SUPPLY RISK MANAGEMENT AND OPERATIONAL EFFICIENCY

AT ALFIL MILLERS (U) LIMITED

BY

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A RESEARCH THESIS SUBMITTED TO THE SCHOOL OF MANAGEMENT AND ENTREPRENEURSHIP IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF A MASTER OF SCIENCE IN SUPPLY CHAIN MANAGEMENT OF KYAMBOGO UNIVERSITY

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DECLARATION.

I, Hawa Tuku, hereby declare that, this thesis entitled "***supply Risk management and operational efficiency at Alfil Millers***" is my original work and has never been submitted by any student of any University for academic award.

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APPROVAL

This thesis has been under our supervision and is hereby submitted to the Graduate school Kyambogo University with our approval.

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DEDICATION

I dedicate this thesis to my husband Alli Abdu and the entire family of Mr. Tuku Ismail for their moral and financial support given to me during this course.

May the almighty Allah bless them exceedingly and abundantly and reward them more than they ever expected.

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I would like to take this opportunity to acknowledge the people that assisted me during the process of writing this proposal in one way or another.

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ABSTRACT

The study set out to examine the relationship between supply risk management and operational efficiency. The researcher adopted for a case study research design and both qualitative and quantitative research methods. The 52 respondents were selected from Alfil Millers and a few suppliers out of a target population of 55. The information from primary data source was collected using mainly questionnaires and interview guides. Pearson's correlation analysis was utilized to find the relationship between supply risk management and operational efficiency. The response rate was 88.5% an indication that most respondents were well represented in this study. The respondents who participated in this study were knowledgeable to understand and synthesize the issues of supply risk management and operational efficiency. On the supply risk identification strategies the relationship was positive with operational efficiency of 484** at 0.01 level, meanwhile brainstorming, interviews and check lists were agreed on except scenario analysis, bow tie analysis, fault tree analysis, direct observation, incident analysis. On the supply risk analysis used had a negative relationship with operational efficiency at 0.041, document reviews and strength, weaknesses, opportunities and threats of Alfil Millers were used to analyse the identified supply risks except risk categorisation, probability and impact matrix, critical path analysis and others are not been used at Alfil Millers. It was concluded that supply risk mitigations used at Alfil Millers had a positive relationship with the operational efficiency at 0.331 at a significant level of 0.05. There is need to carry out further research on other risks such as customer related risks, further research can also be done on the influence of supply risk management on Service delivery, further research can still be done on supply risk management and supply chain performance.

CHAPTER ONE

SUPPLY RISK MANAGEMENT AND OPERATIONAL EFFICIENCY.

1.0 Introduction.

Alfil Millers has to acquire goods and services in order to carry out its operations. Changing amounts of supply risks are associated with obtaining these inputs. An unplanned event may occur in their acquisition, delivery, and use that can negatively affect their ability to produce its final products. If contingency plans are not made to manage supply risk, the occurrence of a negative incident can have an immediate damaging effect on the operations of Alfil Millers. This chapter intended to address the background to the study, statement of the problem, the general objective, specific objectives of the study, the research questions, scope of the study, significance of the study.

1.1 Background to the Study.

1.1.1 Historical Background

Modern risk management started after 1955. Since the early 1970s, the perception of financial risk management developed significantly. Particularly, risk management has developed less partial to market insurance attention, which is now considered a challenging defence tool that balances several other risk management events. After World War II, big firms with expanded groups of assets started 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 and Becker, 1972; Dionne and Eeckhoudt, 1985). All protection and prevention activities are part of risk management. Insurers' traditional role was seriously questioned in the United States in the 1980s, particularly during the liability insurance crisis characterized by exorbitant premiums and partial risk coverage. In that decade, alternative forms of protection from various risks emerged, such as

captives (company subsidiaries that insure various risks and reinsure the largest ones), risk retention groups (groups of companies in an industry or region that pool together to protect themselves from common risks), and finite insurance (distribution of risks over time for one unit of exposure to the risk rather than between units of exposure).

1.1.2 Conceptual Background

Mitchell (1999) takes a view risk as, therefore, defined as a subjectively-determined expectation of loss; the greater the probability of this loss, the greater the risk thought to exist for an individual. This is the definition that was applied in this thesis.

According to Zsidisin *et al.* (2000) who uphold that supply risk is "the transpiration of significant and/or disappointing failures with inbound goods and services" (Zsidisin et al. 2000, p. 187) which was used in this study.

North (1995, p. 2) looks at supply risk management as "the process of identifying and implementing measures which can be applied to reduce risk to an acceptable level and documenting the final import decision." Supply Risk management is defined as a continuous, proactive and systematic process to understand, manage and communicate risk from an organization-wide perspective. It is about making strategic decisions that contribute to the achievement of an organization's overall corporate objectives" (Berg, 2010, p. 81). Johnston *et al*, (2016), p. 617; Lee *et al* (1993); Noor dewier *et al.* (1990) suggests that supply risk management is associated with Methods to distribute, handle, and transport inputs in an organisation.

Jüttner, *et al* (2003) suggests that, supply risk management comprises four main elements: (1) assessing the risk sources, (2) identifying the concepts, (3) tracking the drivers, and (4) mitigating the risks. Sodhi *et al* (2012) identify similar elements from the literature, differentiating between (1) risk identification, (2) risk assessment, (3) risk mitigation and (4)

responsiveness to risk (either operational or catastrophic). Kleindorfer and Saad (2005), in turn, propose three process elements, namely (1) specifying the sources of risk and vulnerability, (2) assessment and (3) mitigation, which is fairly close to what Waters (2007) proposes risk identification, risk analysis and risk mitigation which the study was considered because of its proper explanation in support of this case.

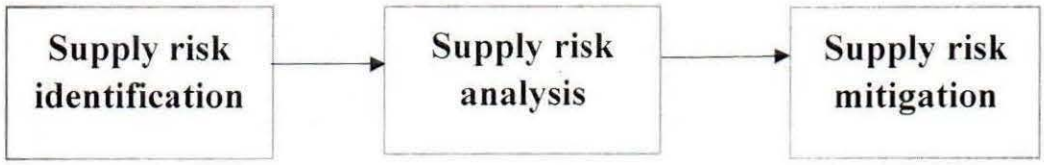


Figure 1.1 a framework for managing risks (adapted from Waters2007)

Housman (2004) defines Operational efficiency as a gauge to company's operations in terms of supply chains activities to meet ultimate purchaser's needs, including timely delivery of goods and availability of crucial inventory in a responsive manner. Heightened competition among firms posed by globalization, firms can drive value through effective operations. Gattorna (2003), notes that firms should look at whole operational efficiency as opposed to improving particular functions like logistics while neglecting upstream and downstream effects.

Huan (2004) notes that these measures will be arrived by auditing firm's processes such as: product delivery, lead time, responsiveness, production time, total logistic management cost, inventory days of supply and asset turns. By evaluating these metrics, organizational performance measures can, therefore, be narrowed to cost, speed, reliability and customer satisfaction perspectives (Beamon, 1999). Ultimately these performance measures will help firms assess their competitive position and work towards operational efficiency with a view to exploiting potential operational success (Stock and Lambert, 2000).

According to Kurien and Qureshi (2011), the Supply Chain Operations Reference (SCOR) model approach promotes for a number of operational efficiency measures. SCOR looks into cost, time, quality and flexibility. Of which three of the measures **(cost, quality and time)** was considered in this study.

Operational efficiency measures help firms in several ways. First the measurements directly guide actions of operations staff hence indirectly influence performance; secondly some key measures help in keeping a firm on track in achieving its operational enhancement objectives; thirdly they support fact-based decision making based on outputs of performance measures against objectives; fourthly they communicate operational requirements for monitoring, continuous improvements and change management in companies; and lastly they motivate better supplier performance (Monczka, 2011).

1.2 Contextual Background

Alfil Millers is located in Kabojja (A) Nsangi sub-county in Wakiso district and are the manufacturers of Tembo baking flour and has products such as baker's flour and home baking flour (Amon 2018) which was considered in this study. Alfil Millers imports wheat grains as raw materials from firms in Mombasa who also import from some European countries and some South American countries. Their operations have become more complex and wider. The desire to attain a better operational efficiency is combined with the pressure of many risks to its operations. In the chains of Alfil Millers, the raw materials of the company include packaging materials, additives and the main raw material wheat grains which is obtained from Mombasa from suppliers such as sea board, whole board, Amlelopa and Allied commodities whose main suppliers are from Europe and south American countries (Farid 2017). The processing is done by Alfil Millers and final product sold to bakeries such as Jonisal, Peal, Tendo J. B and Denovo being the main bakery and individual customers such as whole sellers

and retailers (Alfil 2016/17 sales report). These customers pick their items through truck delivers and individual pickings. However in this aspect, Amon (2018) explained that the company is faced with several supply risks such as price fluctuation as a result of US dollars, clearing, and theft by drivers, and breakdown of trucks, delays and damages of products which are identified with no clear strategy. These supply risks are mitigated on a reactive method rather than proactive means this leaves the company with only a chance of advanced planning which is not reliable. Hence Alfil Millers is faced with an inappropriate supply risk management which affects the operational efficiency.

1.3 Statement of the Problem.

Alfil Millers is faced with numerous supply risks since its suppliers of the raw material (wheat grains) are not within the country. According to the procurement officer Rashid (2018) These supply risks include; price fluctuation as a result of US dollars, clearing, theft by drivers, breakdown of trucks, delays which have been identified with no clear defined identification strategies and possible causes are not been focused on.

According to Farid (2018) the head of logistics these supply risks have been analyzed majorly as they occur rather than an analysis prepared in advance as a result of poor identification strategies. The implication being that the identification strategies are reactive rather than proactive. For example the company has put in the effort of a third party motor insurance for solving the transportation challenges and making orders in advance to handle issues of delays which is still not appropriate (Amon 2018).

If not proactively managed, Alfil Millers may face increased costs, poor quality products and increased time wastage, long product lead time which may result in to loss of profits due to increased costs, loss of customer satisfaction due to long lead time, loss of customer retentions due to poor quality services. A formal study to analyze these consequences as a result of poor

supply risk management has not been done hence the study seeks to examine the linkage between supply risk management and operational efficiency of Alfil Millers (U) Limited.

1.4 General objective.

To examine the relationship between supply risk management and operational efficiency taking the case of Alfil Millers (U) Limited.

1.4.1 Specific Objectives.

i. To establish the relationship between supply risks identification strategies used at Alfil Millers (U) Limited and operational efficiency.

ii. To examine the relationship between supply risks analysis is undertaken and operational efficiency at the Alfil Millers (U) Limited.

iii. To analyse the relationship between the supply risk mitigation methods used and operational efficiency at Alfil Millers (U) Limited.

1.5 Research Questions

i. What is the relationship between the supply risk identification strategies used at Alfil Millers (U) Limited and operational efficiency?

ii. What is the relationship between the supply risks analysis undertaken and operational efficiency at the Alfil Millers (U) Limited?

iii. What is the relationship between the supply risk mitigation methods used and operational efficiency at Alfil Millers (U) Limited?

1.6 Scope of the Study

1.6.1. Content Scope

The study focused on examining the relationship between supply risk management and the operational efficiency of Alfil Millers (U) Limited. The dependent variable was Operational Efficiency while the independent variable was Supply Risk Management. Supply Risk

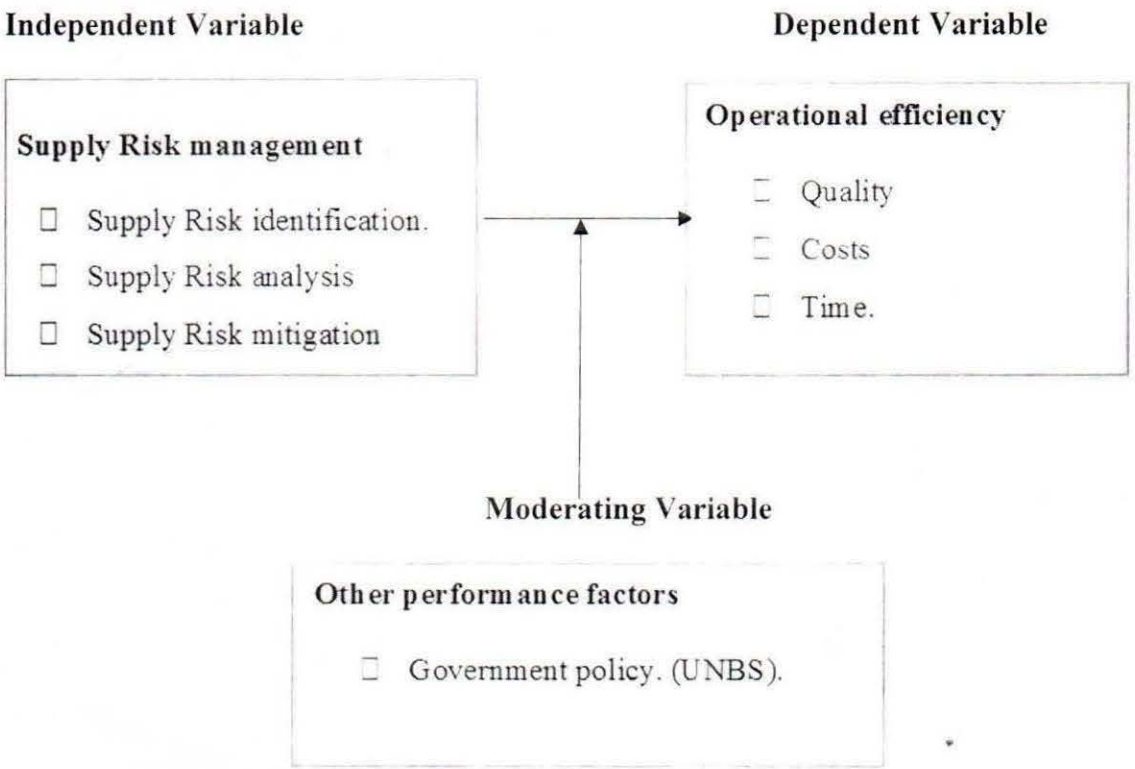
management was measured using strategies for identifying supply risks, risk analysis and mitigation strategies while Operational Efficiency was measured using quality, costs and time.

