obtained in categories using standards of measurement in order to interpret data and ensure an unbiased inquiry. In order to ensure non-discrimination, the researcher treated individual participants equally with fairness irrespective of their race, sex, or any other form of discrimination.

3.15 Limitations of the study

The study was hampered by the following limitations:

Some respondents were not willing to give complete information as they look at research as a threat to the institutional status and wastage of their time. The researcher, endeavored to make the questions and interview guide as objective as possible and also to avoid misleading questions

The research was affected by limited time factor since the researcher carried out the study at the same time while conducting practicum and working. Balancing the three was multi-tasking yet a limited time frame was given for submission of reports.

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND ANALYSIS OF RESULTS

4.0 Introduction

This chapter explores data presentation, analysis and interpretation of results from primary and secondary data in bid to answer the research questions in chapter one. For each research question, data is descriptively, qualitatively and quantitatively presented: finally, interpretation of results followed.

4.1 Response Rate

The researcher distributed 70 questionnaire forms of which 66 were fully answered and returned. Unstructured interviews were also administered among 10 respondents. In relation to the sample size of 70 respondents, overall response rate was 94.3%. According to Mugenda and Mugenda (2003), a response rate above 70% is very good for the study findings to be valid.

4.2 Background Information of the Respondents

In order to find out about the demographic data of the respondents questions 1-5 were administered and the following was revealed.

4.2.1 Gender Distribution of the respondents

The study was gender sensitive as illustrated below;

Table 4.1: Gender Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	26	39.4	39.4	39.4
	Female	40	60.6	60.6	100.0
	Total	66	100.0	100.0	

Source: Primary data

From the above table, it is shown that 26 (39.4%) of the participants were males while 40(60.6%) were female respondents. The implication of table 4.1 results is that the study involved either sex which helped to obtain more objective data about supply risk management and financial performance.

Question 2 in the questionnaire was used to obtain data on this parameter; as presented in table below;

Table 4.2: Age distribution of the Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 20 -30	13	19.7	19.7	19.7
31-40	25	37.9	37.9	57.6
41-50	19	28.8	28.8	86.4
50 & above	9	13.6	13.6	100.0
Total	66	100.0	100.0	

Source: Primary data

Table 4.2 majority of the respondents 25 (37.9%) were aged between 31-40 years because Uganda Flowers Exporters Association had more of the middle age adults, experienced and knowledgeable to handle risk related issues to influence financial performance. 19 (28.8 percent) were aged between 41-50years, 13(19.5 percent) were of the age bracket between 20 to 30 while 9 (13.6 percent) of the respondents were aged 50years and above. On analysis of the above Finding, Uganda Flowers Exporters Association employed experienced staff mostly aged between 31 and 40 years, the most risk adverse age group to deliver desirable output.

4.2.3 Education Level

Question 3 in the questionnaire was used to elicit information on this variable; table 4.4 as demonstrates the finding below;

Table 4.3: showing the Education Level of the employees at Uganda Flowers Exporters Association

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Certificate	15	22.7	22.7	22.7
Diploma	19	28.8	28.8	51.5
Degree	29	43.9	43.9	95.5
Master Degree	2	3.0	3.0	98.5
PHD	1	1.5	1.5	100.0
Total	66	100.0	100.0	

Source: Primary Data

Table 4.3 above shows that the qualifications of Uganda Flowers Exporters Association employees as; 15(22.7%) had certificates, 19 (28.8%) were diploma holders, 29 (43.9%) had degrees, 2(3%) held Masters Qualifications, while 1(1.5%) held PHD qualification. This implies that most of the company's employees were informed and therefore clearly understood the

variables under investigation. This further meant that staff had technical expertise to perform their duties diligently.

4.2.4 Length of Service at Uganda Flowers Exporters Association

Data on this parameter was obtained through question 4 in the questionnaire; and below is their feedback.

Table 4.4: Length of Service at Uganda Flowers Exporters Association

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1-5 years	23	34.8	34.8	34.8
6 -10years	31	47.0	47.0	81.8
11-15 years	9	13.6	13.6	95.5
16+ above	3	4.5	4.5	100.0
Total	66	100.0	100.0	

Source: Primary data

Table 4.4 above illustrates that 34.8 percent of employees had served for the period between 1-5 years, 47 percent had worked for 6 to 10 years, 13.6 percent had worked for 11 to 15 years and 4.5 percent had served for a period of over 16 years. This indicates that most of the employees had served for between 6 to 10 years and were therefore deemed to have sufficient data about the Uganda Flowers Exporters Association financial policies, systems, processes and procedures.

4.2.4 Positions/Responsibility Held

Question 5 in the questionnaire was used to obtain data on this parameter; Table 4.5 below shows the results;

Table 4.5: Positions/Responsibility held

Title of the respondents		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Management Team	10	15.2	15.2	15.2
	Executive managers	22	33.3	33.3	48.5
	Senior managers	7	10.6	10.6	59.1
	Accountant	4	6.1	6.1	65.2
	Production	23	34.8	34.8	100.0
	Total	66	100.0	100.0	

Source: Primary Data

Results in Table 4.5 above indicates that 15.2% of the respondents held managerial/supervisory roles, 33.3% were executive managers in charge of enforcing supply products, 10.6% were

senior managers, 6.1% were accountants in charge of financial statements while 23% were production staff. The implication of table 4.5 findings is that this helped in obtaining more objective information.

4.3 Supply Risk Identification strategies and financial Performance of Uganda Flowers Exporters Association

The first objective of the study was to examine the relationship between Supply Risk Identification strategies and financial Performance of Uganda Flowers Exporters Association. To elicit data about the objective, the researcher administered research tools whose findings were presented under section 4.3 as follows;

Table 4. 6: Supply Risk Identification strategies and financial Performance of Uganda Flowers Exporters Association

The Influence of Risk Identification(RI)	N	Minimum	Maximum	Mean	Standard Deviation
Uganda Flowers Exporters Association has Risk registers.	66	1	5	1.88	.814
Brain storming help Uganda Flowers Exporters Association forecast its demand	66	1	5	2.62	1.465
Uganda Flowers Exporters Association previous assessments of Internal and external kinds of supply risks	66	1	5	2.79	1.431
Staff at Uganda Flowers Exporters Association vests in risk planning and management activities.	66	1	5	3.11	1.550
Uganda Flowers Exporters Association scans the environment to identify new and emerging risks.	66	1	5	2.33	1.328
Surveys/Questionnaires help Uganda Flowers Exporters Association to prevent delays in identifying risk.	66	1	5	1.92	1.219
Business Impact Analysis (BIA) reveals the Flower export firms' risk resources.	66	1	5	3.62	1.401
RI exposes increasing chance of losses and their severity.	66	1	5	2.08	1.305
SWOT analysis ensures effective risk management.	66	1	5	3.52	1.339
With RI, Uganda Flowers Exporters Association easily meets unexpected demands.	66	1	5	2.56	1.488
RI at Uganda Flowers Exporters Association has helped to tighten supplying and increased profit recovery	66	1	5	3.08	1.481

Source: Primary data

Table 4.6 above illustrates that, Uganda Flowers Exporters Association has Risk registers and risk reports, (with mean=1.88,). This implies that, Uganda Flowers Exporters

Association has Risk registers and risk reports to assist it identify risks, source, cause, occurrence, when, where and likely consequences to boost Financial performance.

Respondents supported the view that, brain storming helps Uganda Flowers Exporters Association to forecast its demand (with mean=2.62,). Brainstorming helps Uganda Flowers Exporters Association to forecast its demand risks in order to maintain adequate stock flows for better financial performance.

The respondents supported the view that, Uganda Flowers Exporters Association previous assessments of Internal and external kinds of supply risks (with mean=2.79,). On analysis of the findings, Internal and external reviews aid identify the kinds of supply risks most likely to distress financial performance.

Respondents supported the view that, (with mean=3.11, 55) staff at Uganda Flowers Exporters Association vest in risk planning and management activities. On analysis of table 4.6 findings, Stake holder analysis allows staff to vest in risk planning and management activities for effective financial performance.

The study result in Table 4.6 above shows that Uganda Flowers Exporters Association scans the environment to identify new and emerging risks, (with mean=2.33.,). This means that, working groups scan the environment from time to time to identify new and emerging risks hence visibility in the supply chain which leads to financial performance.

The respondents supported the view that, Surveys/Questionnaires help Uganda Flowers Exporters Association to prevent delay in identifying risk (with mean=1.92,).

The respondents supported the view that, (with mean=3.62,) Business Impact Analysis (BIA) reveals the Flower export firm's risk resources. On analysis of table 4.6 findings, Business Impact Analysis (BIA) determines the possible risks facing the resources for improved financial decision making.

Table 4.6 above illustrates that RI exposes increasing chance of losses and their severity to firms due to risks (with mean=2.08,). On analysis of table 4.6 findings, Uganda Flowers Exporters Association RI exposes circumstances that increase chance of losses and their severity to allow financial stability which enhances financial performance.

Respondents sustained the view that, SWOT analysis ensures effective supply risk management (with mean=3.52,). This means that SWOT Scenario analysis depicts risk exposures like physical resources, human resources and financial resources.

Table 4.6 indicate that, the respondents concurred that With SRI; Uganda Flowers Exporters Association easily meets unexpected demands (with mean=2.59,). This means that RI at Uganda Flowers Exporters Association easily forecast demand to meet unexpected demands which yields to sale volumes.

The study revealed that SRI at Uganda Flowers Exporters Association has helped to tighten loses and increased profitability. The implication of the above finding is that, (with mean=3.08,) SRI at Uganda Flowers Exporters Association has helped to streamline the risk hence reducing on losses associated with risks hence increasing profitability levels. SRI at Uganda Flowers Exporters Association has improved quality and the decline of non-performing supply for higher financial performance.