1.6.2 Time Scope

The study covered the period between Jan 2018 to Oct 2018 while review of related literature was based on the past years. This study was conducted within 10 months (January 2018-October 2019) as indicated.

1.7 Conceptual Framework

Figure 2.1: Conceptual framework model on supply risk management and operational efficiency.



Source: Adapted from: (Waters, 2007), (Richard et al 2009). (Kurien and Qureshi 2011) and modified by the researcher.

In the perspective of Alfil Millers (u) Limited, in its supply risk management its inputs were the resources from suppliers of the company while the outputs were the final products for the customers. In relation to the above conceptual frame work, to manage the supply risks the

study looked at the Independent variables as risk identification focusing on the strategies used in identifying the supply risks. Risk analysis looking at how analysis was done and Risk mitigation focusing on the relationship between risk mitigations used and operational efficiency. The dependent variable was operational efficiency which was measured in to three dimensions of quality which included Meeting quality performance standards, Defect detected per unit produced per unit purchased, Quality awards standards, Products per unit sold and Fitness of use. Costs which are measured as Cost measures within the organisation, Total supply chain management cost (across the supply chain) and time was indicated by timeliness in terms of reduced order lead times, reduced transit times, reduced order response time, on time response to company needs and reduced procurement process. The relationship between the supply risk management and operational efficiency was also influenced by which measures the firm uses internally and how these are embedded into incentive and supply risk management within the firm In other words, the supply risk management influences operational efficiency at the individual and organizational levels (Levenson, Van der Stede, & Cohen, 2006).

However there is also the moderating variable which influences the operational efficiency of the company that's the government policy which states standardization of products by all manufacturing companies. But the study did not focus on the moderating variable and only looked at the independent variable and the dependent variable.

1.8 Significance of the Study

i. The data bank of Kyambogo University may be added which could also be useful for future students of the institution.

ii. This study may offer significant information to future researchers who would want to explore more about the concept of supply risk management in relation to operational efficiency and related fields.

iii. Vital clues on risk management may be provided to the management of Alfil Millers (U) Limited and other companies which could help in improving Operational Efficiency.

iv. Mechanisms to mitigate the various supply risks faced by companies may be suggested and could help in solving the consistent challenges if adopted by similar companies.

1.9 Definition of Key Terms.

Risk. This is a subjectively-determined expectation of loss: the greater the probability of this loss, the greater the risk thought to exist for an individual.

Supply Risk is the transpiration of significant and/or disappointing failures with inbound goods and services.

Supply Risk Management. Supply Risk management is defined as a continuous, proactive and systematic process to understand, manage and communicate risk from an organization-wide perspective.

Risk Identification is a process for identifying and recording potential project risks that can affect the materials delivery. (Olga 2018)

Risk Analysis Risk analysis is the process of identifying and analysing potential issues that could negatively impact key business initiatives or critical projects in order to help organizations avoid or mitigate those risks. (Margaret 2018)

Risk Mitigation. Risk mitigation is defined as taking steps to reduce adverse effects. There are four types of risk mitigation strategies that hold unique to Business Continuity and Disaster Recovery. It's important to develop a strategy that closely relates to and matches your company's profile. (Herera 2013)

Operational Efficiency. It's a gauge to company's operations in terms of supply chains activities to meet ultimate purchaser's needs, including timely delivery of goods and availability of crucial inventory in a responsive manner.

CHAPTER TWO

LITERATURE REVIEW.

2.1 Introduction.

This chapter presents literature reviewed about supply risk management and operational efficiency in relation to the study objectives. The information is a mixture of quotations, summarized statements from textbooks, pamphlets, journals, magazines, websites, publications and related online reports in regard to the significance of supply risk management and the operational efficiency. Literature is classified on the basis of what supply risk management is, with starting; the strategies used for supply risk identification at Alfil Millers and, how the supply risks analysis is undertaken at Alfil Millers and the relationship between the supply risk mitigation used and operational efficiency at Alfil Millers.

2.2 Theoretical Background.

The resource dependence theory experienced its formal birth with the publication of Pfeiffer and Salancik's influential book carrying the title "The external control of organizations: A resource dependence perspective" (Pfeiffer/Salancik 1978). It has its roots in sociological theories trying to explain the behaviour of individuals based on their relative power positions (See B. L. Johnson 1995, p. 4f).

Therefore, the resource dependence approach argues that the intra-organizational behaviour of a firm is determined by the extent to which it depends on the resources of another company. Pfeiffer/Salancik (1978), p.1ff Hence, it is asserted that a given company (Alfil Millers) is dependent on those entities in its environment which possess and control resources crucial to its survival. (Schwaiger/Meyer 2009, p. 3). It has to be remarked that the term 'resource' in this context is to be defined broadly and refers to materials, capital, technologies and social legitimacy, among others.

According Schwaiger/Meyer (2009, p. 32) taking a look at buyer-supplier relationships within a supply chain, it becomes apparent why the resource dependence approach fits well to buyer-supplier relationships. In fact, the exchange and control of resources from suppliers and to suppliers are at the core of this approach. What is more, Alfil Millers and its suppliers engage in a resource exchange relationship. The buyer (Alfil Millers) needs the product or the service, and its supplier usually the money of the buyer it gets in return. Therefore, buyer and supplier depend to varying degrees on each other's resources within a supply chain. But how could resource dependence theory explain supply risk in an operational efficiency? For instance Alfil Millers is a large powerful firm that receive preferential treatment from small firms because they depend on the large firm's business and resources such as management skills and better credit standing. Through preferential resource allocation, the suppliers opt to 'persuade' the buyers (Alfil Millers) which they are dependent on to continue the exchange relationship. This secures the suppliers' access to the buyers' resources. That is to say more for large, powerful customers, less for small buyers. Thus, it seems reasonable to argue that buyers' power over suppliers leads to preferential treatment and therefore to low strategic supply risk.

2.3 Conceptual review.

2.3.1 Supply Risk Identification.

It is generally agreed that identification is the initial step in the process of supply chain risk management. According to Waters (2007), identifying the risks is a key activity on which all other aspects of the process are based. However, in reality it is virtually impossible to list every conceivable risk, and identification will only cover the most significant in terms of their effect on the operational efficiency. Organisations cannot rely on personal knowledge and informal procedures, but need some formal arrangements (Waters, 2007).

According to Lin & Zhang (2008, p. 2), "risk identification aims to discover possible risk Sources and potential risk events. In order not to exclude critical risks, it is important to undertake a systematic and comprehensive identification of all risks including those not directly under the control of the Company. Tchankova (2002, p. 291) suggests that, risk identification should be taken in a broader perspective. The managers should be proactive in risk identification and they should not focus only on what can be insured or mitigated and suggests the following questions should be addressed and "What If Scenarios" considered when undertaking an early assessment: What can happen, Where can it happen, When can it happen, Why can it happen, How can it happen, what is the impact, who is responsible?.

Peck *et al.*, (2003) suggests many tools available to help identify the risks, such as: Process charts and process controls, Interviews, Group meetings, Delphi methods, Brainstorming, PMBOK Guide (PMI, 2004) and Kerzner (2009) Checklists, Cause-and-effect diagrams, Pareto analyses, and Statistics over historical data is one of the most applied methods to identify uncertainty.

However there are Challenges in supply risk identification. It is impossible to identify every conceivable risk to the operations. One reason is that every operation has its unique nature; therefore, there is no one size that fits all guidelines to identify all potential risks. As a result, managers should try to list the most significant (serious) risks and allocate their efforts toward these risks. Also, the decision related to the number of risks to be identified must remain a matter of management judgment, given the unique nature of the supply chain. Rhee *et al.* 2003;

Waters, (2007) explained that Supply Risk identification requires different sets of skills, and even people with intimate knowledge about the company's operations may fail to properly identify risks. Acknowledgment that risks do exist is an important step (Waters, 2007, pp. 101–121). However in relation to the companies responsibilities, Everyone in the company is

responsible for the ensuring that effective risk management is carried out for their own personal safety and to maintain a safe and secure environment.

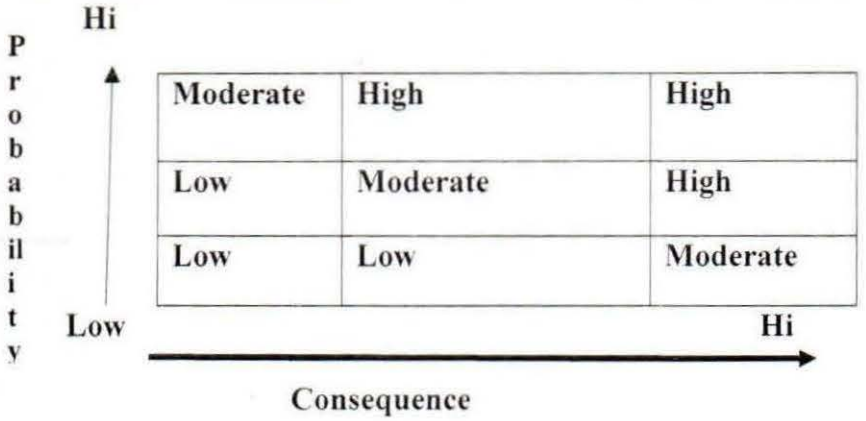
2.3.2 Supply Risk Analysis

Supply Risk analysis activities continue the assessment process by refining the description of identified risk event through isolation of the cause of risk, determination of the full impact of risk, and the determination and choice of alternative courses of action (Horvarth, 2001). According to Jüttner (2005), risk analysis explores the options, opportunities, and alternatives associated with the risk. The aim of risk analysis is to prioritize the identified risks, based on their significance. Having identified the most significant risks, managers should pay sufficient attention in order to control these. And the following sources of information may be referred to when analysing identified risks: Past records; Practice and relevant experience; Published literature; Market research; Experiments and examples; Economic and system models; Specialist and expert ruling; Focus groups; Structured interviews, questionnaires.

According to Waters (2007, p. 127), there are two approaches to risk analysis. The first approach is purely qualitative and the second is quantitative. The most commonly used risk identification and analysis techniques are divided into qualitative and quantitative approaches on the PRAM proposed by (Chapman 2001). The table was created by referencing to various sources such as Kliem and Ludin (1997), Kendrick (2009) and PMBOK Guide (PMI, 2004). The qualitative techniques cover the two stages of the risk management process, namely the risk identification and risk analysis. These approaches are useful to gain better understanding of risks, their effects and their consequences. Features of the identified risks are described qualitatively in terms of: The nature of each risk; Potential consequences/subsequent changes to operations; Likelihood; The scope and areas affected; Responsibility for risk control; Current management of risks and their efficacy;

Risk analysis helps notify decisions about which risks require treatment strategies (Jüttner 2005). The organisation considers risks based on the mixture of the consequence of occurrence and likelihood of occurrence. The following sources of information may be referred to: - Past records; Practice and relevant experience; Published literature; Market research; Experiments and examples; Economic and system models; Specialist and expert ruling; There are many tools and techniques available for analysing risks.

Table 2.1 explains a risk matrix as a tool for risk analysis (Horvarth, 2001).



Moderate	**High**	**High**
Low	**Moderate**	**High**
Low	**Low**	**Moderate**

Risk evaluation comes as a second part of analysis According to Lin & Zhang (2008, p. 2), "risk assessment follows to study the characters of every single risk and estimate it's happening possibility, emerging time, and consequences". Risk evaluation involves comparing the level of risk found during the analysis process with the risk criteria established. In evaluating the analysed risks, the following areas have to be looked at; Consequences. The information contained about the magnitude of a risk provides a guide as to the consequence rating which should be applied as per the categories stated. Likelihood. The assessment of likelihood of the risk occurring should be assessed against the criteria set out. Risk Rating Table. This is the combination of the Likelihood rating and Consequence.

The **table 2.2** is a risk rating table as below:

CONSEQUENCE

LIKELIHOOD	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	high	high	extreme	extreme	extreme
Likely	moderate	high	high	extreme	extreme
Moderate	Low	moderate	high	high	extreme
Unlikely	Low	low	moderate	high	extreme
Rare	low	low	moderate	high	high

Taken from http://www.worksafety.act.gov.au/files/image/Risk%20matrix.jpg (Accessed April, 19, 2010) (Internet - 4).

Cox (2008) discussed that risk matrix mainly focuses on to minimize the maximum loss from misclassified risks. Through Likely-hood and harshness, risks are ranked associated with hazard. This can be illustrated by where they fall on the risk matrix. Higher priority for treatment and mitigation is acquired for that hazards receiving higher risk. "Risk matrices have been widely praised and adopted as simple, effective approaches to risk management. They provide a clear framework for systematic review of individual risks and portfolios of risks; convenient documentation for the rationale of risk rankings and priority setting; relatively simple appearing inputs and outputs, often with attractively coloured grids; opportunities for many stakeholders to participate in customizing category.

2.3.3 Supply Risk Mitigation.

Consequent to their analysis, the risks have to be properly managed (Gerber and von Solms, 2005). Waters, (2007) defines the activity of supply risk management following risk analysis as "designing an appropriate response", in other words determining the most appropriate way of dealing with the risks. Once they have been identified and prioritised, and the amount of attention each risk deserves has been assessed, careful consideration should be given to the

amount of resources required to deal with them. Tummala and Schoenherr (2011) present a list of 'risk triggers', and like many other authors divide the risks according to their 'consequence severity level' and 'risk probability', which finally determines the severity. It is important that where risks have been assessed as extreme or high, that action plans are put into place to manage and mitigate the risks. It is unlikely that risks will ever be entirely eliminated, but by signifying that actions are being applied, the risks may be reduced to a more suitable level. There are a number of options available for treating risks.

Newman et al.'s (1993) study of the use of buffers as an approach to dealing with supply uncertainty. (3)Transfer the Risk. (4)Avoid the Risk. (5)Risk sharing. Risk monitoring is the continuous process of tracking and evaluating the risk management process by metric reporting, enterprise feedback on watch list items, and regular enterprise input on potential developing risks. (The metrics, watch lists, and feedback system are developed and maintained as an assessment activity). (Chia *et al.*, 2009). Waters (2007) suggests the following range of responses to risk: ignore or accept it, reduce the probability, reduce or limit the consequences, transfer, and share or deflect the risk, make contingency plans, adapt to it, oppose a change, or move to another environment. Brennagimler, (2016) suggests of risk avoidance, mitigation, risk retention and risk transfer which the study shall be based on.

2.3.4 Cost

Cost is an important operational efficiency indicator. Supply chain costs include all costs associated with operational efficiency, including the cost of goods and total supply chain management cost (Bolstorff& Rosenbaum, 2003, p. 52). Intaher "Marcus Ambe (2014) identified indicators of costs as Cost measures within the organisation, Total supply chain management cost (across the supply chain). Operational costs are associated with forecasting, administration, transportation, inventory, manufacturing, customer service and supplier relationship management according to (Burt, Petcavage & Pinkerton, 2010, p. 308) was

considered in this thesis. Cost performance is critical, it is tracked more carefully and comprehensively than any other aspect of competitive performance (Fawcett *et al.*, 2007, p. 412). Cost control and cost reduction capabilities must be intrinsic to structure, processes, culture and technology foundation for an organisation to survive and thrive.

2.3.5 Time

Time, is the ability to do things quickly in response to customer demands and thereby offer short lead times between when a customer orders a product or service. (Fawcett *et al.*, 2007) identified that time is indicated by timeliness in terms of reduced order lead times, reduced transit times, reduced order response time, on time response to company needs and reduced procurement process.

2.3.6 Quality

Quality is conformance to requirement or fitness for use. According to Intaher Marcus Ambe (2014). Quality which is indicated by Meeting quality performance standards, Defect detected per unit produced per unit purchased, Quality awards standards, Products per unit sold and Fitness of use was considered in this thesis. Some of the indicators of quality include a formal quality assurance system, continuous improvement, statistical process control, six sigma limits, fail-safe lot traceability and incoming quality assured (Hugo et al., 2004, p. 166). According to Hugo *et al.* (2004, p. 165), managing product quality in operations is the shared responsibility of all participants. Managing quality in the supply chain is the integration of the quality philosophy of the supplier quality system, the internal system of the vantage point firm and the quality the customer expects.

2.4 Supply Risk Identification Strategies.

One of the most popular, Failure Mode and Effects Analysis (FMEA). A proactive tool for risk identification and analysis, FMEA was developed by NASA in 1963 to identify, evaluate

and prevent product and/or process failures (Hu et al., 2009). It was considered a powerful and effective analytical tool for examining possible failure modes in a system (Chen, 2007). Approaches used to identify risks could include according to Henschel (2009), the use of checklists, judgments based on experience and records, flow charts, brainstorming, systems analysis, scenario analysis states (Henschel 2009). Risk workshops and interviews are useful for identifying, filtering and screening risks but it is important that these judgment based techniques be supplemented by more robust and sophisticated methods where possible, including quantitative techniques. The following strategies for identifying supply risks were considered in the study as per (Henschel 2009).

Brainstorming. Brainstorming involves a group of people working together to identify potential risks, causes, failure modes, hazards and criteria for decisions and/or options for treatment. Brainstorming should stimulate and encourage free-flowing conversation amongst a group of knowledgeable people without criticizing or rewarding ideas. Tony (2009) explained it as one of the best and most popular ways to identify both risks and key controls and is the basis for most risk workshops.

Interviews. During a structured interview, interviewees are asked a set of prepared questions to encourage the interviewee to present their own perspective and thus identify risks. Tony (2009) explains that structured interviews are frequently used during consultation with key stakeholders when designing the risk management framework.

Checklists. Henschel (2009) explains that Checklists are pre-populated lists of hazards, risks or control failures that have been developed usually from experience, either as a result of a previous risk assessment or as a result of past failures or incidents. Tony (2009) strongly recommend that risk checklists only be used as a secondary form of risk and control identification because relying entirely on checklists can restrict 'risk thinking'

Structured "What-if" Technique (SWIFT). This is a systematic, team based exercise, where the facilitator utilizes a set of 'prompt' words or phrases to stimulate participants to identify risks (Tony 2009).

Scenario Analysis. Closely related to SWIFT. Here a scenario is a short story or description of a situation of how a future event or events might turn out or look like. Tony (2009) explains that for each scenario, participants reflect and analyse the potential consequences and potential causes when analysing risk. Scenario analysis can be used to identify opportunities for fraud.

Fault Tree Analysis (FTA). This method is similar to a form of creative thinking called reverse brainstorming. This technique is used for identifying and analysing factors that can contribute to a specified undesired event (called the "top event"). Tony (2009) states Causal factors are then identified and organized in a logical manner and represented pictorially in a tree diagram.

Bow Tie Analysis. They say "a picture is worth a thousand words" and this method is a perfect example. Bow tie analysis is a diagrammatic way of describing, linking and analysing the pathways of a risk from causes to effects/consequences. Tony (2009) explains that after a brainstorming session, bow tie analysis is a great way to clean up the ideas generated and consolidate the results into more appropriate risk statements.

Direct Observations. This relatively simple technique is used daily in the workplace by staff who may observe risky situations and hazards regularly when goods are been supplied. Henschel (2009) states that it is also used by emergency services when attending to an emergency and is a form of dynamic risk assessment. It is also heavily used by Workplace Health & Safety professionals during inspections especially when identifying current risks at a point of receipt (Tony 2009).

Incident Analysis. Incidents are risks that have now occurred. Tony (2009) states that recording incidents in a register, conducting root cause analysis and periodically running some trend analysis reports to analyse incidents, can potentially enable new risks to be identified. Surveys, it is similar to structured interviews but involves a larger number of people. It can be used to collect a broad set of ideas, thoughts and opinions across a range of areas covering risks and control effectiveness. One of the best ways for risk managers to use surveys is to assess the supply chain's risk culture (Tony 2009).

2.5 How Supply Risk Analysis Is Undertaken.

The risk analysis is the procedure of an upward insight of the risk. The purpose of risk evaluation is to support decision makings, focused on the risk analysis results, concern with those risks that required management attention and to prioritize treatment implementation.

The PRAM provided by Chapman (2001) is divided into two sub-stages: a qualitative analysis sub-stage that focuses on identification together with risk assessment using the operational efficiency parameters that the research will look in to while the quantitative analysis sub-stage focuses on risk evaluation. In addition, the PMBOK Guide (PMI, 2004) clearly differentiates the qualitative risk analysis from the quantitative risk analysis.

Although the PMBOK Guide Section 11.3 defines that qualitative analysis as risk prioritization, Thompson and Perry (1992) define the qualitative risk analysis as the process of two objectives: the risk identification and the initial risk assessment. This initial phase is essential because it gives considerable benefits in operational efficiency understanding. This is further supported by Heldman's (2005) comments that the purpose of the qualitative risk analysis process is to determine the consequences that the identified risks may have on the project objectives. It involves determining the probability that the risks will occur and risks are ranked according to their effect on the project objectives. In her opinion, the qualitative risk analysis is the most commonly and probably the easiest method for analysing risks.

Chapman and Ward (1997) added that the qualitative analysis and its documentation can also help to capture corporate knowledge in an effective manner, for both current and future performance analysis. Rest repo (1995) avowed that 'majority of decisions are based on the qualitative risk assessment results than the quantitative ones', thus, Patterson (2002) explain that the qualitative assessments are generically easier and less costly to complete than utilizing the quantitative simulation techniques. Nevertheless, as a result of this, qualitative assessments can contain more uncertainties and potentially less accurate information than quantitative analysis methods.

The quantitative risk analysis is defined as the process of evaluating and quantifying risk exposure by assigning numeric values to the risk probabilities and impacts as illustrated by (Heldman 2005). However, some of the quantification techniques are closely related to qualitative techniques because it required the overall score that needs to be obtained through the application of the probability and impact scales.

The PMBOK Guide Section 11.4 defines quantitative risk analysis as the numerical analysis of the risk effect on the project. For Thompson and Perry (1992), the quantitative analysis frequently includes complex analysis methods, regularly with the need of computer programs as a large formal feature of the whole process requiring estimates of uncertainty and probabilistic combination of individual uncertainties. Cooper et al (2005) acknowledged that the quantitative analysis uses numerical ratio scales for likelihoods and consequences, rather than descriptive scales. The value of quantitative analysis is to facilitate in distinguishing between targets, expectations, and commitments, the pursuit of risk efficient ways of carrying out an analysis on the impact of risks in relation to its effect on the performance of a supply chain, according to (Chapman and Ward 1997).

The quantitative techniques which are widely used to perform risk analysis comprise of earned value monetary, simulation and modelling techniques. For example, the commonly known

decision trees analysis, Monte Carlo simulations, CPM and PERT analysis. In addition, Vose (2008) illustrated the benefit and advantages of using Monte Carlo analysis especially integrating with the Primavera software. However, it is surprisingly to know from the study by Besner and Hobbs (2008) that this technique is low in application in the practical field and quantitative techniques of risk assessment are mostly found to be applied in large supply chains.

Figure 2.2 Chia and Cardenas Davalos, 2009 showing the most commonly used qualitative and quantitative techniques and a few underlined were adopted in the study.

Qualitative Techniques	**Quantitative Techniques**
• Documentation Reviews (e.g. lesson learned documentation of past projects) • Brainstorming • Root Cause Identification (e.g. Ishikawa fishbone) • Strengths, weakness, opportunities and threats (SWOT) • Delphi technique • Checklist analysis • Assumptions analysis • Risk categorization (e.g. Risk breakdown structure) • Probability and impact Matrix • Heuristics (Rule of thumb)	• Critical Path Method (CPM) • Program, evaluation and review technique (PERT) analysis • Expected monetary value analysis (e.g. Decision tree analysis) • Sensitivity Analysis • Variance trend analysis • Numerical approximations • Monte Carlo analysis

2.6 Supply Risk Mitigation

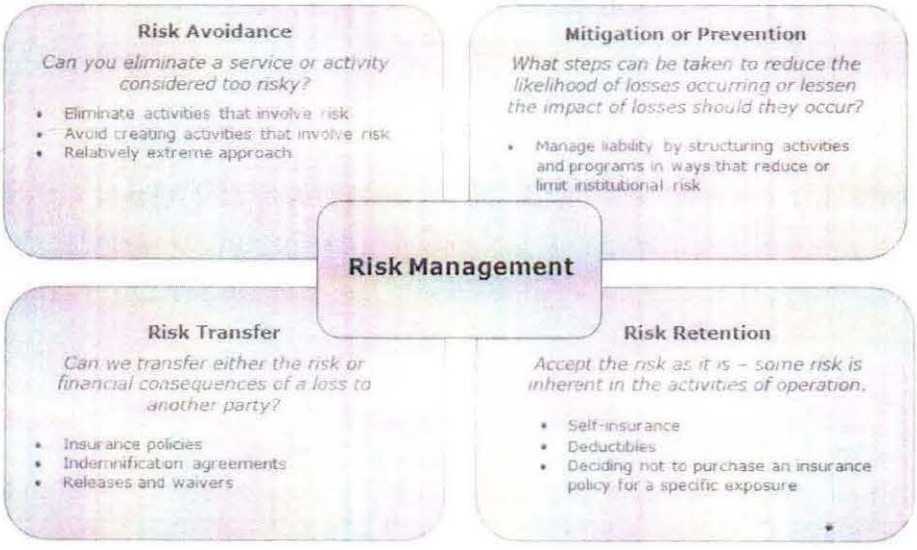
The relationship between supply risk mitigation used and operational efficiency.

Risks can be mitigated either through proactive approach or through reactive approach. Reactive approach refers to the actions initiated after the eventuation of the risks events while Proactive approach refers to actions initiated based on chance of the occurrence of certain risks (Ahmed et al., 2007). Standards Australia (2004) identifies the following options for the treatment of risks; reduce the likelihood, reduce the consequences, Transfer the risk, accept the

risk and avoid the risk. According to Duffie and Singleton (2003), the Methods for doing this are numerous, but all fall into four basic categories: Risk Avoidance, Risk Control, Risk Assumption, and Risk Transfer. Miller (1992) describes number of strategic moves that can potentially mitigate the risks associated with the uncertainties and divides five general strategies for mitigate risk of companies. Avoidance, Control, Cooperation, Imitation and Time But as per Juttner et al (2003), four out of these five can be modified for supply risk mitigation. Berg (2012, p 86-87) presents the most traditional ways of mitigating risks: (1). Reduce the likelihood of the event the likelihood of risky events. (2). Reduce the consequences. (3) Transfer the risk: Newman et al.'s (1993). (4). accept and ignore the risk:

This study considered mitigation measures suggested by Brennagimler, (2016) which constitutes of risk avoidance, mitigation, risk retention and risk transfer.

The following are the strategies of supply risk mitigation. As seen in **figure. 2.3**Below;



These four strategies are, in principle, general, which means that they need to be operationalized and translated into more detailed methods to achieve the desired result of operational efficiency with better quality, low costs and time within the supply chain. To do so, all the possible responses to the risk in question should be listed; then, a reasonable shortlist of responses is considered, and the best response is selected. Generally, the chosen response

should achieve the following, as a minimum: Allow supply chain flows to continue normally with minimum disruptions, allow efficient allocation of resources, and be effective in dealing with risks and Comply with rules, laws and regulations.

Risk retention.

Managers may choose to retain a given risk if it is insignificant. This can be done through self-insurance, deductions and deciding not to purchase an insurance policy. Newman et al.'s (1993) states, managers may also accept significant risks if these risks are not a major element of their planning problems. Trivial and small risks with relatively low probability and insignificant consequences may be ignored, especially if the cost of any remedial action is higher than the risk consequences. As a result, companies knowingly accept the complete consequence of the potential risk event hence making them achieve a better operational efficiency in terms of gaining a low cost should the positive risk be retained or accepted. However, risk retention must be limited to trivial and very small risks (Waters, 2007, pp. 151,152).

Risk Avoidance

According to Jüttner et al. (2003, pp. 200–207), risk avoidance refers to a situation where a company drops a specific product, supplier or geographical market. In other words, the event that triggers the risk is eliminated. Newman et al.'s (1993) in extreme cases, where no other option is feasible, an organization may not be able to handle the severity of the risk, and exits the market states Standards Australia (2004) this however makes an organisation avoid making financial losses in terms of profit loss hence low cost in the chain.