Table 4. 7: Relationship between Supply Risk Identification strategies and financial performance

Correlations

		Supply Risk Identification strategies	Financial performance
Supply Risk identification strategies	Pearson Correlation	1	.846(**)
	Sig. (2-tailed)		.000
	N	66	66
Financial performance	Pearson Correlation	.846(**)	1
	Sig. (2-tailed)	.000	
	N	66	66

** Correlation is significant at the 0.01 level (2-tailed).

Since the Pearson correlation coefficient 0.846 is significant at 0.000 being less than 0.01(alpha level), therefore, there is a strong positive relation between Supply Risk Identification strategies and financial performance at Uganda Flowers Exporters Association.

Interview results further revealed that Supply Risk Identification strategies was done by management which implemented policies approved by the board of directors. It was also revealed that, the Board provides written policies covering specific areas such as late delivery, uncertainty capacity due to supply disruptions and supply financial stress.

One of the interviewees; responded that, Uganda Flowers Exporters Association took on exposures to supply risk, which caused a financial loss to the Flower export firms by failing to meet demand in full when due. Supply risk such as uncertainty in demand in the different export countries are the most important supply risks for the Flower export firms' business: management therefore carefully managed the exposures to supply risk of a portfolio of assets that entailed further estimations as to the likelihood of export losses occurring.

4.4 Supply Risk measurement techniques and financial performance of Uganda Flowers Exporters Association

In bid to establish, the results to the second objective of the study which was to examine the relationship of supply Risk measurement techniques on financial performance of Uganda Flowers Exporters Association; respondents indicated the extent to which they strongly agree (5), agree (4), disagree (3), strongly disagree (2) and not sure (1) as presented in the table below;

Table 4. 8: Relationship between supply Risk measurement techniques and financial performance

The effect of supply Risk measurement techniques	N	Minimum	Maximum	Mean	Standard Deviation
Uganda Flowers Exporters Association assesses the impact of supply risk exposure to promote timely business development	66	1	5	3.70	1.509
Estimating supply risk significance improves financial management and promotes sale growth	66	1	5	2.65	1.612
Uganda Flowers Exporters Association assesses the frequency of occurrence manage supply risks, coordinate activities and improve financial growth	66	1	5	2.42	1.499
With risk analysis, the ratio of a firms equity to total equity always increase annually	66	1	5	4.26	1.256
Supply risk analysis at Uganda Flowers Exporters Association reduces costs and increases profitability to overcome poor financial performance	66	1	5	2.85	1.721
Assessing the significance of supply risk helps to control export loses for better financial performance	66	1	5	2.29	1.527
Analyzing market risks abet to maintain supply risk at reasonable assurance and cost-benefit to increase revenue	66	1	5	4.09	1.454
Risk analysis helps Uganda Flowers Exporters Association to increase the operating accounts balances	66	1	5	2.77	1.596
Risk analysis has helped Uganda Flowers Exporters Association adopt more aggressive strategies for realizing market share.	66	1	5	3.42	1.458
Responsible team continually monitors effectiveness of risk levels for better financial performance	66	1	5	3.55	1.459
Risk analysis has accelerated growth of Total profits	66	1	5	2.83	1.632
Risk analysis has attracted growth in the Flower export firms.	66	1	5	2.68	1.638
Risk analysis has helped Uganda Flowers Exporters Association to reduce uncertainty and supply risk associated with the supply's	66	1	5	2.45	1.279

Source: Primary data

From table 4.8 above, respondents supported the view that, Uganda Flowers Exporters Association assesses impact of exposure to promote timely business development (with mean=3.7,). This means that assessing the potential impact of exposure assists to promote timely business development and financial performance.

Findings show that estimating supply risk significance improves financial management and promotes business growth (with mean=2.65,); This means that estimating supply risk significantly improves financial management and promotes business growth.

Results in Table 4.8 above shows that Uganda Flowers Exporters Association assesses the frequency of occurrence manage supply risks, coordinate activities and improve financial growth (with mean=2.42,). This implies that Uganda Flowers Exporters Association assessed the frequency of occurrence which helped the Uganda Flowers Exporters Association to know how to manage risks, coordinate activities and improve financial growth.

The respondents accepted that with supply risk analysis the ratio of firms equity to total equity always declines annually (with mean = 4.26,). With supply risk analysis the ratio of firm's equity to total equity always declines annually. On analysis of table 4.8 findings, with supply risk analysis, the ratio of firm's equity to total equity always increases.

The findings above show that supply risk analysis at Uganda Flowers Exporters Association reduces costs and increase Capital Adequacy to overcome poor financial performance (with mean=2.85,). This meant that supply risk analysis at Uganda Flowers Exporters Association reduces costs and increases profitability to overcome poor financial performance.

Table 4.8 above shows stated that assessing the significance of supply risk helps to control loses for better financial performance (with mean=2.29, 1.527). This meant that supply risk with little significance and low probability of occurrence reduces costs and increase Capital Adequacy to overcome poor financial performance. On analysis of the findings, on average Assessing the

significance of supply risk helps to control losses for better financial performance in Uganda Flowers Exporters Association.

Table 4.8 above shows stated analyzing market risks abet to maintain supply risk at reasonable assurance and cost-benefit to increase revenue (with mean=4.09, 1.454). On analysis of findings, analyzing market risks abet to maintain supply risk at reasonable assurance and cost-benefit to increase revenue.

Table 4.8 above shows that supply risk analysis helps Uganda Flowers Exporters Association to increase the operating costs (with mean=2.77,).

Table 4.8 above shows stated that, supply risk analysis has helped Uganda Flowers Exporters Association adopt more aggressive strategies for realizing sale volumes and better market share (with mean=3.42, 1.458). On analysis of table 4.8 findings, supply risk analysis has helped Uganda Flowers Exporters Association adopt more aggressive strategies for realizing sale volumes and better market share.

From the above table it is illustrated that, that Responsible team continually monitors effectiveness of risk levels for better financial performance (with mean=3.42,). The implication of the above finding is that, Responsible team continually monitors effectiveness of risk levels for better financial performance.

Table 4.8 shows that, respondents accepted that supply risk analysis has accelerated growth of Total profits (with mean=3.55,). This means that, supply risk analysis has accelerated growth of Total profits.

Table 4.8 shows that, accepted with the view that supply risk analysis attracted growth in the Flower export firms (with mean=2.68, 1.638). The implication of the above finding is that, Uganda Flowers Exporters Association experience demand problems.

The study indicated in Table 4.8 that, respondents concurred that supply risk analysis has helped Uganda Flowers Exporters Association to reduce uncertainty demand and forecast risk

associated with the supply's enhance the review financial transaction (with mean=2.45,). This means that the institutions were able to supply risk analysis has facilitated lower loses and accelerated growth sale volumes.

Interview results revealed that, Uganda Flowers Exporters Association activities were exposed to a variety of supply risks; market risk, (stock flow and price risk), demand risk and supply risk. These activities involved analysis, evaluation, acceptance and management of some degree of risk or combination of risks. One of the interviewees lamented, *"Taking risk is core to the Flower export firms' business and Uganda Flowers Exporters Association's aim is therefore to achieve an appropriate balance between supply risk and return and minimize potential adverse effects on its financial performance"*.

Uganda Flowers Exporters Association analyzed risks by structuring the levels of supply risks. This was undertaken by placing limits on the amount of supply risk accepted in relation to supply groups. Such risks were monitored on a revolving basis and subject to annual or more frequent review.

The information obtained from Data viewed from Uganda Flowers Exporters Association supply risk management policy indicated that the Flower export firm incorporates various elements as part of a cohesive liquidity management process. These included; short-term and long term stock flow management, maintaining demand, contingency plan and Market Risk.

Table 4. 9: Relationship between supply Risk measurement techniques and Financial Performance

		Correlations	
		supply Risk measurement techniques	Financial Performance
supply Risk measurement techniques	Pearson Correlation	1	.303*
	Sig. (2-tailed)		.035
	N	66	66
Financial Performance	Pearson Correlation	.303*	1
	Sig. (2-tailed)	.035	
	N	66	66

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

From Table 4.9, there is Relationship between supply Risk measurement techniques and financial performance ($r=0.303$; $p>0.035$, <0.05). The study results therefore show that supply Risk measurement techniques have a low positive effect on Financial Performance. This is explained by the low positive correlation co-efficient between the two variables ($r = 0.303$). Low levels of supply Risk measurement techniques make Financial Performance difficult for the Uganda Flowers Exporters Association.

Interview with one supply risk controller revealed there is a need to streamline supplies Risk measurement techniques to improve Financial Performance at Uganda Flowers Exporters Association in respect to other commercial Flower export firms.

The results suggest that for any institution to improve her performance, it should make sure that it's supply risk analysis and mitigation should be understandable.

4.5 The Relationship between supply risk mitigation strategies and financial performance

In bid to elicit data about the relationship between supply risk mitigation strategies and financial performance of Uganda Flowers Exporters Association as the third objective of the study, the researcher administered research tools whose responses are as follows;

Table 4. 10: The relationship between supply risk mitigation strategies and financial performance of Uganda Flowers Exporters Association

supply risk mitigation strategies and financial performance	N	Minimum	maximum	Mean	Standard Deviation
Uganda Flowers Exporters Association monitors risks to ensure no alteration in financial priorities	66	1	5	2.79	1.431
Risk monitoring allows timely reports on the financial condition	66	1	5	3.11	1.550
Risk monitoring permits clear understanding of the financial position and risk exposures.	66	1	5	2.33	1.328
Risk monitoring practices and reports address all of its material risks	66	1	5	1.92	1.219
With Risk monitoring, procedures are tested for reliability on an on-going basis to improve investment potential	66	1	5	3.62	1.401
Risk monitoring ensures compliance with established limits, goals, or objectives.	66	1	5	2.08	1.305
Decision-makers are able to identify any adverse trends and to evaluate adequately the level of risk faced	66	1	5	2.85	1.721
Uganda Flowers Exporters Association monitors the supply contractual repayment schedules for an improvement in its financial position	66	1	5	2.29	1.527
Risk monitoring lowers supply risk of the Group's portfolio and risk versus financial return conditions	66	1	5	4.09	1.454
Monitoring applicant's financial position, uses of funds, resources allows repayment &boosts financial performance	66	1	5	2.77	1.596
Monitoring compliance with the established policies, lowers forecast risk and high financial performance	66	1	5	3.42	1.458
Monitoring of actual losses incurred boosts FP	66	1	5	3.55	1.459
Risk monitoring reduces risks for effective financial performance	66	1	5	2.79	1.431
Risk monitoring can assist in lowering the risk burden	66	1	5	3.11	1.550

Source: Primary data

Table above shows that Uganda Flowers Exporters Association monitors supply risks to ensure no alteration in financial priorities (with mean=2.79, . On analysis of table 4.5

findings, Uganda Flowers Exporters Association monitors supply risks to ensure no alteration in financial priorities.