Risk Mitigation

In this strategy, a company may choose to mitigate the risk either by reducing the probability that a risk will occur or by reducing the consequences of the risk. Ideally, managers would reduce both the probability and the consequences of the risk (Waters, 2007, p. 157). According

to Mollah et al. (2013, p. 20), when an organization chooses to reduce risk, it should try to make changes inherent in the design, so that the risks are removed without introducing new risks. This can be achieved by including protective measures or controls. Newman et al.'s (1993) one of the major aspects of mitigations strategies, is creating time to adapt sudden/unexpected events and changes, with least costs and without disturbing the remaining of the system hence achieving better product quality in terms of better sales.

Risk Transfer

Organizations may choose to transfer the risk to someone who is willing and able to handle it. This can be through insurance policy, indemnification agreements. Newman et al.'s (1993) suggests the reason for risk transfer is that the cost of risk transfer outweighs the cost of internal management. However, when a risk is transferred, it is neither reduced nor eliminated. Surprisingly, the transferred risk may increase if it is transferred to an organization that is not able to handle it properly. The most common way of risk transfer is insurance (Waters, 2007, p. 157). This involves other parties bearing or sharing the risk either partially or in full. This may be through insurance arrangements, contracts, partnerships and/or joint ventures. However this may result in to reducing time in terms of having an alternative supplier in case the original supplier fails.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the practical procedures and techniques that were used to carry out this study. It gives details of the research design, population of the study, nature of sample, sampling procedures, data collection procedures and the data analysis techniques that were applied, the methods of data collection and analysis.

3.2 The Research Design

A research design refers to the overall strategy that integrates the different components of the study in a coherent and logical way, thereby ensuring the effective approach to address the research problem (Amin, 2005). A case study design was used since it is an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Yin, 1984). 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 and thus present a deeper analysis of a situation pertaining to the unit of concern (Ary, and Razavieh, 2002). A case study is more appropriate because of being more holistic and specific: it enables suggestion of possible links between phenomena, a very important requirement for this particular study.

The study also employed both quantitative and qualitative methods. Quantitative research methods were used because they enabled a structured statistical measurement of variables (Trochim, 2006). Qualitative methods were be used so as to collect in-depth information on the research variables and this enabled triangulation of the data collected so as to increase its validity (Ary, and Razavieh, 2002). For example; Quantitative methods like tables were used to illustrate statistical findings for simplification and easy interpretations, whereas qualitative

methods helped in providing detailed explanations about situational occurrences since some of the data is expected to be in form of interviews or quotations and observed gestures from respondents of the study, (McBurney, D.H., 2001). The cross-sectional study design will be done to enable the researcher conduct the study within 3 months of a short time-frame (Cohen et al, 2007).

3.3 Area of the Study

The study was carried out at the main plant of Alfil Millers which is located at kabojja along Nsangi sub-county Wakiso district. This was chosen because Alfil Millers is one of the leading manufacturing companies in Uganda and the researcher has reliable access to the plant.

3.4 Population of the Study

The target population of this study included all staff that appeared in the human resources records of Alfil Millers. On the quantitative aspect, the study obtained responses representative of non-management employees who were selected from 7 departments of Alfil Millers. The study used a target population of 55 people comprising of staff of Alfil Millersand a few of suppliers of the company. The study population included respondents from top management, heads of department, non-management employees and support staff and the some suppliers.

3.5 Sample Techniques and Sampling Selection

The Krejcie and Morgan (1970) guide was used to determine both the random sample of non-management employees and the target non-random sample. The selection procedure is summarised in the tables below.

Table 3.1: Sample Determination

Staff Category	**Target Population**	**Target Sample**	**Sampling Technique**
Top Management	5	5	Purposive
Heads of Departments	15	14	Purposive
Non-management employees (*Administrative and support staff*)	30	28	Random
suppliers	5	5	purposive
TOTAL	**N=55**	**S=52**	

**Alfil HR records (2018)*
***Krejcie *and Morgan* (1970)

The table above shows that the target random sample of non-management employees (not working in managerial capacity) was 28 respondents and the non-random sample of key informants was 24 respondents, including 5 top managers and 14 heads of departments and 5 suppliers. The total target sample size was 52 respondents.

3.5.1 Sampling Procedure

Both random and non-random sampling techniques were used to select a representative sample. Random sampling strategies give every individual in the population a chance to be part of the sample. This reduces bias and increases the representativeness of the sample. On the other hand, Amin (2005), say that non-random sampling strategies enable the researcher to select respondents who have the information. Simple random sampling was used to select non-management employees. This method was used in order to give more respondents in the population a chance of being part of the sample. This technique increases representatives that enable collection of a cross section of data. Purposive sampling was used to select management employees, who included officials from top management, heads of departments and some

suppliers. This sampling method was used for this sub sample in order to collect in-depth responses from respondents who are well informed about the research problem.

3.6. Research Instruments

Both Primary and secondary data were used to collect data from the field. Primary data was collected using structured questionnaire and interview guide. Secondary data was gathered from documentary review of reports on the Alfil Millers state of affairs.

3.6.1 Structured Questionnaire.

A structured questionnaire was used to collect data from the main respondents who are Alfil Millers staff from; Accounts and Finance, Procurement, Engineering/technical, security, Stores and Audit department. After being briefed, the respondents were given a structured questionnaire to complete. As advised by Bush and Ortinau (2000), the questionnaire had items derived from the study objectives and Likert scale responses. Section A of the questionnaire measured the demographic variables of respondents. Section B, measures supply risk identification strategies, section C, supply risk analysis, section D, supply risk mitigation, while section E measures operational efficiency.

3.6.2 Interview Guide for Key Informants

In-depth Key informants interviews (KIIs) were used to collect data from key informants. This method was preferred because it enables the collection of reliable, in-depth information. With the use of the interview guide, the researcher asked key informants selected from top management, departments heads and some suppliers. The key informants' responses written down by the researcher (Sekaran, 2003). Using appropriate probing, the researcher sought detailed information that will be relevant to the research questions (Amin, 2005). Interview guides are a far more personal form of research instruments than questionnaires, (Amin 2005).

An interview is a conversation between two or more people where questions are asked by the interviewer to elicit facts or statements from the interviewee. Interview guides were used to collect qualitative data from Top Management, heads of department and some suppliers. Interview guide helped to obtain in-depth and detailed information through probing during face-to-face interaction.

3.7 Validity and Reliability of the Instrument

3.7.1 Validity

With regard to content validity, the researcher ensured that the items that measure the main variables (independent and dependent variables) conformed to the study's conceptual framework. The opinion of the supervisor on the relevance, wording and clarity of the items in the instruments is sought.

The CVI is measured using the formula:

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

$$(\text{CVI}) = \frac{38}{41}$$

$$(\text{CVI}) = 0.93$$

The total number of items rated relevant was 38 and the number of items in the questionnaire was 41. Using the above formula, the content validity index for the questionnaire was calculated as follows;

Therefore the items in the questionnaire were taken to be valid since the content validity index of 0.93 was within the accepted range of $>0.5<1$.

3.7.2 Reliability

Reliability refers to the ability of research instruments to generate similar results if they are administered repeatedly (Kothari, 2004). Instrument reliability measures the consistency of research instruments (Saunders et al, 2003). To ensure instrument reliability, the questionnaire

in this study was pilot tested for consistence, and responses were subjected to the Cronbach's Alpha Reliability test using SPSS software to measure internal consistency of responses (Amin, 2005).

Table 3. 2 reliability statistics of the questionnaire

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.767	.728	41

Source: Primary data.

The results from the reliability tests showed that the all variables tested returned a Cronbach's alpha statistic of 0.767 out of 41 number of items which is more than 0.50, it indicates that the research instruments are reliable to provide consistent results if administered repeatedly, as supported by (Kothari 2004).

3.8 Data Collection Procedure

The research was carried out basing on the laws/regulations governing research. Permission to conduct the research is obtained from the relevant authorities, i.e., an introductory letter from the Dean Graduate School- Kyambogo University. The letter was addressed; To Whom It May Concern in Alfil millers (u) limited. The research explains the purpose of the study and its benefits and then requests for permission to sample respondents. Permission was granted and the researcher met respondents. With the help of heads of departments, the researcher assured respondents of the utmost confidentiality; that only data would only be used to draw conclusions to the study for academic purposes. Then data was collected from respondents. Interviews were conducted for two days while questionnaires will collected after one week.

3.8.1 Data Processing and Analysis

3.8.2 Quantitative Data Analysis

The quantitative data was obtained using questionnaires. The raw data was cleaned, sorted and coded. The data coded was entered into the computer and analysed using SPSS version 23. Descriptive statistics and frequency tables were used to describe the level of occurrence of the study variables, (Onwuegbuzie *et al* 2011). Person's correlationwas used to analyse the relationship of the independent variables on the dependent variable.

3.8.3 Qualitative Data Analysis

Qualitative data was collected using an interview guide and documentary review. Descriptive data was categorized under different themes and sub-themes using critical judgmental approach and quotations to obtain meaningful inferences, (Miles *et al* 1994). Data was further analysed and organized based on pattern, repetitions and commonalities into themes based on study variables.

3.9 Ethical Considerations

The issue of ethics was an important consideration in research that involves human subjects. Research ethics is appropriate behaviour of a researcher relative to the norms of society (Zikmund, 2010). This research considered ethical factors in a number of ways. Participation in the research was voluntary, and research participants were informed of the right to withdraw at any time of their choice. Therefore, before the study was carried out, the researcher sought for the consent of respondents by explaining the purpose of the study to them and assuring them of their confidentiality. In addition to this, and the researcher discussed the intended data collection period with the respondents before the questionnaire administration. Approval to conduct the study was acquired from the research review committee of Kyambogo University which also considered ethical standard of the research.

The respondents were adequately informed before the research commences regarding how they would be treated throughout the research, how risks would be managed and the benefits of participating in the study. The research participants were provided with information sheets prior to the research to enable them to freely decide to participate. All their questions and concerns were however be answered, and requests of voluntarily consent to participate in the study was made. The researcher assured the respondents that anonymity and confidentiality would be maintained and guaranteed. The researcher allowed adequate time to reflect on the information provided, and minimise coercion and undue influence. The respondents were however not be paid for their participation in the study and were not required to write their names or signatures.

3.10 Summary

This chapter described the detailed research methodology, which was a step by step approach in aiding collection of in-depth and detailed information that enhances presentation of the research findings.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

The chapter has dealt with the results of a case study design as pointed out in the methodology. Pearson's correlation was applied to establish the relationships between the variables in the conceptual frame work as established in Chapter Three while the overall relationship between the independent variable and the dependent was assessed. The presentation was guided by research objectives as shown in chapter one.

The rest of the chapter has been organized as follows: The response rate as part one, Results on the background characteristics of respondents as part two, and Descriptive and Inferential results on the substantive objectives as part three.

4.1 Response rate.

Response rate is the ratio of the actual number of respondents, vis-à-vis the targeted. In this study, the researcher targeted to collect data from 52 respondents drawn from the various respondents' categories and got the following:

Table 4.1: Response Rate from the various respondents

Respondent Category	Sample Size (S)	Response Rate	Response percentage (%)
Top management	5	3	60
Head of department	14	12	85.7
Non-management employee*(Administrative and support staff)*	28	28	100
Suppliers	5	3	60
Total	52	46	88.5

Source: **Primary data**

The Table indicates that of the 5 top management targeted 3 participated, of the14 head of department targeted, 12 participated. Meanwhile the Non-management employee *(Administrative and support staff)* fully participated and 5 suppliers targeted 3 participated. However, from the sample size of 52 respondents selected, a total of 46 questionnaires were returned and fully completed, implying response rate of 88.5%.

The researcher considered this response rate to be very good because according to Amin (2005) for studies of this nature a response rate of 70% is considered valid. This therefore means that the findings of this research can be considered valid.

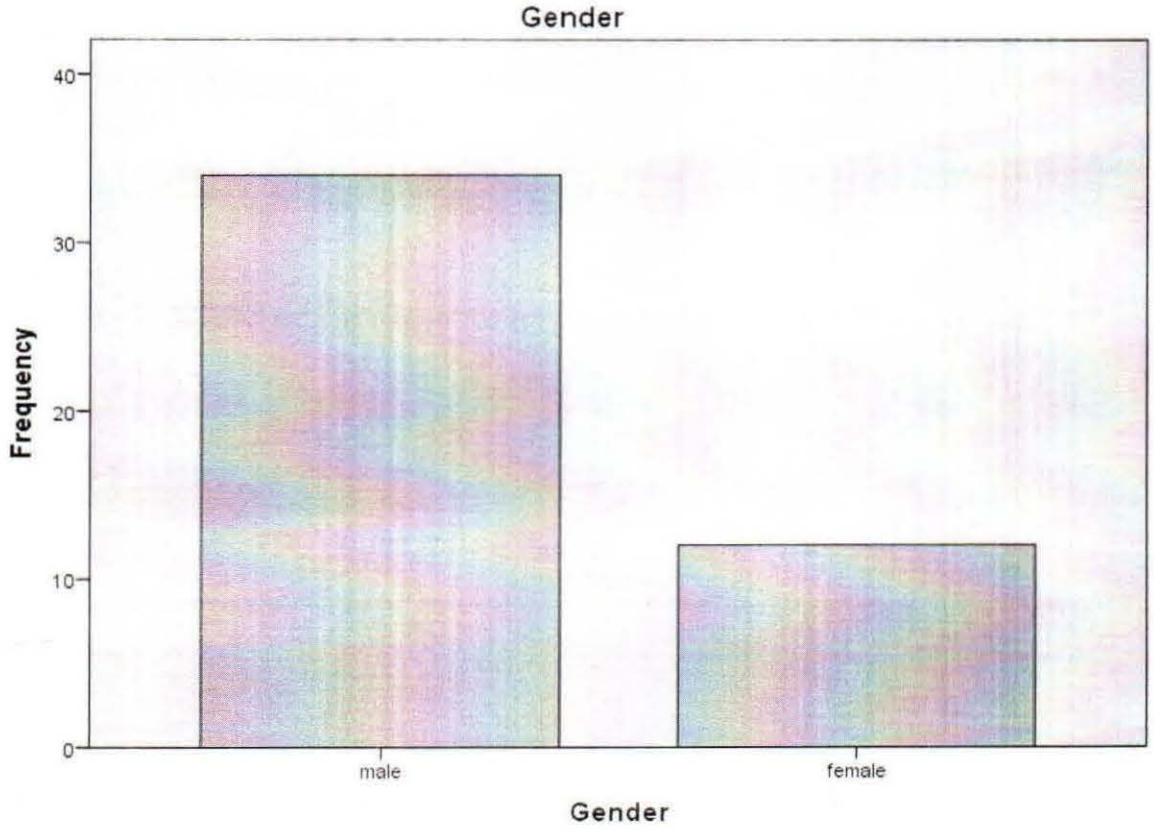
4.2 Background Information.

This section contains the general characteristics of the respondent group in terms of basic characteristics such as Gender, Age Group, Marital Status, Level of Education, Number of years spent in the organization, Category of Respondents. These were all presented using the frequency tables.

4.2.1 Gender

The researcher set to find out the Gender distribution of employees in Alfil Millers. This was intended to balance the response based on gender. The results are presented as shown below.

Figure 4.1: Gender of respondents.



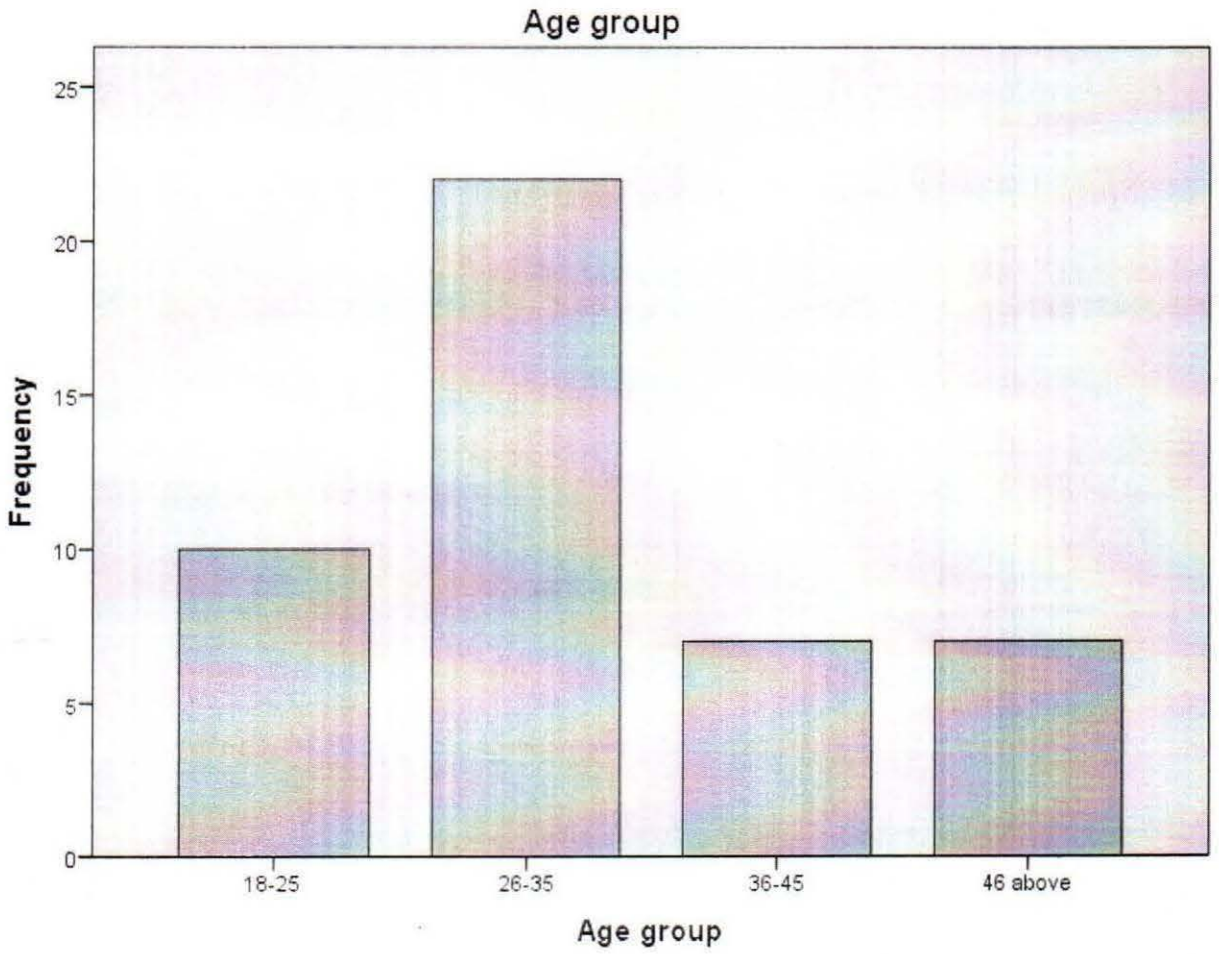
Source: primary data.

In the figure above out of 46 respondents, (34) 73.9% were male and only (12) 26.1% were Female. This clearly indicates that the number of males employed in Alfil Millers is considerable bigger than Females and therefore few Female employees contribute to the supply risk management compared to their male counter parts. These findings confirm what was observed by Clifton, Narasimhan, and Yue (2009) that many employers have instituted affirmative action programs by embracing gender balance in hiring their employees.

4.2.2 Age Group of the Respondents

The researcher inquired into the age group of the respondents. This was intended to establish the age distribution of the respondents and how it relates to supply risk management.

Figure 4.2: Age group of respondents.



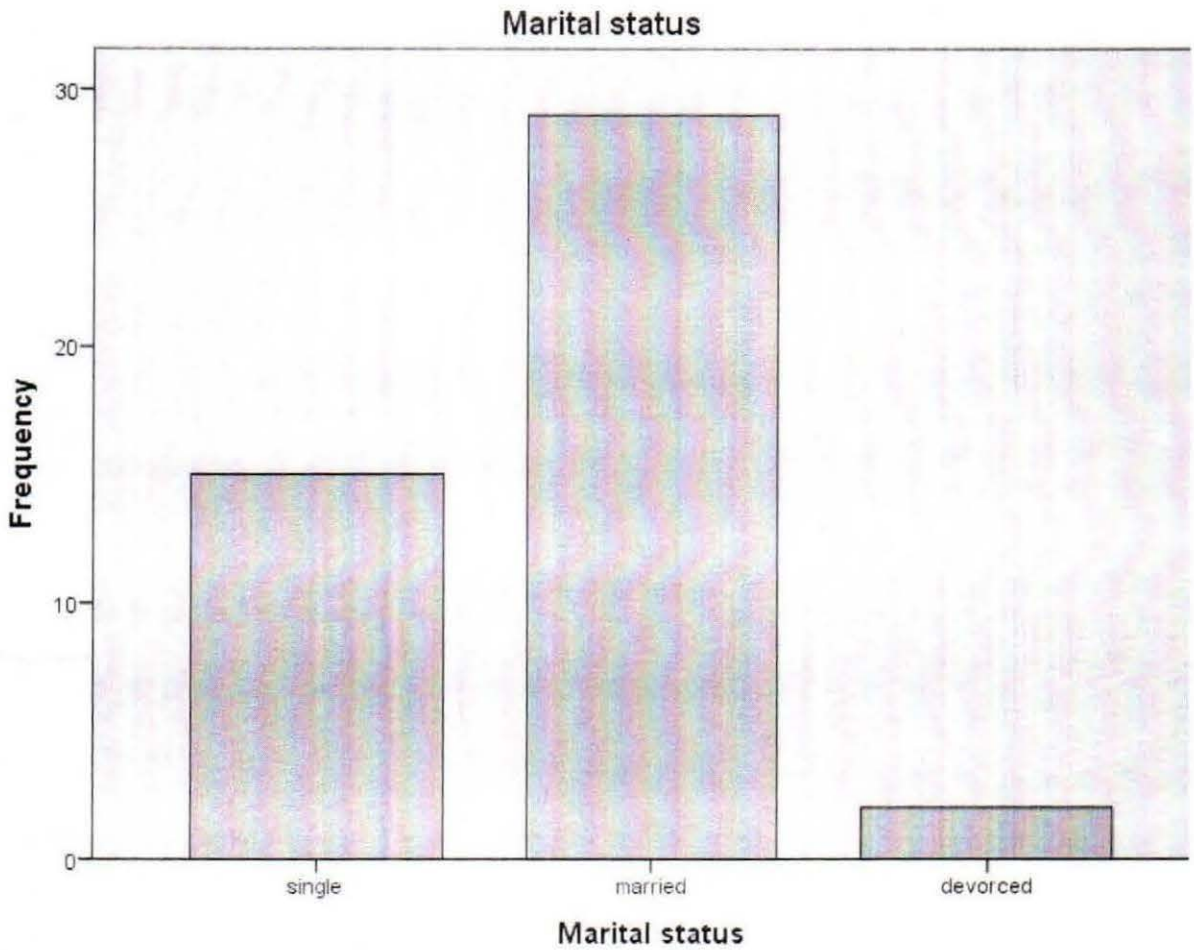
Source: Primary data.

The above figure shows that the respondents, 10 (21.7 %) were within the range of 18-25 years, 22 (47.8 %) were between their ages 26-35 years, 7 (15.2 %) fell between the age ranges of 36-45 years, while 7 (15.2 %) was above 46 years of age. What this implies is that, the majority (47.8 %) and 21.7 % of employees at Alfil Millers are middle aged (26-35) and young workers (18-25 years) with high probability to perform better in operation when motivated.

4.2.3 Marital Status.

The researcher inquired into the marital status of the respondents. This was intended to establish the status of the respondents and how it relates to supply risk management.

Figure 4.3: Marital status of respondents



Source: Primary data

The results in figure above indicate that out of the 46 respondents 15 (32.6 %) are single, 29 (63.0 %) married and 2 (4.3 %) divorced. The findings indicate that Alfil Millers employs mainly married people with a few single and divorced.

4.2.4 Level of Education.

The study queried into education level of the respondents. This was done with a view of guaranteeing that the data collected was from true sources because the response category which was stated in the sample size determination majority were of those who are literate.

Table 4.2: level of education.

level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	certificate	5	10.9	10.9	10.9
	diploma	9	19.6	19.6	30.4
	bachelor's degree	25	54.3	54.3	84.8
	master's degree	7	15.2	15.2	100.0
	Total	46	100.0	100.0	

Source: Primary data

The above table reveals that the most common level of education attained by the respondents was Degree 25(54.3 %), this was followed by Diploma holders 9 (19.6 %), 7 (15.2 %) were Masters holders and the least being certificate holders who were 5 (10.9 %). This implies that the Alfil Millers has highly qualified staff who grasps easily issues of supply risk management and operational efficiency.

4.2.5 Number of years spent in the organization.

The researcher also inquired in to the length of service to establish the distribution of the respondents by experience.

Table 4.3: Number of years spent in the organization.

Years spent in the organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 years	14	30.4	30.4	30.4
	2-4 years	29	63.0	63.0	93.5
	5 years above	3	6.5	6.5	100.0
	Total	46	100.0	100.0	

Source: Primary data

The above Table indicates that: 14 (30.4 %) had served between 1-2 years, majority 29 (63.0 %) had served between 2-4 years, and the minority 3 (6.5 %) had served for 5 years and above. This implies that very few respondents 6.5 % were long time employees, and majority joined service after a few years. It could also mean that the staff has had a substantial less exposure on matters related to supply risk management. This finding is in agreement with the Alfil Millers (u) limited staff list (2018) which indicated majority of the staff had joined in 2015.

4.2.6 Category of Respondent.

The study inquired into category of the respondents. This was done with a view of guaranteeing that the data collected was from true sources because the response category which was stated in the sample size determination majority were categorized in to four groups.

Table 4.4: category of respondents.

category of respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	top management	3	6.5	6.5	6.5
	head of department	12	26.1	26.1	32.6
	non-management employee	28	60.9	60.9	93.5
	supplier	3	6.5	6.5	100.0
	Total	46	100.0	100.0	

Source: Primary data

The above table shows that the most category marked by the respondents was top management 3(6.5 %), head of department 12 (26.1 %), non-management employee 28 (60.9 %) and the suppliers who were 3(6.5 %). This implies that in Alfil Millers non-management employees have accurate information about operational issues.

4.3 Empirical Findings

The Researcher wanted to examine the relationship between supply risk management and operational efficiency at Alfil Millers (U) Limited.

In this part of the chapter the researcher presents the descriptive statistic regarding respondents' opinion on supply risk management and operational efficiency as got from the self-administered questionnaire. Responses on each of the items were rated on a five-point Likert scale with 5 representing strongly agree, 4 representing agree, 3 representing not sure, 2 representing disagree and 1 representing strongly disagree. Findings were then analyzed, interpreted and presented according to the objectives of the study.

4.3.1 Supply risk identification strategies used and operational efficiency.

The first objective of the study was to establish the supply risk identification strategies used at Alfil Millers. The findings obtained from the questionnaire are summarized below: as SDA is strongly disagree, D is disagree, NS is not sure, A is agree, and SA is strongly agree.

Table 4.5: The summary of descriptive statistic on the views of respondents on supply risk identification strategies and operational efficiency.