Table 4.10 above shows that supply risk monitoring allows timely reports on the financial condition (with mean=3.11, . . .). This means that supply risk monitoring allows timely reports on the financial condition.

Table 4.10 above shows that Risk monitoring permits clear understanding of the financial position and supply risk exposures (with mean=2.33, . . .). This means that lack of infrastructure, skills, resources, research, and technology as well as language and cultural barriers limits the Flower export firms from fully undertaking the necessary supply risk management controls.

Table 4.10 above that Risk monitoring practices and reports address all of its material risks (with mean=1.92, . . .). This meant that Risk monitoring practices and reports address all of its material risks

From Table 4.10 above shows that with supply risk monitoring, procedures are tested for reliability on an on-going basis to improve investment potential (with mean=3.62, . . .). On analysis of this finding, with supply risk monitoring, procedures are tested for reliability on an on-going basis to improve investment potential.

Table 4.10 above shows stated supply risk monitoring ensures compliance with established limits, goals, or objectives (with mean=2.08, . . .). This means that Risk monitoring ensures compliance with established limits, goals, or objectives and, as appropriate, compare actual versus expected financial performance is expected.

Table 4.10 reveals that the respondents stated decision-makers are able to identify any adverse trends and to evaluate adequately the level of supply risk faced (with mean=, 2.29 . . .). The implication of the above finding is that Decision-makers are able to identify any adverse trends and to evaluate adequately the level of supply risk faced.

Findings in Table 4.10 illustrate that, Uganda Flowers Exporters Association monitors the supply contractual repayment schedules for improved financial position (with mean=4.09, . The implication of the finding is that; Uganda Flowers Exporters Association monitors the supply contractual repayment schedules for improved financial position.

Table 4.10 findings indicated that, Risk monitoring lowers supply risk of the Group's portfolio and risk versus financial return condition (mean=2.115, . On analysis of the findings, supply risk monitoring lowers supply risk of the Group's portfolio.

Table 4.10 shows that, Monitoring applicant's financial position, uses of funds, resources allows repayment & boosts financial performance (with mean=2.77, . This means that monitoring applicant's financial position, uses of funds, resources for the repayment of obligations boosts financial performance.

Table 4.10 shows that, monitoring compliance with the established policies lowers supply risk and high financial performance (with mean=3.42, . The implication of the above finding is that, Monitoring compliance with the established policies, procedures and limits aid day-to-day low supply risk and high financial performance.

The study indicated in Table 4.10 that, Monitoring of actual losses incurred boosts financial performance enhance the review financial transaction. This means that monitoring of actual losses incurred, inadequate or failed internal processes, people and systems, or from external events (including legal risk); differ from the expected boosts financial performance.

From Table 4.10 results, that Risk monitoring reduces risks for effective financial performance (with mean=2.79, . The implication of the above finding is that, Risk monitoring reduces risks for effective financial performance. This implies that, Risk monitoring reduces supply risks for effective financial performance

The results as reflected from Table 4.10 confirms that, Risk monitoring can assist in lowering the supply risk burden (with mean=,3.11

Table 4. 11: Relationship between supply risk mitigation strategies and Financial Performance of Uganda Flowers Exporters Association

		Correlations	
		supply risk mitigation strategies	Financial Performance
supply risk mitigation strategies	Pearson Correlation	1	.052
	Sig. (2-tailed)		.730
	N	66	66
Financial Performance	Pearson Correlation	.052	1
	Sig. (2-tailed)	.730	
	N	66	66

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

From Table 4.11, there is a relationship between supply risk mitigation strategies and Financial Performance of Uganda Flowers Exporters Association ($r=.052$; $p>0.73$, <0.05). The study results therefore show that the supply risk mitigation strategies have a low positive effect on Financial Performance though the effect is not significant. Since the Pearson correlation coefficient 0.52 is significant at 0.000 being less than 0.05(alpha level), there is a moderate positive relation between supply risk mitigation strategies and financial performance at Uganda Flowers Exporters Association.

This explains that there is a moderate positive correlation co-efficient between the two variables which is 0.052 which is explained by the supply risk mitigation strategies which make Financial Performance difficult for the flower exporting firms. That said there is a need to streamline the supply risk mitigation strategies to improve Financial Performance at Uganda Flowers Exporters Association.

The study noted that Uganda Flowers Exporters Association: In fact, in an interview with one of the risk managers, he mentioned that.

“Our supply risk mitigation strategies depends on the preferences and calculations made to suit the request of operating and market conditions”

The results suggest that for any floricultural firms to improve her performance, it should make sure that its supply risk mitigation strategies are frequently reviewed by experienced supply risk managers and controllers of the Flower exporting firms.

Interview results with management indicated that, Uganda Flowers Exporters Association supply Risk management was adopted to reduce the potential of lowering the value of shareholders’

wealth. Being risk averse enhances the stability of the Flower export firms' earnings to ensure the reduced volatility of profits through supply risk mitigation strategies. More than 70 percent of a Flower export firms' balance sheet generally relates to high supply risk and hence considered as the principal cause of potential losses and Flower export firms failures. Time and again, lack of diversification of supply risk has been the primary culprit for Flower export firms' failures.

Data obtained about the role of the supply risk management department encompassed responsibilities of monitoring the market risk situation on a regular basis, monitoring supply rates through daily, weekly and monthly reviews of the structure and pricing of flowers, checking the open market positions to ensure that they are kept within approved overnight and intraday price limits. Supply risk was monitored through the gap analysis and ensured that the export earnings base was well diversified in line with the Supply Policy. The Market supply Risk Manager also constantly reviewed the market risk exposures with the view of ensuring they are within prudential limits at all times.

Table 4. 12: The Financial Performance of Uganda Flowers Exporters Association

Financial Performance of Uganda Flowers Exporters Association	N	Minimum	Maximum	Mean	Standard deviation
Uganda Flowers Exporters Association has a solid financial base to sustain its operations	66	1	5	2.83	1.632
Uganda Flowers Exporters Association incurs costs of maintaining the value of equity relative to inflation	66	1	5	3.14	1.369
We always strive to increase our income by increasing our sale volumes.	66	1	5	3.79	1.723
Uganda Flowers Exporters Association reduces operational and financial costs through efficiency and productivity levels.	66	1	5	3.08	1.611
Uganda Flowers Exporters Association strives to reduce loss write offs by managing quality	66	1	5	3.42	1.458
The supply disruptions has been reducing annually	66	1	5	3.55	1.459
Uganda Flowers Exporters Association 's level of financial self-sufficiency has been increasing annually	66	1	5	4.00	1.457

Source: primary data

The results as reflected from Table 4.13 confirm that, Uganda Flowers Exporters Association has a solid financial base to sustain its operations (with mean=2.83, . This implies that Uganda Flowers Exporters Association does not have solid financial base to sustain its operations.

The results as reflected from Table 4.13 confirm that, Uganda Flowers Exporters Association incurred costs of maintaining the value of sale volumes relative to market share (with mean=3.14, . This implies that stock reserves were so insignificant for the Flower export firms' survival.

The results as reflected from Table 4.13 confirm that the Flower export firms always strive to increase its income by increasing sale volumes. Uganda Flowers Exporters Association made losses in the previous financial years which affected its performance (with mean=3.79,

Interview with management provided that, even the other leading Flower export firms have suffered significant losses or a drop in profits, as the ripple effects of the economic slow-down continue to be felt. Financial reports released in the past few years show that three of the six largest Flower export firms, each with assets worth at least Shs 1 trillion, saw their profits drop

by 20 per cent or more. Uganda Flowers Exporters Association attributed the decline to a reduction in loans and advances, increase in expenses, and a rise in competitor in flower business. Uganda Flowers Exporters Association Managing Director, said while releasing the company's results in May 2015/16, the financial year 2015/16, that the effects of the 2012 economic slump because of competitors and supply disruptions were haunting the Flower exporting sector.

The results as reflected from Table 4.13 confirms that, Uganda Flowers Exporters Association reduces operational and financial costs through efficiency and productivity of flowers (with mean=3.08, . The implication of the above finding is that, Uganda Flowers Exporters Association experienced difficulties in managing operational costs.

Interview results indicated that losses are an almost permanent fixture on Uganda Flowers Exporters Association's balance sheets. The difference this time is that the losses written off by the Flower export firms have massively increased, indicating poor economic recovery. The executive director said that slow economic activity had contributed to more bad sales "The level of non-performing flowers has increased from 4.9 per cent in September last year to 6.9 per cent in December 2015. Therefore, to the commercial Flower export firms, quality-wise there is a problem," he said.

The results as reflected from Table 4.13 confirms that, Uganda Flowers Exporters Association strives to reduce supply risk losses by managing flowers portfolio quality (with mean=3.42,

The results as reflected from Table 4.13 confirms that the demand rate has been reducing annually, concurred that the demand rate has been reducing annually (with mean=3.55, . The implication of the above finding is that, the demand rate declined but slowly with increase in the client base. This meant that Uganda Flowers Exporters Association customers reduce more often. This implies that, effective supply costs in such markets as well as export rates charged are rather high, e.g. payday supply often exceeds 200 percent on an annualized basis to raise the demand rate.

Results in Table 4.13 above confirm that Uganda Flowers Exporters Association 's level of financial self-sufficiency has been decreasing annually; that (with mean= 2.176, . low financial self-sufficiency reduced the level at which firms create assets and even savings which reduce bankruptcy by increasing income levels.

However, secondary data observations (The CEO magazine June 2014) results with management indicated poor financial performance. They revealed that Uganda Flowers Exporters Association experienced a loss of 7billion and this compelled management of UFEA to contribute to 11,256millions to the flower firms to cater for accumulated losses for the period from the directors' dividend for the year 2013.

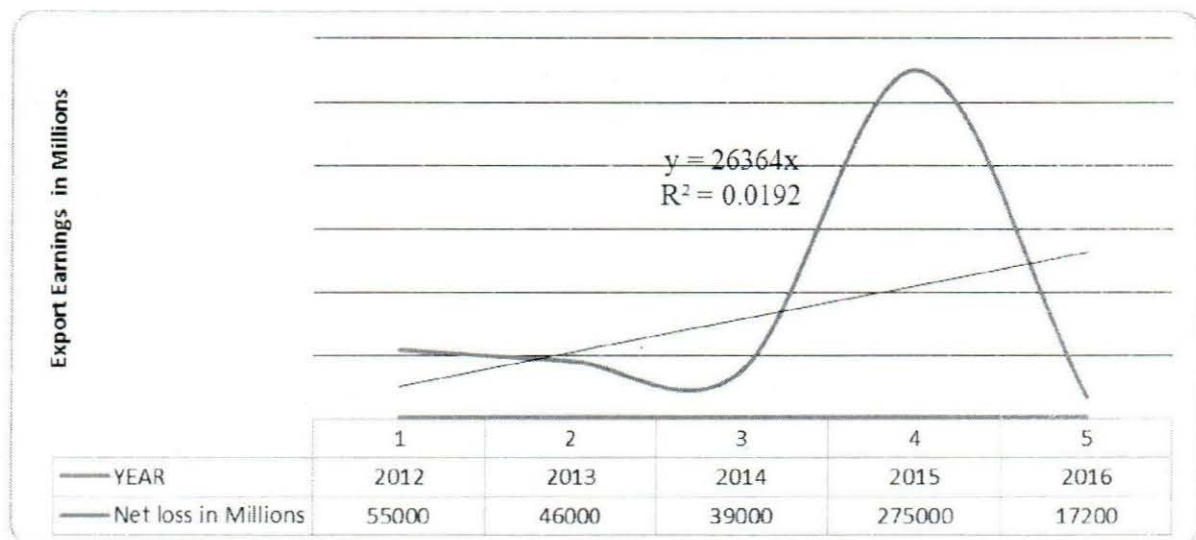


Figure 4. 1: Summary of the Financial Performance for the Period 2012 to 2016

Figure 4.1 above illustrates that between 2013 and 2014 Uganda Flowers Exporters Association made losses at a declining rate whereas from 2014 to 2015 losses hiked severely till 2016 with the root mean square value of 0.0192. The performance graph also reveals the model relationship as $Y = 26364x$, this is the rate at which Uganda Flowers Exporters Association makes losses per annum.

Further still in regard to financial performance, Uganda Flowers Exporters Association's liquidity between 2012 and 2013 reduced from 55000 million to 46000 million indicating a reduction in financial performance of 9%.

CHAPTER FIVE

DISCUSSION, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter explores discussion of the major findings, a summary of the findings, conclusions, recommendation drawn there after based on previous chapter and answering the objectives of the study spelt out in chapter one.

5.1 Discussion of the Major findings

5.1.1 Supply Risk Identification strategies and Financial Performance of Uganda Flowers Exporters Association

Basing on chapter four results in table 4.6, Uganda Flowers Exporters Association believed in having effective systems in place to enable it acquire adequate information on buyers. This enables the Flower export firms to properly identify supply risks associated with individual firms and supply portfolio. This helped Uganda Flowers Exporters Association to identify supply risks associated with the individual transactions from the onset. After an in-depth review of the firms and the actual transactions being proposed to identify the inherent risks, risk ratings developed internally by Uganda Flowers Exporters Association are assigned to both the obligor and the facility being sought for. The key risks identified were; Political instability, Trade restrictions, Theft and illicit trade, Demand shocks, Competition, Supply shocks, Currency fluctuations and Price volatility. This finding is in agreement with Miller, (2008); Keizer, Halman and Song (2002), who identified are five different sources of supply chain risks being technological risks, political risks, market risks, turbulence risks, financial risks and organizational and societal risks. These risks affect the performance of the supply to varied levels depending with the existing circumstances.

The study further revealed that Market risks were spotted by the Market Risk Manager and officers of the internal control department. The daily trading activities do not conform to approved strategies and resulting into risk exposures which exceed approved price limits and the overall risk tolerance level set by the board. The finding is in agreement with Basel Committee on Flower Exporting Supervision (2009), which stipulated that supply Risks that may arise from changes in market supply risk factors, may affect the value of trading and non-trading positions

as well as income streams on non-trading portfolios are also monitored and identified by the responsible staff on a daily basis. Additionally, The Basel II operational risk framework, Uganda Flowers Exporters Association categorizes its operational risk into seven loss event categories based on their primary cause: internal fraud, external fraud, employment practices and workplace safety, dispute with clients, damage to physical assets, business disruptions and systems failure, and execution, delivery and process.

Table 4.7 results revealed that there was a strong positive correlation between Supply Risk Identification strategies and financial performance ($r = 0.846$ being significant at 0.000 less than 0.01(alpha level). This helped Uganda Flowers Exporters Association to identify supply Risk of permanent default. The finding is in agreement with Annual Report of Uganda Flowers Exporters Association (2009) which indicated that a risk –based assessment eliminates the possible inherent risks. The Flower export firms had risk analysts in the business units to conduct Supply Risk Identification strategies to ensure that risk considerations are factored in the process right from the beginning. It also enabled the functions with diverse interests to work together at addressing any concerns surrounding the supply request so that a timely decision could be undertaken and a response given to customers without undue delays.

The use of the risk ratings system at Uganda Flowers Exporters Association also assisted in the proper classification of borrowers and facilities in the Flower export firms supply portfolio. The classification assists in measuring supply exposures across different supply groups, product types, geographies, industry segments and other relevant risk factors using the same standards. The risks in the Flower export firms' supply portfolio are therefore identified as unhealthy portfolio structures (over-concentrations), and highlights deteriorating supply quality in certain classified groups. In addition to the regular assessments of business activities to identify potential inherent supply risks, risk indicators such as thefts, failed trades, errors in funds transfer or loan disbursements Uganda Flowers Exporters Association immediately highlighted and brought to the attention of management in order to initiate steps to reduce the impact of potential losses. The above result is supported by Baxter (2008) who noted that, giving loans is a risky affair for Flower export firms sometimes and certain risks may also come when Flower export firms offer securities and other forms of investments. The risk of losses that results from insufficient receipts from expected debtors is a kind of risk that must be expected for a Flower

export firms to keep substantial amount of capital to protect its solvency and to maintain its economic stability.

5.1.2 Risk measurement, Mitigation and Financial Performance of Uganda Flowers Exporters Association

Table 4.8 results revealed that Uganda Flowers Exporters Association uses gap analysis to measure its exposure to supply rate risk where it compares the values of supply rate sensitive that mature at various time periods in the future. The study also revealed that, in cases where some stock did not have specific contractual maturity or re-pricing dates, Uganda Flowers Exporters Association makes judgmental assumptions about their behavior. This enabled Uganda Flowers Exporters Association to estimate the effect of supply rate changes (fluctuations) on its near-term reported earnings. This provided a straightforward approach for controlling hedging foreign exchange risks. The finding is in agreement with Owojori, and Adidu, (2011), who lamented that, definitive risk ratings usually inform who in the organization is responsible for dealing with the risk. However, this was a static nature of risk management in that it did not give Uganda Flowers Exporters Association a complete picture of demand risk. By focusing on reported earnings in estimating rate sensitivity, this approach to evaluating demand risk tends to ignore the effect of mismatches among medium-or long-term positions.

According to table 4.9 findings, there existed a positive significant relationship at 1% in which supply risk analysis and mitigation affected financial performance by 85.4% while other factors contribute 14.6% at Uganda Flowers Exporters Association. This further means that supply risk analysis and mitigation ultimately targeted the interest rate control and management in order to regulate the level of net supply margin normally determined by the relative yields and sale volumes of balance sheet items.

The finding is contrary to Acharya, et al (2011) who revealed that, the funding strategy on the net interest margins assumes that funding decisions in the future will be similar to the decisions that resulted in the Flower export firms' original re-pricing schedule. Further, gap analysis does not take into demand variations in the characteristics of different positions within a time band because all positions are assumed to mature or re-price simultaneously. Ideally, a Flower export firms' interest rate supply risk management system should take into account the specific

characteristics of each interest-sensitive position and capture in detail the range of potential movements.

The study also revealed that Uganda Flowers Exporters Association supply Risk Analysis and Mitigation of market supply risk was taken on whenever there were fluctuations in the prevailing price listings in the foreign markets, dumping among others, on its financial positions and cash flows. The actual impacts of such mismatches were measured through the income statement as foreign exchange gains or losses. Uganda Flowers Exporters Association's supply risk management was based on mismatch analysis which helped it to determine imbalances in sale volumes. These imbalances were then evaluated in the light of current and expected exchange rates, domestic and international market rates and acceptable supply risk return profiles. The result is synonymous to the World Economic Forum (2008), report which observed that Market Risk Management provides a comprehensive framework for measuring, monitoring and managing demand, foreign exchange and equity as well as commodity price risk of a Flower export firms that needs to be closely integrated with the Flower export firms' business strategy.