SUPPLY RISK IDENTIFICATION STRATEGIES	Percentage Responses					Mean	Std Deviation
	SDA	D	NS	A	SA		
Brainstorming is used to identify supply risks when goods are received.	4.3 (2)	4.3 (2)	2.2 (1)	63.0 (29)	26.1 (12)	4.02	.931
Interviews are organised with staff of Alfil Millers to identify possible supply risks.	4.3 (2)	6.5 (3)	15.2 (7)	43.5 (20)	30.4 (14)	3.89	1.059
In Alfil Millers, checklists from past experiences or either from previous supply risks are used to identify existing supply risks	6.5 (3)	6.5 (3)	13.0 (6)	47.8 (22)	26.1 (12)	3.80	1.108
Scenario analysis are done by operations officers to identify supply risks during specific incidences at Alfil Millers.	30.4 (14)	34.8 (16)	19.6 (9)	15.2 (7)		2.20	1.046
At Alfil Millers top events are identified and analysed in a logical manner and presented in a pictorially in a tree diagram by the management	30.4 (14)	37.0 (17)	21.7 (10)	8.7 (4)	2.2 (1)	2.15	1.032
In Alfil Millers diagrams are drawn to describe supply risks, link a supply risks from cause to effect/consequences which help to identify new supply risks.	34.8 (16)	41.3 (19)	17.4 (8)	6.5 (3)		1.96	.893
In Alfil Millers risky situations and hazards are observed regularly in order to identify supply risks.	45.7 (21)	32.6 (15)	6.5 (3)	13.0 (6)	2.2 (1)	1.93	1.124
In Alfil Millers, records of incidents put in a register and root-cause analysis are periodically reviewed to identify new supply risks.	28.3 (13)	37.0 (17)	10.9 (5)	17.4 (8)	6.5 (3)	2.37	1.254

Source: Primary data

From the above table, when respondents were asked whether Brainstorming was used to identify supply risks when goods are received, 2 (4.3 %) strongly disagreed, 2 (4.3 %) disagreed, 1 (2.2 %) was not sure, 29 (63.0 %) agreed and 12 (26.1 %) strongly agreed. This concludes that at Alfil Millers brain storming is used to identify supply risks.

In an interview, some staff were able to consent that *"through brainstorming, they were able to identify possible supply risks."*

Ina question about whether Interviews are organized with staff of Alfil Millers to identify possible supply risks 2 (4.3 %) strongly disagreed, 3 (6.5 %) disagreed, 7 (15.2 %) were not sure, 20 (43.5 %) agreed and 14 (30.4 %) strongly agreed. This concludes that staff of Alfil Millers agreed that interviews organized with staff help to identify possible supply risks.

In an interview, one top manager consent that *"sometimes we are forced to organize interviews with these truck drivers to know what possible risks they would be faced with."*

when asked whether In Alfil Millers, checklists from past experiences or either from previous supply risks are used to identify existing supply risks, 3 (6.5 %) strongly disagreed, 3 (6.5 %) disagreed, 6 (13.0 %) were not sure, 22 (47.8 %) agreed and 12 (26.1 %) strongly agreed. This concludes that staff of Alfil Millers have agreed that checklists from past experiences or either from previous supply risks are used to identify existing supply risks.

Ina question whether scenario analysis are done by operations officers to identify supply risks during specific incidences at Alfil Millers. 14 (30.4 %) strongly disagreed, 16 (34.8 %) disagreed, 9 (19.6 %) were not sure, 7 (15.2 %) agreed. This explains that at Alfil Millers scenario analysis are not done by operations officers to identify supply risks during specific incidences at Alfil Millers.

In a question whether at Alfil Millers top events are identified and analyzed in a logical manner and presented in a pictorially in a tree diagram by the management. In the table above, 14 (30.4 %) strongly disagreed, 17 (37.0 %) disagreed, 10 (21.7 %) were not sure, 4 (8.7 %) agreed and 1 (2.2 %) strongly agreed. This explains that at Alfil Millers, top events are not identified and analyzed in a logical manner and presented in a pictorially in atree diagram by the management.

In a question whether in Alfil Millers diagrams are drawn to describe supply risks, link a supply risks from cause to effect/consequences which help to identify new supply risks. 16 (34.8 %) strongly disagreed, 19 (41.3 %) disagreed, 8 (17.4 %) were not sure, 3 (6.5 %) agreed. This explains that 35 (76.1 %) respondents of Alfil Millers have disagreed that diagrams are drawn to describe supply risks, link a supply risks from cause to effect/consequences which help to identify new supply risks.

In a question whether risky situations and hazards are observed regularly in order to identify supply risks. 21 (45.7 %) strongly disagreed, 15 (32.6 %) disagreed, 3 (6.5 %) were not sure, 6 (13.0 %) agreed and 1 (2.2 %) strongly agreed. This explains that at Alfil Millers risky situations and hazards are not observed regularly in order to identify supply risk.

In a question whether records of incidents put in a register and root cause analysis are periodically reviewed to identify new supply risks. 13 (28.3 %) strongly disagreed, 17 (37.0 %) disagreed, 5 (10.9 %) were not sure, 8 (17.4 %) agreed, 3 (6.5 %) strongly agreed. This explains that respondents of Alfil Millers have disagreed that records of incidents put in a register and root cause analysis are not periodically reviewed to identify new supply risks.

Table 4.6: Pearson's correlation between supply risk identification strategies and operational efficiency.

Correlations

		Supply risk identification strategies	Operational Efficiency
Supply risk identification strategies	Pearson Correlation	1	.484**
	Sig. (2-tailed)		.001
	N	46	46
Operational Efficiency	Pearson Correlation	.484**	1
	Sig. (2-tailed)	.001	
	N	46	46

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

Source: Primary data.

The results from table above indicate that the supply risk identification strategy used had a positive correlation with the operational efficiency (r=484 **P<0.01). This means that the two variables are positively correlated. This supports the premise that there is a significant relationship between supply risk identification strategy and operational efficiency. This implies that when appropriate supply risk strategy is used, operational efficiency will be high

4.3.2 Supply risk Analysis used and operational efficiency at Alfil Millers.

The second objective of the study was to examine how the supply risk analysis is undertaken at Alfil Miller (u) Limited. The findings obtained from the questionnaire are summarized below. As SDA is strongly disagree, D is disagree, NS is not sure, A is agree, and SA is strongly agree.

Table 4.7: The summary of descriptive statistic on the views of respondents on supply risk analysis used and operational efficiency.

SUPPLY RISK ANALYSIS	PERCENTAGE RESPONSES					Mean	Std Deviation
	SDA	D	NS	A	SA		
At Alfil Millers, passed documents are reviewed to identify lessons learnt from past risks in order to analyze current related supply risks.	13.0 (6)	8.7 (4)	13.0 (6)	34.8 (16)	30.4 (14)	3.61	1.358
At Alfil Millers, strengths, weakness, opportunities and threats of identified supply risks are studied in order to find the best mitigation options.		6.5 (3)	6.5 (3)	43.5 (20)	43.5 (20)	4.24	.848
At Alfil Millers, supply risks are breakdowns according to their categories in order to analyze them	41.3 (19)	30.4 (14)	15.2 (7)	13.0 (6)		2.00	1.054
Probabilities and impacts of a supply risk has on the operational efficiency is used to analyze a particular risk at Alfil Millers.	45.7 (21)	28.3 (13)	21.7 (10)	4.3 (2)		1.85	.918
Operations manager of Alfil Millers uses critical path of a supply risk is used to analyze a risk.	39.1 (18)	23.9 (11)	19.6 (9)	13.0 (6)	4.3 (2)	2.20	1.222
At Alfil Millers, PERT analysis is done to analyze an identified supply risk.	32.6 (15)	32.6 (15)	26.1 (12)	4.3 (2)	4.3 (2)	2.15	1.074
At Alfil Millers, decision tree analysis is used to analyze an identified supply risk.	45.7 (21)	28.3 (13)	21.7 (10)	4.3 (2)		1.85	.918

Source: Primary data.

From the table above, when respondents were asked whether At Alfil Millers, passed documents are reviewed to identify lessons learnt from past risks in order to analyse current related supply risks, minority, 6 (13.0 %) strongly disagreed, 4 (8.7 %) disagreed, 6 (13.0 %) were not sure and the greatest majority, 16 (34.8 %) agreed, 14 (30.4 %) strongly agreed. This implies that identified supply risks are analysed by using passed documents which are reviewed to identify lessons learnt from past risks in order to analyse current related supply risks. Although some respondents still disagreed, 10 (21.7 %). This view is in tandem with interview results especially a supplier interviewed stated that *"we always analysed our risks by reviewing passed documents to identify lessons learnt from past risks in order to analyse current related supply risks"*.

On the question of whether at Alfil Millers, strengths, weakness, opportunities and threats of identified supply risks are studied in order to find the best mitigation options, 3 (6.5)% of the respondents disagreed, 3 (6.5 %) were not sure, and majority 20 (43.5%) agreed and 20 (43.5%) strongly agreed. This implies that 87 % of respondents agreed that strengths, weakness, opportunities and threats of identified supply risks are studied in order to find the best mitigation options although a few percentage of 6.5% have not agreed.

On the question of whether At Alfil Millers, supply risks are breakdowns according to their categories in order to analyse them, 19 (41.3 %) of the respondents strongly disagreed, 14 (30.4 %) disagreed, 7 (15.2%) were not sure, and 6 (13.0%) agreed. This implies that supply risks are not breakdowns according to their categories in order to analyse them. This is because, the number of respondents who disagreed and those who were not sure is high (41.3% +30.4%+15.2%) indicating that though supply risks are identified, proper risk analysis is not under taken.

When asked whether Probabilities and impacts of a supply risk on the operational efficiency is used to analyse a particular risk at Alfil Millers, majority 21 (45.7%) strongly disagreed, 13

(28.3%) disagreed and 10 (21.7%) of respondents were not sure and minority 2 (4.3%) agreed. This implies therefore that much as supply risks may be identified, they are not analysed according to Probabilities and impacts of a supply risk on the operational efficiency is used to analyse a particular risk and some respondents are not aware of supply risk analysis means used at Alfil Millers10 (21.7%).

From the table 4.10, when respondents were asked whether Operations manager of Alfil Millers uses critical path of a supply risk to analyse a risk. Majority, 63 %, (39.1% +23.9%) disagreed, 19.6% were not sure and the greatest minority, 13.0% + 4.3% (17.3%) agreed. This implies that operations manager of Alfil Millers does not use critical path of a supply risk to analyse a supply risk and some respondents are not aware of supply risk analysis means used at Alfil Millers.

From the table above, when respondents were asked whether PERT analysis is done to analyse an identified supply risk, majority, 15, (32.6%) strongly disagreed 15 (32.6%) disagreed, 12 (26.1%) were not sure and the minority, 8.6% (4.3%+4.3%) agreed. This implies that PERT analysis is not done to analyse an identified supply risk and some respondents are not aware of supply risk analysis means used at Alfil Millers. Although some respondents still agreed, (8.6%).

From the table above, when respondents were asked whether At Alfil Millers, decision tree analysis is used to analyse an identified supply risk, majority ,74%, (45.7%+28.3%) disagreed, 21.7% were not sure and the minority, 2 (4.3%) agreed. This implies that decision tree analysis are not used to analyse an identified supply risk though 4.3% did agree and some respondents are not aware of supply risk analysis means used at Alfil Millers.

Table 4.8: The relationship between supply risk analysis and operational efficiency.

Correlations

		Supply risk analysis used	Operational Efficiency
Supply risk analysis used	Pearson Correlation	1	-.041
	Sig. (2-tailed)		.788
	N	46	46
Operational Efficiency	Pearson Correlation	-.041	1
	Sig. (2-tailed)	.788	
	N	46	46

Source: Primary data.

The results from table above indicate that supply risk analysis used had a negative correlation with the operational efficiency (r=0.041). This means that the two variables are negatively correlated. This supports the premise that there is no significant relationship between supply risk analysis used and operational efficiency. This implies that when any supply risk analysis is used, it will have no effect on the operational efficiency in terms of costs, quality and time.

4.3.3 To analyse the relationship between the supply risk mitigation methods used and operational efficiency at Alfil Millers (U) Limited.

In this objective three, the study sought to analyse establish the relationship between the supply risk mitigation methods used and operational efficiency at Alfil Millers (U) Limited. The results presented in frequency tables below indicate the level of respondents' agreement or disagreement on statements relating to supply risk mitigation means. Responses on each of the

items were rated on a five-point Likert scale with 5 representing strongly agree, 4 representing agree, 3 representing not sure, 2 representing disagree and 1 representing strongly disagree. As SDA is strongly disagree, D is disagree, NS is not sure, A is agree, and SA is strongly agree.

Table 4.9: The summary of descriptive statistic on the views of respondents on supply risk mitigation used and operational efficiency.

SUPPLY RISK MITIGATION	PERCENTAGE RESPONSES					Mean	Std Deviation
	SDA	D	NS	A	SA		
At Alfil Millers, eliminating activities that involve supply risks helps lower operational costs.		4.3 (2)	8.7 (4)	52.2 (22)	34.8 (16)	4.17	.769
At Alfil Millers creating activities that involve supply risks are avoided which helps in providing better quality products.	32.6 (15)	17.4 (8)	6.5 (3)	26.1 (12)	17.4 (8)	2.78	1.562
Alfil Millers, manages its liabilities by structuring its activities and programs in ways that reduces theft of raw materials by truck drivers on transit	21.7 (10)	19.6 (9)	6.5 (3)	28.3 (13)	23.9 (11)	3.13	1.529
use of an insurance policy helped Alfil to reduce effects of truck breakdowns	4.3 (2)	6.5 (3)	8.7 (4)	52.2 (24)	28.3 (13)	3.93	1.020
trivial and small supply risks with relatively low probability and insignificant consequences are ignored at Alfil since this has low cost effect on operations	30.4 (14)	21.7 (10)	8.7 4)	21.7 10)	17.4 (8)	2.74	1.527

Source: Primary data.

When asked whether at Alfil Millers creating activities that involve supply risks are avoided which helps in providing better quality products, majority 23 (50%) disagreed with 15 (32.6 %) strongly disagreed and 8 (17.4 %) of the respondents disagreed, 3 (6.5%) were not sure, and 20 (43.5%) of the respondents agreed. That implies that at most respondents do not agree

that at Alfil Millers creating activities that involve supply risks are avoided which helps in providing better quality products.

When respondents were also asked whether at Alfil Millers, eliminating activities that involve supply risks helps lower operational costs., 2 (4.3%) disagreed, 4(8.7%) were not sure, and majority 24 (52.2%) agreed, 16 (34.8%) strongly agreed that eliminating activities that involve supply risks helps lower operational costs.

respondents were also asked whether Alfil Millers, manages its liabilities by structuring its activities and programs in ways that reduces theft of raw materials by truck drivers on transit, 10 (21.7%) strongly disagreed, 9 (19.6%) disagreed meanwhile 3 (6.5%) were not sure and the majority 24 (52.2%) agreed that Alfil Millers, manages its liabilities by structuring its activities and programs in ways that reduces theft of raw materials by truck drivers on transit.