Supply Risk management mitigation strategies used in the organization include avoidance which is the main type of strategy used. The organization also uses supply risk control, cooperation and flexibility methods avoid supply risk, that is, do not undertake the activity, if the activity is essential the supply risk must be accepted and managed. The next strategy is to minimize supply risk through reducing either the impact or the probability (or both) for example, where appropriate requiring parent company guarantees and link financial distress provisions to the parent company's financial performance. Control means taking proactive steps to reduce the supply risk. Buffer inventories could be on such approach. Building penalty clauses into supplier contracts, linking pay to performance, and managing capacity can all help better control the situation. The extreme case is vertical integration, where the firm takes ownership of the supply source. Another way is to Spread the supply risk, that is, develop 'insurance', For example, source from more than one supplier, although lowest price point may not be achieved.

The last strategy is to Accept supply risks, this is the best overall strategy, particularly if low impact or probability supply risks and alternative strategies are not deemed effective or efficient. It is recommended that supply risk reduction or impact mitigation measures and monitoring be employed in these circumstances, as appropriate. Where the risk has to be accepted, minimize

the likelihood of the supply risk occurring. Reduce the likelihood of supply risk by: clarifying the requirements, specifications and outcomes, revising procedures and specifying quality assurance and product standards, conducting product testing and inspection, specifying professional accreditation. Reduce the consequences through, contingency planning, contract terms and conditions, and inspections and checks to detect compliance.

5.1.3 Supply risk measurement techniques and Financial Performance of Uganda Flowers Exporters Association

The results using Pearson's correlation coefficient revealed that the relationship is significant at 1%. Having effective Risk monitoring strategies improved financial performance by 87.4%. The study further provided that director of Uganda Flowers Exporters Association had the responsibility of monitoring the market risk situation on a regular basis. He monitored interest rates through daily, weekly and monthly reviews of the structure and pricing of assets and liabilities. The director also checked the open market positions to ensure that they are kept within approved overnight and intraday price limits. The result is complementary to Ramcharan (2009), who argued that Flower export firms monitor the supply risk standing of their customers by monitoring their fulfillment of contractual repayment schedules, their business performance, financial position, qualitative factors, and other indicators. Especially for customers to which they have major supply exposure and may have a major impact on management, monitoring is carried out more strictly and on a continuing basis improves access to capital and investment potential.

Uganda Flowers Exporters Association monitored supply risk through the gap analysis and ensured that the supply base is well diversified in line with the Supply Policy approved by management. The Market Risk Manager also constantly reviewed the market risk exposures with the view of ensuring they are within prudential limits at all times. At their monthly meetings, director also examined various reports, tracking major activities giving rise to supply market risk and also analyzed the impact of unlikely but not impossible events by means of scenario analysis to enable them gain a better understanding of the risks that Uganda Flowers Exporters Association faced under extreme conditions. The results correspond to Scott and Arias (2011), who noted that when screening applications for supply, Group Flower export firms examine and gain a firm grasp of the applicant's financial position, uses of funds, resources for the repayment

of obligations, and other related matters, and, then taking account of special supply risk characteristics or other issues, perform appropriate supply analyses.

On semi-annual and annual basis, Uganda Flowers Exporters Association's internal control department undertook thorough and objective assessment of the entire supply risk management framework to ascertain assurance regarding its continuing appropriateness and adequacy in the light of current macroeconomic developments and financial sector industry practices. Market risk being monitored and controlled from different angles and levels, where Uganda Flowers Exporters Association was assured of an effective system of ensuring that market risk is kept within acceptable limits. Similarly Torben (2009), argued that, to deal with concentrations of exposure to specific customers or groups of customers, in view of possible repercussions for the management, Group Flower export firms set supply limits, or supply ceilings, and adopt other measures to manage such circumstances.

The study also indicated that Risk Reporting facilitated by an elaborate information management system embedded in its IT platform, the management of Uganda Flowers Exporters Association was provided with timely information on market risk exposures. Scheduled reports on the Flower export firm's position were also provided by the finance department to assist in decision making. Independent reviews of the Flower export firm's positions and procedures by the Audit and Compliance Unit to the board gave the board an objective view of the market risk situation. The result is supported by Ahmed (2009), who advocated that to effectively manage and monitor its net funding requirements; a Flower export firms should have the ability to calculate liquidity positions on an intraday basis, on a day-to-day basis for the shorter time horizons, and over a series of more distant time periods thereafter.

Due to the complex and diverse nature of operational risk, Uganda Flowers Exporters Association's main strategy for managing risk, was to develop a strong operational risk culture amongst its entire staff and therefore had committed significant resources to it in the last two (2) years. Most of the efforts towards this had been in the form of sensitizing and training staff on how their daily work activities can contribute to operational risk and what they can do to avoid potential losses. The Flower export firms has also invested in an operational risk management application (Oprisk Management System) developed for it by UIA and Uganda export

promotions board to assist in identifying lapses in every aspect of the Flower export firms activities which can result in operational losses.

Uganda Flowers Exporters Association's reward system was adjusted to include recognition for being operational risk conscious. The Board of Directors and the Managing Director of Uganda Flowers Exporters Association Uganda Limited paid keen interest and were directly responsible for the management of operational risk in order to improve the Flower export firm's financial position. The study further revealed that, they set the appropriate environment necessary for handling operational risk in the Flower export firms by approving the framework and strategies for managing it. The responsibility for executing the framework and implementing the strategy was however vested in all heads of units and departments since the sources of operational risks cuts across the entire operations of the Flower export firms.

Uganda Flowers Exporters Association appointed the operational risk manager to assist in coordinating the effort of all the staff and management working within or managing operational business units of the Flower export firms. The Operational Risk Manager existed within the risk function to ensure that adequate knowledge, systems and resources were available to handle operational risks. Operational Risk Manager also participates in preparing, testing and reviewing the business continuity and disaster recovery plan of every business unit.

Through its risk monitoring, control self-assessments system enabled by its operational risk management application, Uganda Flowers Exporters Association Uganda Limited was able to track internal loss data for monitoring and control purposes. Business units were thus able to monitor the key operational risk exposures and their underlying causes against the thresholds set by the Flower export firms. The study also revealed that the Operational Manager was also able to have access to real time data on the levels and trends of loss events and therefore helped in monitoring to ensure that they are within acceptable levels set by the board.

The study results also indicated that Uganda Flowers Exporters Association analyzed the impact of unlikely, but not impossible events by means of scenario analysis, which enabled management to gain a better understanding of the risks that it faced under extreme conditions. A risk Regular monitoring activities ensured that deficiencies in the operational risk management policies, processes and procedures were quickly detected and corrected to reduce the incidence of loss

events. Any indication of potential loss triggered mitigation measures if the loss was beyond the Flower export firm's acceptable level. There were clear sanctions for flouting the processes and procedures established to ensure control over operations to ensure strict compliance. Uganda Flowers Exporters Association's Internal Control Unit and its external auditors also provided independent assurance and challenge across all business functions in respect of the integrity and effectiveness of the operational supply risk management framework.

Chapter four results further indicated that it was the responsibility of the Operational supply Risk Manager to periodically (quarterly) report, aggregate risk profile, risk control effectiveness and corrective actions taken during every period. Operational losses were often reported to management. The Internal Auditor of Uganda Flowers Exporters Association submitted detailed reports of their investigations of operational loss events, including causes and remedial actions to be implemented to management. Further, still Uganda Flowers Exporters Association Board required immediate consultations with the Risk Committee and Board of all instances of unauthorized deviations from any of the standards set out in the risk policy statement and the likely or actual breaches of thresholds agreed by the Risk Committee and the Board.

5.2 Summary of the major findings

The study aimed at investigating the supply risk management framework employed by Uganda Flowers Exporters Association to enable it achieves an appropriate balance between risk and financial performance. The framework was basically structured to handle supply risk, market risk and operational risk which the Flower export firms considered to be the major risks inherent in its business activities.

5.2.1 Supply Risk Identification strategies and financial performance of Uganda Flowers Exporters Association

There was a strong positive correlation between Supply Risk Identification strategies and financial performance (that is 0.846 being significant at 0.000 less than 0.01(alpha level). The key risks identified were; supply risk, market risks (which includes demand risk and foreign exchange risk), operational risks which sometimes include legal risk, and more recently, strategic risk.

Uganda Flowers Exporters Association had a comprehensive Supply Policy Manual which had been reviewed over the years to reflect new developments in the Flower exporting industry (both local and international). This helped the Flower export firms to identify, monitor, analyze and mitigate supply risks regularly to reduce on the level of financial losses from Ushs.17.2billions to 9.2 billion between 2015 and 2016.

5.2.2 Supply risk measurement techniques and Financial Performance of Uganda Flowers Exporters Association

There is a strong positive relation between Supply risk measurement techniques and financial performance at Uganda Flowers Exporters Association. Low Supply Risk Identification strategies increased borrowing and operational costs hence reducing liquidity levels and lowering financial performance. Uganda Flowers Exporters Association Risk Analysis and Mitigation of Foreign currency risk was taken on whenever there were fluctuations in the prevailing supply rates, on its financial positions and cash flows. The actual impacts of such mismatches were measured through the income statement as export gains or losses.

5.2.3 Supply Risk Mitigation Techniques and Financial Performance of Uganda Flowers Exporters Association

The results using Pearson's correlation coefficient revealed that there is Relationship between Supply Risk Mitigation Techniques and financial performance ($r=0.303$; $p>0.035$, <0.05). The study results therefore show that Supply Risk Mitigation Techniques have a positive effect on Financial Performance. This is explained by the positive correlation co-efficient between the two variables ($r = 0.303$). Low levels of Supply Risk Mitigation Techniques make Financial Performance difficult for the Uganda Flowers Exporters Association. Having effective supply Risk monitoring strategies improved financial performance. Director of Uganda Flowers Exporters Association had the responsibility of monitoring the market risk situation on a regular basis. Uganda Flowers Exporters Association monitored supply risk levels by monitoring fulfillment of contractual repayment schedules, client business performance and financial positions. Avoiding supply risks also means losing out on the potential gain that accepting (retaining) the supply risk.

good supply risk profiles as well as sound frameworks for managing supply risks inherent in their business activities, although it held the 5th position out of 26 Flower export firms within the industrial position of the financial industry in the financial year 2014/2015.

5.3.3 The relationship between supply risk mitigation strategies and financial performance of Uganda Flowers Exporters Association

There is an effect between supply risk mitigation strategies and Financial Performance of Uganda Flowers Exporters Association ($r=.052$; $p>0.73$, <0.05). The study results therefore show that the supply risk mitigation strategies have a positive effect on Financial Performance though the effect is not significant. Since the Pearson correlation coefficient 0.52 is significant at 0.000 being less than 0.05(alpha level), there is a strong positive relation between supply risk mitigation strategies and financial performance at Uganda Flowers Exporters Association.

This implies that only 4.3 % ($0.043*100\%$) variation in Uganda Flowers Exporters Association financial performance can be explained by the three factors supply Risk Identification strategies, supply risk measurement techniques & supply risk mitigation strategies while the remaining of the variations of 95.7% can be explained by other factors such as the Flower export firm's objectives, supply staff abilities. However, the flowers quality improved as the level of both supply risks and financial risks declined in the flower export market with tightened lending processes and increased monitoring and recovery activities.

5.4 Recommendations

Despite a fairly good risk management system put in place by Uganda Flowers Exporters Association, to adequately manage the various types of risks it faced, a couple of recommendations can be suggested to strengthen its supply risk management systems and make it more competitive;

Uganda Flowers Exporters Association should maintain a balance between simplicity and results to manage supply risks related to exportation, flower growing /production in the market. Flower Firms can Partners to provide the strategic alliance with resources such as products and distribution channels.

good supply risk profiles as well as sound frameworks for managing supply risks inherent in their business activities, although it held the 5th position out of 26 Flower export firms within the industrial position of the financial industry in the financial year 2014/2015.

5.3.3 The relationship between supply risk mitigation strategies and financial performance of Uganda Flowers Exporters Association

There is an effect between supply risk mitigation strategies and Financial Performance of Uganda Flowers Exporters Association ($r=.052$; $p>0.73$, <0.05). The study results therefore show that the supply risk mitigation strategies have a positive effect on Financial Performance though the effect is not significant. Since the Pearson correlation coefficient 0.52 is significant at 0.000 being less than 0.05(alpha level), there is a strong positive relation between supply risk mitigation strategies and financial performance at Uganda Flowers Exporters Association.

This implies that only 4.3 % ($0.043*100\%$) variation in Uganda Flowers Exporters Association financial performance can be explained by the three factors supply Risk Identification strategies, supply risk measurement techniques & supply risk mitigation strategies while the remaining of the variations of 95.7% can be explained by other factors such as the Flower export firm's objectives, supply staff abilities. However, the flowers quality improved as the level of both supply risks and financial risks declined in the flower export market with tightened lending processes and increased monitoring and recovery activities.

5.4 Recommendations

Despite a fairly good risk management system put in place by Uganda Flowers Exporters Association, to adequately manage the various types of risks it faced, a couple of recommendations can be suggested to strengthen its supply risk management systems and make it more competitive;

Uganda Flowers Exporters Association should maintain a balance between simplicity and results to manage supply risks related to exportation, flower growing /production in the market. Flower Firms can Partners to provide the strategic alliance with resources such as products and distribution channels.

Management will therefore need a portfolio view of all the various risks and developing a strategy to manage them with the view of benefiting from diversification effects. Such an integrated approach can help senior management realize the relationships between various supply risk exposures as well as their multidimensional effect on the Flower export firms.

Uganda Flowers Exporters Association's Risk Management Committee should be expanded to include the heads of other departments with some responsibilities for some risks such as IT, Operations, Internal Control the three business segments (Wholesale Flower exporting firms, Retail Flower export firms). The expanded committee can be used to promote an integrated framework of policies, procedures and defined processes for Flower export firms-wide supply risk management with the view of ensuring accountability for decisions related to the management of supply risks.

Uganda Flowers Exporters Association should also aim at developing aggregate measures for its risk exposure. The idea is to incorporate multiple types or sources of supply risks into a single quantitative risk measure. Such a measure would give the management of the Flower export firms an idea of what its aggregate risk exposure at any point in time. In this regard, the Flower export firms should consider the use of the economic capital methodology. An economic capital method attempt to assess the amount of capital needed to support a given set of business activities for improved financial performance.

The study further suggests that Floriculture firms must conduct impact analysis needs to assist in assessing the need for supply risk mitigation in bid to enhance business continuity plan as the key measure to flower exportation with limited supply disruptions.

There is need to frequently measure along the distribution chain cycle and procurement cycle, through drawing functional requirements and moderate procurements requirement to standardize the procurement specifications and ensure that there exists a feedback mechanism through consistent supply chain audits and joint planning meetings.

The Uganda export sector should develop a proactive supply risk management culture towards managing supply risk to ensure that contingent plans are put in place in case of adverse supply chain performance.

5.5 Areas for further research

The following areas are suggested for further research;

To examine the effect of supply risk management on service delivery. This can help to recognize the importance of information sharing in enhancing service delivery, given its quantitative importance, a careful assessment of the implementation

To assess the effect of supply risk management on the operational effectiveness of an organization. This will help to identify unique Flower export firms' strengths and weaknesses, which in itself inform institutions profitability and supply quality. Financial crisis to analyze how supply risk relates to Flower export firms business models. Institutions with higher risk exposure had less capital, larger size, greater reliance on short-term market funding, and aggressive supply Growth.

The available knowledge on information sharing and supply risk management and financial performance of commercial Flower export firms and also fill the gap on the relationship between these variables. The level of distress of the riskier Flower export firms is more sensitive to sale growth and market funding. More precisely, a stronger customer supply base is relatively more effective in reducing distress for the riskier compared to the less risky Flower export firms. Similarly, a higher proportion of market funding increases the likelihood of distress of the riskiest Flower export firms although it has no effect on the less risky institutions

To investigate the relationship between Risk Management and Entrepreneurial Development.

To examine how risk management practices influence sales volume of Uganda's export industry

REFERENCES

- Aghazadeh, S. (2004). Improving logistics operations across the food industry supply chain. *International Journal of contemporary Hospitality Management*, 16(4), 263-268. <http://dx.doi.org/10.1108/09596110410537423>
- Agrell, P.J., Lindroth, R., & Norrman, A. (2004). Risk, information and incentives in telecom supply chains. *International Journal of Production Economics*, 90, 1-16. [http://dx.doi.org/10.1016/S0925-5273\(02\)00471-1](http://dx.doi.org/10.1016/S0925-5273(02)00471-1)
- Akkerman, R., Farahani, P., & Grunow, M. (2010). Quality, safety and sustainability in food distribution: A review of quantitative operations management approaches and challenges. *OR Spectrum*, 32, 863-904. <http://dx.doi.org/10.1007/s00291-010-0223-2>
- Amin, M. E (2005). *Social Science research: conception, methodology and analysis*. Kampala: Makerere University Press.
- Anderson, E. and R. Oliver. "Perspectives on Behavior-Based versus Outcome-Based Salesforce Control Systems," *Journal of Marketing*, (51:4), 1987, pp. 76-88.
- Arya, A., Fellingham, J., Schroeder, D. (2000a), "Accounting information, aggregation, and discriminant analysis", *Management Science*, Vol. 46 No.6, pp.790-806.
- Bell, P. (2004). Promoting students' argument construction and collaborative debate in the science classroom. In M. C. Linn & E. A. Davis & P. Bell (Eds.), *Internet environments for science education* (pp. 115-143). Mahwah, NJ: Erlbaum.
- Benson, C., & Clay, E. (1998). *The Impact of Drought on Sub-Saharan African Economies: A Preliminary Examination*. World Bank Technical Paper 401, Washington, DC. <http://dx.doi.org/10.1596/0-8213-4180-4>
- Benson, Charlotte, and Edward J. Clay. 1998. *The Impact of Drought on Sub-Saharan African Economies: A Preliminary Examination*. World Bank Technical Paper 401. Washington, D.C.
- Benson, Charlotte. 1994. "Book Review of *The Political Economy of Large Natural Disasters with Special Reference to Developing Countries*, by J. M. Albala-Bertrand." *Disasters* 18 (4): 383-86.
- Brimer, R. C. (1995). *Logistics networking*. *Logistics Information Management*, 8, 8-11. <http://dx.doi.org/10.1108/09576059510091850>

- Bryceson K. P., & Smith C. S. (2008). Abstraction and Modelling of Agri-Food Chains as Complex Decision Making Systems. Proceedings of the EAAE Conference on System Dynamics and Innovation in Food Networks, pp. 18-22, Innsbruck-Igls, Austria.
- Bryceson K. P., & Smith C. S. (2008). Abstraction and Modelling of Agri-Food Chains as Complex Decision Making Systems. Proceedings of the EAAE Conference on System Dynamics and Innovation in Food Networks, pp. 18-22, Innsbruck-Igls, Austria.
- Bryceson K. P., & Smith C. S. (2008). Abstraction and Modelling of Agri-Food Chains as Complex Decision Making Systems. Proceedings of the EAAE Conference on System Dynamics and Innovation in Food Networks, pp. 18-22, Innsbruck-Igls, Austria.
- Celly, K. and G. Frazier. "Outcome-Based and Behavior-Based Coordination Efforts in Channel Relationships," *Journal of Marketing Research*, (33:2), 1996, pp. 200-210.
- Checa, N., Maguire, J., & Barney, J. (2003). The new world disorder. *Harvard Business Review*, 81(8), 70-79.
- Chopra, S., & Sodhi, M. (2004). Managing risk to avoid supply-chain breakdown. *Sloan Management Review*, 46(1), 53–61.
- Choi, T. and J. Liker. "Bringing Japanese Continuous Improvement Approaches to US Manufacturing: The Roles of Process Orientation and Communications," *Decision Sciences*, (26:5), 1995, pp. 589-620.
- Chopra, S. and Sodhi, M. (2004). "Managing risk to avoid supply chain breakdown." *MIT Sloan Management Review*. 46(3): 53-61.
- Chopra, S., & Sodhi, M. (2004). Managing risk to avoid supply-chain breakdown. *Sloan Management Review*, 46(1), 53–61.
- Chopra, S., & Sodhi, M. (2004). Managing risk to avoid supply-chain breakdown. *Sloan Management Review*, 46(1), 53–61.
- Christopher, M. (2005). *Logistics and Supply Chain Management*. Prentice Hall, London.
- Christopher, M., & Lee, H. L. (2004). Mitigating Supply Chain Risk through Improved Confidence. *International Journal of Physical Distribution and Logistics Management*, 34(5), 388-396. <http://dx.doi.org/10.1108/09600030410545436>
- Christopher, M. and Holweg, M. (2011). "Supply Chain 2.0": Managing supply chains in the era of turbulence." *International Journal of Physical Distribution & Logistics Management*, 41(1): 63-82.
- Christopher, M. and Lee, H. (2004). "Mitigating supply chain risk through improved confidence." *International Journal of Physical Distribution & Logistics Management*, 34(5): 388-396.
- Christopher, M., Lee, H., 2004. Mitigating supply chain risk through improved confidence.
- Culp, C.L., 2001, "The risk management process. Business strategy and tactics", John Wiley & Sons, Inc. New York – NY - ISBN 0-471-40554-X