When respondents were also asked whether use of an insurance policy helped Alfil to reduce effects of truck breakdowns, the minority 5(10.8%) disagreed, 4 (8.7%) were not sure, and majority 37 (80.5%) agreed that the use of an insurance policy helped Alfil to reduce effects of truck breakdowns.

When respondents were also asked whether Trivial and small supply risks with relatively low probability and insignificant consequences are ignored at Alfil since this has low cost effect on operations, 24 (52.1%) disagreed, 4 (8.7%) were not sure, and 18 (39.1%) agreed which implies that they do disagree that Trivial and small supply risks with relatively low probability and insignificant consequences are ignored at Alfil since this has low cost effect on operations.

Table 4.10: The relationship between supply risk mitigation used and operational efficiency at Alfil Millers.

Pearson's correlation

		supply risk mitigation used and operational efficiency	Operational Efficiency
supply risk mitigation used and operational efficiency	Pearson Correlation	1	.331*
	Sig. (2-tailed)		.025
	N	46	46
Operational Efficiency	Pearson Correlation	.331*	1
	Sig. (2-tailed)	.025	
	N	46	46

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

Source: Primary data

The results from table above indicate that supply risk mitigation used had a positive correlation with the operational efficiency (r=331 *P<0.05). This means that the two variables are positively correlated. This supports the premise that there is a significant relationship between supply risk mitigation used and operational efficiency. This implies that when appropriate supply risk mitigation is undertaken, the operations will have low costs, high quality and on time productions.

4.4 Operational Efficiency

The research set out to generate respondents view on the independent variable (operational efficiency). The summary of the responses are provided in terms of cost, quality ant time as below; as SDA is strongly disagree, D is disagree, NS is not sure, A is agree, and SA is strongly agree.

4.4.1 Cost.

The table 4.11: The summary of descriptive statistic on the views of respondents on costs.

OPERATIONAL EFFICIENCY (COST)	PERCENTAGE RESPONSES					Mean	Std Deviation
	SDA	D	NS	A	SA		
Supply risks management has helped Alfil Milers to forecast production activities which encourages reduced inventory costs.	4.3 (2)	2.2 (1)	8.7 (4)	67.4 (31)	17.4 (8)	3.91	.865
A well-managed supply risk management has helped Alfil Millers to reduce its transportation costs.	2.2 (1)	4.3 (2)	13.0 (6)	56.5 (26)	23.9 (11)	3.96	.868
Supply risk management has enabled Alfil Millers to reduce on its inventory cost	2.2 (1)	4.3 (2)	2.2 (1)	50.0 (23)	41.3 (19)	4.24	.874
At Alfil Millers, supply risk management has ensured manufacturing costs are reduced.	2.2 (1)	4.3 (2)	17.4 (8)	41.3 (19)	34.8 (16)	4.02	.954
Supply risk management has helped Alfil Millers to achieve a great customer service which reduces cost of running out of stock.		4.3 (2)	6.5 (3)	45.7 (21)	43.5 (20)	4.28	.779

Source: Primary data.

From the table above when the respondents were asked if Supply risk management helps Alfil Millers to forecast production which encourages reduced costs, greater part (67.4%+17.4% =84.8%) agreed mean while minority (4.3%+2.2%=6.5%) disagreed and few (8.7%) were not sure. This implies that Supply risk management helps Alfil Millers to forecast production which encourages reduced costs.

when the respondents were asked if a well-managed supply risk management has helped Alfil Millers to reduce its transportation costs, greater part (56.5%+23.9%=80.4%) agreed mean while minority (2.2%+4.3%=6.5%) disagreed and few (13.0%) were not sure. This implies that

a well-managed supply risk management has helped Alfil Millers to reduce its transportation costs.

When the respondents were asked whether supply risk management has enabled Alfil Millers to reduce of inventory costs, majority (50.0%+41.3%=91.3%) agreed mean while few (2.2%+4.3%=6.5%) disagreed and minority (2.2 %) were indifferent. This implies that supply risk management has enabled Alfil Millers to reduce of inventory costs.

When the respondents were asked if at Alfil Millers, supply risk management has ensured manufacturing costs are reduced, greater part (41.3%+34.8%=76.1%) agreed mean while minority (2.2%+4.3%=6.5%) disagreed and few (17.4%) were not sure. This implies that At Alfil Millers, supply risk management has ensured manufacturing costs are reduced.

when the respondents were asked if supply risk management has helped Alfil Millers to achieve a great customer service which reduces the cost of running out of stock, majority (45.7%+43.5%=89.2%) agreed mean while minority (4.3%) disagreed and few (6.5%) were not sure. This implies that supply risk management has helped Alfil Millers to achieve a great customer service which reduces the cost of running out of stock.

4.4.2 Quality

As SDA is strongly disagree, D is disagree, NS is not sure, A is agree, and SA is strongly agree.

Table 4.12: The summary of descriptive statistic on the views of respondents on quality

OPERATIONAL EFFICIENCY (QUALITY)	PERCENTAGE RESPONSES					Mean	Std Deviation
	SDA	D	NS	A	SA		
Supply risk management has helped Alfil Millers to meet quality performance standards of its products.		2.2 (1)	6.5 (3)	50.0 (23)	41.3 (19)	4.30	.695
At Alfil Millers supply risk management has enabled detection of defects per unit produced per unit purchased.		8.7 (4)	17.4 (8)	58.7 (27)	15.2 (7)	3.80	.806
At Alfil Millers supply risk management has resulted into quality awards standards been achieved.		8.7 (4)	6.5 (3)	52.2 (24)	32.6 (15)	4.09	.865
Supply risk management strives hard to ensure continuous improvements of operations at Alfil Millers.			2.2 (1)	47.8 (22)	50.0 (23)	4.48	.547
At Alfil Millers supply risk management has helped to ensure products produced are fit for use for customers.		2.2 (1)	2.2 (1)	28.3 (13)	67.4 (31)	4.61	.649

Source: Primary data

The researcher further inquired whether Supply risk management has helped Alfil Millers to meet quality performance standards of its products. Greater part (50.0%+41.2%=91.3%) agreed mean while marginal (2.2%) disagreed and (6.5%) were undecided. The above findings indicate that Supply risk management has helped Alfil Millers to meet quality performance standards of its products.

The researcher further inquired whether at Alfil Millers, supply risk management has enabled detection of defects per unit produced per unit purchase, greater part (58.7%+15.2%=73.9%)

agreed mean while marginal (8.7%) disagreed and (17.4%) were not sure. The above findings indicate that at Alfil Millers. supply risk management has enabled detection of defects per unit produced per unit purchase.

The researcher further inquired whether at Millers, supply risk management has resulted in to quality awards standards been achieved, greater part (52.2%+32.6%=84.8%) agreed meanwhile (8.7%) disagreed and (6.5%) were not sure. The above findings indicate that at Millers, supply risk management has resulted in to quality awards standards been achieved.

When inquired whether supply risk management strives hard to ensure continuous improvements in operations of Alfil Millers, greater part (47.8%+50.0%=97.8%) agreed mean while none disagreed and (2.2%) were not sure. The above findings indicate that supply risk management strives hard to ensure continuous improvements in operations of Alfil Millers.

The researcher further inquired whether At Alfil Millers, supply risk management has helped to ensure products produced are fit for use for customers, majority (28.3%+67.4%=95.7%) agreed meanwhile (2.2%) disagreed and (2.2%) were not sure. The above findings indicate that at Alfil Millers, supply risk management has helped to ensure products produced are fit for use for customers.

4.4.3 Time

As SDA is strongly disagree, D is disagree, NS is not sure, A is agree, and SA is strongly agree.

Table 4.13: Supply risk management has helped reduce order lead time at Alfil Millers.

OPERATIONAL EFFICIENCY (TIME)	PERCENTAGE RESPONSES					Mean	Std Deviation
	SDA	D	NS	A	SA		
Supply risk management has helped reduce order lead time at Alfil Millers.			2.2 (1)	56.5 (26)	41.3 (19)	4.39	.537
At Alfil Millers supply risk management has helped to reduce the procurement process.	2.2 (1)	4.3 (2)	8.7 (4)	50.0 (23)	34.8 (16)	4.11	.900
At Alfil Millers supply risk management has helped reduce transit time.		8.7 (4)	6.5 (3)	52.2 (24)	32.6 (15)	4.09	.865
Supply risk management ensures that there is always faster order response time at Alfil Millers.		4.3 (3)		58.7 (27)	34.8 (16)	4.22	.758
At Alfil Millers Supply risk management encourages on-time response to company needs.		2.2 (1)	4.3 (2)	45.7 (21)	47.8 (22)	4.39	.682

Source: Primary data

When the participants were asked whether supply risk management has helped reduce order lead time at Alfil Millers., majority (56.5%+41.3%=97.8%) agreed, meanwhile (2.2%) were not sure and non-disagreed. This implies that supply risk management has helped reduce order lead time at Alfil Millers.

When the participants were asked whether at Alfil Millers, supply risk management has helped reduce the procurement process, majority (50.0%+34.8%=84.8%) agreed, meanwhile (2.2%+4.3%=6.5%) disagreed and (8.7%) were not sure. This implies that at Alfil Millers, supply risk management has helped reduce the procurement process.

Meanwhile when the participants were asked whether supply risk management has helped reduce transit time, majority (52.2%+32.6%=84.8%) agreed, meanwhile (8.7%) disagreed and (6.5%) were undecided. This implies that supply risk management has helped reduce transit time.

When the participants were asked whether supply risk management ensures that there is always faster order response time at Alfil Millers., majority (58.7%+34.8%=93.5%) agreed, meanwhile (6.5%) disagreed and non were not sure. This implies that supply risk management ensures that there is always faster order response time at Alfil Millers.

Meanwhile when the respondents were asked if at Alfil Millers, supply risk management encourages on-time response to company needs, majority (45.7%+47.8%=93.5%) agreed, meanwhile (2.2%) disagreed and (4.3%) were not sure. This implies that at Alfil Millers, supply risk management encourages on-time response to company needs

4.4.4 Pearson's correlation analysis for the general objective.

Table 4.14: Pearson's correlation analysis for the relationship between supply risk management and operational efficiency at Alfil Millers (U) Limited.

Correlations

		Supply Risk Management	Operational Efficiency
Supply Risk Management	Pearson Correlation	1	.463**
	Sig. (2-tailed)		.001
	N	46	46
Operational Efficiency	Pearson Correlation	.463**	1
	Sig. (2-tailed)	.001	
	N	46	46

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

Source: Primary data

The results from table above indicate that supply risk management had a positive correlation with the operational efficiency (r=463 **P<0.01). This means that the two variables are positively correlated. This supports the premise that there is a significant relationship between supply risk management and operational efficiency. This implies that when appropriate supply risk management is undertaken, the operational efficiency will be achieved with low costs, high quality and on time productions.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS.

5.0. Introduction

The study examined the relationship between supply risk management and operational efficiency of Alfil Millers (u) Limited. The preceding four chapters provide a basis for which this wind-up is based. This chapter contains four sections as: summary, discussion, conclusions drawn and recommendations made based on the findings in chapter four.

5.1 Summary of major findings.

The summary of the major findings are presented objective by objective to give a snapshot of the study. Below is a summary of major findings presented objective by objective so as to present a snapshot of the information obtained during the study.

5.1.1 Supply risk identification strategies used and operational efficiency.

The study found out that supply risk identification strategies used has a positive correlation with the operational efficiency of 484** at 0.01. The study found out that out of the eight Supply risk identification strategies, the major findings were that in Alfil Millers, brainstorming is used to identify supply risks, Interviews are organized with staff of Alfil Millers to identify possible supply risks, Check lists from past experience or either from previous supply risk are used to identify existing supply risks. The majority of the respondents disagreed on strategies such as Scenario analysis are done by operations officers to identify supply risks during specific incidences at Alfil Millers, at Alfil Millers the "top event" are identified and analyzed in a logical manner and represented pictorially in a tree diagram by the management to identify major risks, in Alfil Millers, diagrams are drawn to describe, link a supply risk from cause to effects/consequences which helps to identify new supply risks, in Alfil Millers, risky situations and hazards are observed regularly in order to identify supply risks, at Alfil Millers, Records of incidents put in a register and root cause analysis are

periodically reviewed to identify new supply risks. Besides most of the respondents were not sure on strategies used.

5.1.2 Supply risk analysis undertaken and operational efficiency.

The study found out that supply risk analysis used has a negative correlation with the operational efficiency of 0.041 at 0.05. The major findings were that supply risk analysis methods used were very few or are limited to a few methods. It was found that in Alfil Millers, mainly qualitative means of analysis which are done through use of passed documents review to identify lessons learnt from past risks in order to analyze current related supply risks, Strengths, weakness, opportunities and threats of identified supply risks are studied in order to find the best mitigation options and Majority of the respondents noted that the Alfil Millers had not used most of the supply risk analysis means where risk categorization for example risk breakdown structure was not used, probability impact matrix, critical path methods, program, evaluation and review technique analysis and decision tree analysis were not used and most respondents do not have knowledge about the subject of analysis.

5.1.3 Supply risk mitigation used and Operational Efficiency.

The study found out that supply risk mitigation used has a positive correlation with the operational efficiency of 0.331 at 0.05. The major findings were that the supply risk mitigations used have a relationship with the operational efficiency. Alfil millers mainly uses eliminating the activities that involve supply risks helps to lower operational costs, Alfil Millers manages its liabilities by structuring its activities and programs in ways that reduce theft of raw materials by truck drivers on transit, use of an insurance company has helped Alfil Millers to reduce the effect of truck break downs. On the Other hand, Alfil Millers was found to have less interest on creating activities that involve supply risks are avoided which helps in providing better quality products and products, trivial and small supply risks with relatively low probability and insignificant consequences which has low cost effect on operations.