Dietrich, D.M., Cudney, E.A., 2011. Methods and considerations for the development of emerging manufacturing technologies into a global aerospace supply chain. *International Journal of Production Research* 49, 2819–2831.

Dietrich, D.M., Cudney, E.A., 2011. Methods and considerations for the development of emerging manufacturing technologies into a global aerospace supply chain. *International Journal of Production Research* 49, 2819–2831.

Ding, Q., Dong, L., & Kouvelis, P. (2007). On the integration of production and financial hedging decisions in global markets. *Operations Research*, 55(3), 470–489. <http://dx.doi.org/10.1287/opre.1070.0364>

Dorosh, P.A., Dradri, S., & Haggblade, S. (2009). Regional trade, government policy and food security: Recent evidence from Zambia. *Food Policy*, 34(4), 350–366. <http://dx.doi.org/10.1016/j.foodpol.2009.02.001>

Dorothy Nakaweesi(2016) Uganda flower farmers facing tough times as exports and earnings drop. “We are still suffering from the impact of that notice,” UFEA executive director Juliet Musoke told *The East African*.

Dukhuizen, M.P. Meuwissenl, J.B. Hardaker, R.B. and. Huirnel (2001), "Sharing Risks in Agriculture; Principles and Empirical Results "; University Press. *Netherlands Journal of Agricultural Science* 49 (2001) 343-356

Dukhuizen, M.P. Meuwissenl, J.B. Hardaker, R.B. and. Huirnel (2001), "Sharing Risks in Agriculture; Principles and Empirical Results "; University Press. *Netherlands Journal of Agricultural Science* 49 (2001) 343-356

Eisenhardt, K. "Agency Theory: An Assessment and Review," *Academy of Management Review*, (14:1), 1989, pp. 57-74.

Erllich and Becker.(1972), market insurance, self-insurance and self protection. *Journal of political economy* Vol.8. No4

Fitzgerald, K.R. (2005). Big savings, but lots of risk. *Supply Chain Management Review*, 9(9), 16-20.

Hardaker J.B., Huirne R.B.M., Anderson J.R., & Lien G. (2004). *Coping with Risk in agriculture* (2nd ed.). Wallingford: CABI Publishing. <http://dx.doi.org/10.1079/9780851998312.0000>

Hardaker, J.B. (2006), “Farm risk management: past, present and prospects”, *Journal of Farm Management*, 12 (10), 593-612. Hardaker, J.B., Huirne, R.M.B., Anderson, J.R., & Lien, G. (2004a), *Coping with Risk in Agriculture*, 2nd edn, CAB International.

Hardaker, J.B., Richardson, J.W., Lien, G., & Schumann, K.D. (2004b), “Stochastic efficiency analysis with risk aversion bounds: A simplified approach”, *Australian Journal of Agricultural Economics*, 48, 253-70.

Harland, C., Brenchley, R. and Walker, H. (2003). "Risk in supply networks." *Journal of Purchasing and Supply Management*, 9(2): 51–62

Harland, C., Richard B., & Helen, W. (2003). Risk in Supply Networks. *Journal of Purchasing and Supply Management*, 9(2), 51-62. [http://dx.doi.org/10.1016/S1478-4092\(03\)00004-9](http://dx.doi.org/10.1016/S1478-4092(03)00004-9)

Hartley-Urquhart, R. (2006, September). Managing the financial supply chain. *Supply Chain Management Review*, 18-25.

Hendricks, K. B., & Singhal, V. R. (2005a). An Empirical Analysis of the Effects of Supply Chain Disruptions on Long-Run Stock Price Performance and Equity Risk of the Firm. *Production and Operations Management*, 14(1), 35-52. <http://dx.doi.org/10.1111/j.1937-5956.2005.tb00008.x>

Hendricks, K., & Singhal, V. (2005). An empirical analysis of the effect of supply chain disruptions on long-run stock price performance and equity risk of the firm. *Production and Operations Management*, 25-53.

International Journal of Physical Distribution and Logistics Management 34 (5), 388-396

Jaffee, S., Siegel, P., & Andrews, C. (2010). Rapid Agricultural Supply Chain Risk Assessment: A Conceptual Framework. The World Bank. Washington. D.C.

Joppe, M. (2000). The Research Process. <http://www.ryerson.ca/~mjoppe/rp.htm>

Jüttner, U. (2005). Supply chain risk management: Understanding the business requirements from a practitioner perspective. *International Journal of Logistics Management*, 16(1), 120-141. <http://dx.doi.org/10.1108/09574090510617385>

Jüttner, U., Peck, H. and Christopher, M. (2003). "Supply chain risk management: outlining an agenda for future research." *International Journal of Logistics Research and Applications*, 6(4): 197–210.

Krejcie, R.V. & Morgan, D.W. (1970). Determining sample size for research activities, *Educational and Psychological Measurement*, 30, 607-610.

Ksoll, C., Macchiavello, M., & Morjaria, A. (2009). Guns and Roses: The Impact of the Kenyan Post-Election Violence on Flower Exporting Firms. Centre for the Study of African Economies (CSAE), Oxford University. CSAE WPS/2009-06 (May).

LaLonde, B.J. (2004, November/December). A crisis in transportation. *Supply Chain Management Review*, 7-8. LaLonde, B.J. (2005, May/June). Time to get serious about energy. *Supply Chain Management Review*, 8-9.

Lassar, W.M. and J.L. Kerr. "Strategy and Control in Supplier-Distributor Relationships: An Agency Perspective," *Strategic Management Journal*, (17:8), 1996, pp. 613-632.

Lee, H. L., Padmanabhan, V., & Seungjin, W. (1997). Information Distortion in a Supply Chain: The Bullwhip Effect. *Management Science*, 43(4), 546-558. <http://dx.doi.org/10.1287/mnsc.43.4.546>

Liu C, Xi W, Shen L, Tan C, Yu H. Regulation of floral patterning by flowering time genes. *Dev Cell*. 2009;16(5):711–722. doi: 10.1016/j.devcel.2009.03.011

Liu C, Xi W, Shen L, Tan C, Yu H. Regulation of floral patterning by flowering time genes. *Dev Cell*. 2009;16(5):711–722. doi: 10.1016/j.devcel.2009.03.011

Logan, M.S. "Using Agency Theory to Design Successful Outsourcing Relationships," *International Journal of Logistics Management*, (11:2), 2000, pp. 21-32.

Mellenbergh, G. J. (2008). Chapter 10: Tests and questionnaires: Construction and administration. In H. J. Adèr & G. J. Mellenbergh (Eds.) (with contributions by D. J. Hand), *Advising on research methods: A consultant's companion* (pp. 211–234). Huizen, The Netherlands: Johannes van Kessel Publishing.

Mellenbergh, G. J. (2008). Chapter 11: Tests and questionnaires: Analysis. In H. J. Adèr & G. J. Mellenbergh (Eds.) (with contributions by D. J. Hand), *Advising on research methods: A consultant's companion* (pp. 235–268). Huizen, The Netherlands: Johannes van Kessel Publishing.

Meuwissen, M.P.M., Huirne, R.B.M., & Hardaker, J.B. (2001). Risks and risk management strategies; an analysis of Dutch livestock Farmers. *Livestock Production Science*, 69, 43-53. [http://dx.doi.org/10.1016/S0301-6226\(00\)00247-5](http://dx.doi.org/10.1016/S0301-6226(00)00247-5)

Minogue, M. (2005). Apples and Oranges – Comparing International Experiences in Regulatory Reform, Occasional Lecture 13, Bath. Centre for the Study of Regulated Industries, University of Bath

Murphy, S. (2007, December). The supply chain in 2008. *Supply Chain Management Review*, 4-7.

Nagurney, A., Jose, C., June, D., & Ding, Z. (2005). Supply Chain Networks, Electronic Commerce and Supply Side and Demand Side Risk. *European Journal of Operational Research*, 164(1), 120-142. <http://dx.doi.org/10.1016/j.ejor.2003.11.007>

Nahmias, S. (2011). *Perishable Inventory Systems*. Springer, New York, USA. <http://dx.doi.org/10.1007/978-1-4419-7999-5>

Pagell, M. and D.R. Krause. "A Multiple Method Study of Environmental Uncertainty and Manufacturing Flexibility," *Journal of Operations Management*, (17:3), 1999, pp. 307-326.

- Palinkas P., & C. Székely. (2008). Farmers' perception on risk and crisis management. In Meuwissen, M.P.M., M.A.P.M. van Asseldonk and R.B.M. Huirne (Eds.), *Income Stabilization in European Agriculture: Design and Economic Impact of Risk Management Tools*.
- Paulson, U., 2005. Developing a supply chain flow risk model. NOFOMA 2005 Conference
- Peck, H. (2006). Reconciling supply chain vulnerability, risk and supply chain management. *International Journal of Logistics: Research and Application*, 9(2), 127-142. <http://dx.doi.org/10.1080/13675560600673578>
- Quinn, F., 2006. Risky business. *Supply Chain Management Review* 10 (4), 5-5.
- Shwedel, K. (2007). Value chain financing a strategy for an orderly competitive integrated market. Retrieved March 15, 2014, from www.ruralfinance.org/id/54079
- Sodhi, M.S., Son, B., & Tang, C.S. (2012). Researchers' perspectives on supply chain risk management. *Production and Operations Management*, 21(1), 1-13. <http://dx.doi.org/10.1111/j.1937-5956.2011.01251.x>
- Stiglitz, J. (1998). Private Uses of Public Interests: Incentives and Institutions, Governors, Washington, D.C. *Journal of Economic Perspectives*, 12(2), 3-22. <http://dx.doi.org/10.1257/jep.12.2.3>
- Tang, C.S. (2006a). "Perspectives in supply chain risk management." *International Journal of Production Economics*, 103(2): 451-488.
- Tang, C.S. (2006b). "Robust strategies for mitigating supply chain disruptions." *International Journal of Logistics: Research and Applications*, 9(1): 33-45.
- Tarantilis, C. D., Diakoulaki, D., & Kiranoudis, C. T. (2004). Combination of geographical information system and efficient routing algorithms for real life distribution operations. *European Journal of Operational Research*, 152, 437-453. [http://dx.doi.org/10.1016/S0377-2217\(03\)00035-3](http://dx.doi.org/10.1016/S0377-2217(03)00035-3)
- Trochim, W.M.K. (2006). Research methods knowledge base. Retrieved on January 25, 2010 from <http://www.socialresearchmethods.net>
- Wagner, S.M., & Johnson, L. J. (2004). Configuring and Managing Strategic Supplier Portfolios. *Industrial Marketing Management*, 33(8), 717-730.

<http://dx.doi.org/10.1016/j.indmarman.2004.01.005>

Zhang, K., Chai, Y., Yang, S.X., Weng, D., 2011. Pre-warning analysis and application in traceability systems for food production supply chains. *Expert Systems with Applications* 38, 2500–2507.

Zinyama, F. (2007, February 27). WFP awards NMC Zim maize export contract, p11. *The Post*.

Zsidisin, G.A. and Ellram, L.M. (2003). “An agency theory investigation of supply risk management.” *Journal of Supply Chain Management*, 39(3): 15–27.

APPENDICES

APPENDIX A: QUESTIONNAIRES FOR STAFF OF UGANDA FLOWERS EXPORTERS ASSOCIATION

Dear Respondent,

I am Batte Aaron Godfrey, a student of Kyambogo University pursuing a study on; "*Supply Risk Management and Financial Performance of Flower Export Firms in Uganda*". You are among the chosen ones to participate in the study by providing information. This study is a requirement for partial fulfillment for the award of the degree of Master of Science Degree in Supply Chain Management of Kyambogo University and is purely for academic purposes. Therefore, the information given will be treated with utmost confidentiality. I therefore request you to spare some time and help me to fill in these questionnaires. Your response is highly appreciated. Thank you for your cooperation.

Section A: Respondent's Bio-Data

Instruction: Please tick the most appropriate option that applies to the topic of study in relation to your organization.

1) Length of service at Uganda Flowers Exporters Association (UFEA)

- 1-3years 4-7 years
 8-11years 12 and above

2). Position of responsibility

- Executive Senior manager
 Accountant Markets Officer

Section B: Supply Risk Identification strategies Process and financial performance of Uganda Flowers Exporters Association

The table below shows alternative responses; evaluate each statement and tick in the appropriate box basing on the following scale for sections B, C and D

Response Scale:	I strongly disagree	I disagree	I am not sure	I agree	I strongly agree
	5	4	3	2	1

No	Supply Risk Identification strategies Process	5	4	3	2	1
1	UFEA has supply Risk registers and risk reports					
2	brainstorming help UFEA forecast its demand					
3	UFEA previous assessment of Internal and external kinds of supply risks					
4	Staffs at UFEA vest in supply risk planning and management activities.					
5	UFEA scans the environment to identify new and emerging supply risks.					
6	Surveys Questionnaires help UFEA to prevent delay in identifying supply risk.					
7	Business Impact Analysis (BIA) reveals the UFEA risk resources.					
8	RI exposes increasing chance of losses and their severity.					
9	SWOT analysis ensures effective supply risk management.					
10	With RI, UFEA easily meets unexpected demands.					

Section C: The relationship between Supply Risk Measurement Techniques and Financial Performance of Flower Export Firms.

The table below shows alternative responses; evaluate each statement and tick in the appropriate box basing on the following scale for sections B, C and D

Response Scale:	I strongly disagree	I disagree	I am not sure	I agree	I strongly agree
	5	4	3	2	1

No	The effect of Supply Risk Measurement Techniques	5	4	3	2	1
1	UFEA assesses the effect of supply risk exposure to promote timely business development					
2	Estimating supply information risk improves financial management and promotes business growth					
3	UFEA assesses the frequency of occurrence manage supply risks, coordinate activities and improve financial growth					
4	With risk analysis, the ratio of donor equity to total equity always declines annually					
5	Supply Risk analysis at UFEA reduces costs and increase Capital Adequacy to overcome poor financial performance					
6	Assessing the significance of supply risk helps to control supplier financial distress for better financial performance					
7	Analyzing demand volatility Supply risks abet to maintain risk at reasonable assurance and cost-benefit to increase revenue					
8	Supply risk analysis helps UFEA to increase the operating accounts balances					

9	Demand Supply risk analysis has helped UFEA adopt more aggressive strategies for realizing sale volumes.					
10	Responsible team continually monitors effectiveness of supply risk levels for better financial performance					
11	Flowers Supply risks measurement has accelerated growth of Total profits.					
12	Financial Supply risks has attracted growth in the Flower export firms market share					
13	Supply Risk analysis has helped UFEA to reduce uncertainty and demand risk associated with the revenue					

Section D: The relationship between Supply Risk Mitigations Strategies and financial performance of UFEA

The table below shows alternative responses; evaluate each statement and tick in the appropriate box basing on the following scale for sections B, C and D

Response Scale:	I strongly disagree	I disagree	I am not sure	I agree	I strongly agree
	5	4	3	2	1

No	Supply Risk Mitigations Strategies	5	4	3	2	1
1	UFEA monitors transport risks to ensure no alteration in financial priorities					
2	Supply Risk avoidance allows timely reports on the financial condition					
3	Supply Risk control permits clear understanding of the financial position and supply risk exposures.					
4	Supply Risk mitigation practices address all of its material risks					
5	With supply Risk mitigation procedures are tested for reliability on an on-going basis to improve investment potential					
6	Supply Risk mitigation ensures compliance with established limits, goals, or objectives.					
7	Decision-makers are able to mitigate any adverse trends and to adequately evaluate the level of supply risk					
8	UFEA mitigates contractual supply risks repayment schedules for improved financial position					
9	Supply Risk mitigation lowers exportation risk of the versus financial return conditions					
10	Mitigation supply risks improves financial position, resources inflows allows & boosts financial performance					
11	mitigation of supply risks using policies enhances financial performance					
12	mitigation of supply risk controls actual losses that would be incurred boosts FP					
13	Risk monitoring reduces risks for effective financial performance					
14	Supply risk mitigation curbs supply risk burden					

Sec E: the Financial Performance of UFEA

The table below shows alternative responses; evaluate each statement and tick in the appropriate box basing on the following scale for sections B, C and D

Response Scale:	I strongly disagree	I disagree	I am not sure	I agree	I strongly agree
	5	4	3	2	1

No	UFEA has a solid financial base to sustain its operational efficiency							
1	UFEA maximizes sales volume due to supply risk mitigation							
2	We always strive to increase our income by increasing our market share yield							
3	UFEA reduces operational and financial costs to realize high profitability margin							
4	UFEA strives to reduce flower exportation losses by conducting supply risk assessment							
5	UFEA's level of financial growth has been increasing annually							

"Thanks for your Cooperation"

**APPENDIX B: INTERVIEW GUIDE FOR MANAGEMENT OF UGANDA FLOWERS
EXPORTERS ASSOCIATION**

Dear Respondent,

I am Batte Aaron Godfrey, a student of Kyambogo University pursuing a study on; “*Supply Risk Management and Financial Performance of Flower Export Firms in Uganda*”. You are among the chosen ones to participate in the study by providing information. This study is a requirement for partial fulfillment for the award of the degree of Master of Science Degree in Supply Chain Management of Kyambogo University and is purely for academic purposes. Therefore, the information given will be treated with utmost confidentiality. I therefore request you to spare some time and help me to fill in these questionnaires. Your response is highly appreciated. Thank you for your cooperation.

1. What are the types of Risks affecting financial performance of flower export firms?
2. What are the causes of supply risks in the floriculture industry in Uganda?
3. What is the procedure for supply risk management used in your organization?
4. What is the relationship between supply Risk Identification strategies on the financial performance of flower export firms?
5. What is the relationship between supply risk measurement techniques on the financial performance of flower export firms?
6. What is the relationship between supply risk mitigation strategies on the financial performance of flower export firm?
7. What challenges does UFEA experience in implementing appropriate supply risk management strategies?
8. What can be done to enhance efficient and effective supply risk management as well as financial performance?

“Thanks for your Cooperation”

APPENDIX C: POPULATION AND SAMPLE SIZE TABLE

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Krejcie, Robert V., Morgan, Daryle W., "Determining Sample Size for Research Activities", Educational and Psychological Measurement, 1970.

Note.—N is Population size. S is Sample size.