5.2 Discussion of the study findings

Discussion is structured according to the objectives of the study the researcher set out earlier. In the course of the discussions, attempt is made to cross reference the implications of the findings with the existing literature.

5.2.1 Supply Risk Identification and operational efficiency

The first objective was to establish the supply risk identification strategies used at Alfil Millers (u) Limited. According to the study, supply risk identification strategies used has a positive correlation with the operational efficiency of 484** at 0.01. The major findings were that in Alfil Millers, limited supply risk identification strategies are used and are not in a broader perspective. Where in Alfil Millers mainly brainstorming is been used with interviews and checklists to identify supply risks. Tony (2009) explains it as one of the best and most popular ways to identify both risks and key controls and is the basis for most risk workshops.

Scenario analysis, the "top event", diagrams are drawn to describe, , risky situations and hazards are observed regularly, Records of incidents put in a register and root cause analysis are periodically reviewed to identify new supply risks were disagreed by majority of the respondents. This was because the company has not been exposed to many other identification strategies. Besides most of the staff were not sure on the supply risk identification strategies. This is in sharp contrast with the study conducted Tchankova (2002, p. 291) suggests that, risk identification should be taken in a broader perspective.

5.2.2 Supply Risk Analysis and operational efficiency.

The study found out that supply risk analysis used has a negative correlation with the operational efficiency of -0.041 at 0.05. The major findings were that supply risk analysis methods used were very few or are limited to a few methods. It was found that in Alfil Millers, mainly qualitative means of analysis which are done through use of passed documents review to identify lessons learnt from past risks in order to analyze current related supply risks,

Strengths, weakness, opportunities and threats of identified supply risks are studied in order to find the best mitigation options. Rest repo (1995) avowed that 'majority of decisions are based on the qualitative risk assessment results than the quantitative ones', thus, Patterson (2002) explain that the qualitative assessments are generically easier and less costly to complete than utilizing the quantitative simulation techniques.

Majority of the respondents noted that the Alfil Millers had not used most of the supply risk analysis means where risk categorization for example risk breakdown structure was not used, probability impact matrix, critical path methods, program, evaluation and review technique analysis and decision tree analysis were not used and most respondents do not have knowledge about the subject of analysis. According to Jüttner (2005), risk analysis explores the options, opportunities, and alternatives associated with the risk. The aim of risk analysis is to prioritize the identified risks, based on their significance.

5.2.3 Supply Risk Mitigation and Operational Efficiency.

The study found out that supply risk mitigation used has a positive correlation with the operational efficiency of 0.331 at 0.05. The major findings were that the supply risk mitigations used have a relationship with the operational efficiency. Alfil Millers uses mainly risk avoidance as they eliminate the activities that involve supply risks which help to lower operational costs. Alfil Millers manages its liabilities by structuring its activities and programs in ways that reduce theft of raw materials by truck drivers on transit. Use of an insurance company has helped Alfil Millers to reduce the effect of truck break downs. This was in line with Newman et al.'s (1993) study of the use of buffers as an approach to dealing with supply uncertainty. (3)Transfer the Risk. (4)Avoid the Risk. (5)Risk sharing. And (Burt, Petcavage& Pinkerton, 2010, p. 308) where Operational costs are associated with forecasting, administration, transportation, inventory, manufacturing, and customer service and supplier relationship management.

On the Other hand, Alfil Millers was found to have less interest on risk retention and bit of risk avoidance by creating activities that involve supply risks are avoided which helps in providing better quality products and products and trivial and small supply risks with relatively low probability and insignificant consequences are ignored at Alfil since this has low cost effect on operations. This finding is in disagreement with the study conducted with brennagimler, (2016) which constitutes of risk avoidance, mitigation, risk retention and risk transfer. Intaher Marcus Ambe (2014) quality which is indicated by Meeting quality performance standards, Defect detected per unit produced per unit purchased, Quality awards standards, Products per unit sold and Fitness of use.

5.3 Conclusions.

The researcher set out to examine the relationship between supply risk management and operational efficiency of Alfil Millers (u) Limited.

Specifically, the objective was to establish the supply risk identification strategies used at Alfil Millers, to examine how the supply risk analysis is undertaken at Alfil Millers and to analyse the relationship between the supply risk mitigation used and operational efficiency at Alfil Millers (u) Limited. In this chapter the researcher therefore presents the findings of the study. In this part, the researcher therefore presents the major conclusions of the study objective by objective.

5.3.1 Supply Risk Identification and operational efficiency.

From correlation analysis presented in chapter 4 and the discussions above, the study concludes that supply risk identification strategies used had a positive relationship with the operational efficiency having a significantly positive correlation. This implies that any supply risk identification strategy used had a positive influence on the operational efficiency.

This study also concludes that supply risk identification is not done well this is because Alfil Millers, has been using a limited supply risk identification strategies which mainly include

brainstorming , interviews and use of checklists which could have resulted in to identification of limited risks hence resulting in to poor operational efficiency with high costs incurred and long lead times.

On the other hand, Scenario Analysis, Fault Tree Analysis referring to the "top event", Bow Tie Analysis, Direct Observations, Incident Analysis where records of incidents put in a register and root cause analysis are periodically reviewed to identify new supply risks were disagreed by majority of the respondents. This was because the company has not been exposed to many other identification strategies. Besides most of the staff were not sure on the supply risk identification strategies.

5.3.2 Supply Risk Analysis and operational efficiency

From correlation analysis presented in chapter 4 and the discussions above, the study concludes that supply risk analysis used has a negative relationship with the operational efficiency having a significantly negative correlation. This implies that any supply risk analysis used had no influence on the operational efficiency.

And supply risk analysis is not undertaken well this is because in Alfil Millers, mainly qualitative means of analysis which are done through use of passed documents review to identify lessons learnt from past risks in order to analyse current related supply risks, Strengths, weakness, opportunities and threats of identified supply risks are studied in order to find the best mitigation options.

On the other hand, Alfil Millers had not used most of the supply risk analysis means where risk categorization, probability impact matrix, critical path methods, program, evaluation and review technique analysis and decision tree analysis were not used and this is because most staff do not have knowledge about the subject of analysis.

5.3.3 Supply Risk Mitigation and Operational Efficiency.

From correlation analysis presented in chapter 4 and the discussions above, the study concludes that supply risk mitigation used has a positive relationship with the operational efficiency having a significantly positive correlation. This implies that proper supply risk mitigation used results into increase in the operational efficiency.

On the basis of the findings obtained its concluded that, eliminating the activities that involve supply risks helps to lower operational costs, Alfil Millers manages its liabilities by structuring its activities and programs in ways that reduce theft of raw materials by truck drivers on transit, use of an insurance company has helped Alfil Millers to reduce the effect of truck break downs, creating activities that involve supply risks are avoided which helps in providing better quality products and products, trivial and small supply risks with relatively low probability and insignificant consequences which has low cost effect on operations.

5.4 Recommendations

Operational efficiency in an organisation has been on spot light this is more glaring in the manufacturing industry. In order to justify more funding, there is need for Alfil Millers to improve its supply risk management. From the analysis of the findings and from the conclusions drawn above, the following are the recommendations for the improvement of operational efficiency.

5.4.1 Supply Risk Identification and operational efficiency

There is need for Alfil Millers to increase on supply risk awareness and sensitization of the staff this will help improve on the knowledge of the supply risk identification. This can be done through various workshops and trainings provided to staff about risk management. They have to undertake a systematic and comprehensive identification of all supply risks including those not directly under the control of the Company. Supply risk identification should be taken in a broader perspective. The managers should be proactive in risk identification and they should

not focus only on what can be insured or mitigated and suggests the following questions should be addressed and "What If Scenarios" considered when undertaking an early assessment: What can happen, Where can it happen, When can it happen, Why can it happen, How can it happen, what is the impact, who is responsible? Furthermore, the existing literature on supply risk management should explained to the staff in order to understand various supply risk identification strategies.

5.4.2 Supply Risk Analysis and operational efficiency

On the basis of the findings obtained, the following are recommended for the improvement of the operational efficiency of Alfil Millers (u) Limited. Alfil millers should use both qualitative and quantitative means of analysis since the value of quantitative analysis is to facilitate in distinguishing between targets, expectations, and commitments, the pursuit of risk efficient ways of carrying out an analysis on the impact of risks in relation to its effect on the operational efficiency. And qualitative analysis determines the consequences that the identified risks may have on the project objectives. It involves determining the probability that the risks will occur and risks are ranked according to their effect on the project objectives

In analysing the identified supply risk, Alfil Millers should consider supply risks based on the mixture of the consequence of occurrence and likelihood of occurrence and the most significant risks should be paid sufficient attention in order to control them. A risk matrix should be used as a tool for risk analysis which helps in risk assessment in study the characters of every single risk and estimate its happening possibility, emerging time, and consequences. The following sources of information may be referred to: - Past records; Practice and relevant experience; Published literature; Market research; Experiments and examples; Economic and system models; Specialist and expert ruling; There are many tools and techniques available for analysing risks which helps notify decisions about which risks require treatment strategies.

5.4.3 Supply Risk Mitigation and Operational Efficiency.

On the basis of the findings obtained, the following are recommended for increased operational efficiency at Alfil Millers (U) Limited.

Alfil millers should adopt best practices in supply risk management in order to achieve a better operational efficiency.

This can be done through using better supply risk mitigation means such as risk retention, risk avoidance and developing an appropriate supply risk management frame work comprising of all the three stages of supply risk identification, supply risk analysis and supply risk mitigation which results in to reduced inventory costs, transportation costs, improvements in operations, products produced are fit for use and reduced order lead time.

5.5 Limitations of the study

Initially the researcher thought the research instruments would be easily administered and responses easily generated. However this turned out to be a problem because certain parts of the top management were too busy hence affecting easy accessibility to some of the respondents. This led to many issued questionnaires not being returned. The researcher had now to issue other instruments convenient to him.

5.6 Areas for further research

1. There is need to carry out further research on other risks such as customer related risks.

2. Further research can also be done on the influence of supply risk management on Service delivery.

3. Further research can still be done on supply risk management and supply chain performance

APPENDIX 1

QUESTIONNAIRE

LETTER OF REQUEST

Dear Respondent,

I am **Hawa Tuku,** a student of Kyambogo University conducting research on "supply risk management and Operational Efficiency" at Alfil Millers (U) Limited in particular. I am kindly requesting you to take some time and give your honest opinion and response to the questionnaire below in order to support my research and build a body of knowledge in the area of study. Any relevant information provided will be treated with utmost confidentiality as it is only going to be used for academic purposes. Your cooperation is highly appreciated.

SECTION A: BACKGROUND INFORMATION

1. Gender

Male ☐ Female ☐

2. Age group

18-25 ☐ 26-35 ☐ 36-45 ☐ Over 46 ☐

3. Marital status

Single ☐ Married ☐ Divorced ☐

4. Level of Education

Certificate ☐

Diploma ☐

Bachelor's Degree ☐

Master's Degree ☐

Others (specify).....

5. Number of years spent in the organisation

1-2 years ☐

2-4 years ☐

5 years+ ☐

6. Category of respondents

Top management ☐

Head of Department ☐

Non-Management Employee ☐

Supplier ☐

For sections B, C ,D and E, The statements that follow relate to your opinion about the relationship between supply risk management and Operational Efficiency at Alfil Millers (U) Limited .For each of the statements below ,please indicate the extent of your agreement and disagreement by ticking in the space provided below;

KEY:

Strongly Disagree-SD	Disagree-D	Not sure-NS	Agree-A	Strongly Agree-SA

SECTION B: Supply Risks Identification Strategies and operational efficiency

7. What strategies does your company used to identify the supply risks?
(Use the scale of: 1- Strongly Disagree, 2- Disagree, 3- Not sure, 4- Agree, 5- Strongly agree)

S/N	Response	SD	D	NS	A	SA
B1	In Alfil Millers, brainstorming is used to identify supply risks.					
B2	Interviews are organized with staff of Alfil Millers to identify possible supply risks.					
B3	In Alfil Millers, Check lists from past experience or either from previous supply risk are used to identify existing supply risks.					
B4	Scenario analysis are done by operations officers to identify supply risks during specific incidences at Alfil Millers.					
B5	At Alfil Millers the "top event" are identified and analyzed in a logical manner and represented pictorially in a tree diagram by the management to identify major risks.					
B6	In Alfil Millers, diagrams are drawn to describe, link a supply risk from cause to effects/consequences which helps to identify new supply risks.					
B7	In Alfil Millers, risky situations and hazards are observed regularly in order to identify supply risks.					
B8	At Alfil Millers, Records of incidents put in a register and a root cause analysis are periodically reviewed to identify new supply risks.					

SECTION C: Supply Risk Analysis and operational efficiency

8. How does your organization analyze the identified supply risks?

(Use the scale of: 1- Strongly Disagree, 2- Disagree, 3- Not sure, 4- Agree, 5- Strongly agree).

S/N	Response	SD	D	NS	A	SA
C1	At Alfil Millers, Passed documents are reviewed to identify lesson learned from past risks in order to analyse current related supply risks.					
C2	At Alfil Millers, Strengths, weakness, opportunities and threats of an identified supply risks are studied in order to find best mitigation options.					
C3	At Alfil Millers, the supply risks are broken down according to their categories in order to analyse them.					
C4	Probability and impact a supply risk has on the Operational Efficiency is used to analyse the particular risk at Alfil Millers.					
C5	Operations manager of Alfil Millers uses Critical Path of a supply risk is used to analyse the risk.					
C6	At Alfil, Program, evaluation and review technique (PERT) analysis is done to analyse an identified supply risk					
C7	At Alfil Millers, Decision tree analysis is done to analyse an identified supply risk.					

SECTION D: Supply Risk Mitigation Used and Operational Efficiency.

9. What supply risk mitigation means has your company used in order to improve their Operational Efficiency?

(Use the scale of: 1- Strongly Disagree, 2- Disagree, 3- Not sure, 4- Agree, 5- Strongly agree).

S/N	Response	SD	D	NS	A	SA
D1	At Alfil Millers, eliminating the activities that involve supply risks helps to lower operational costs.					
D2	At Alfil Millers, creating activities that involve supply risks are avoided which helps in providing better quality products and products.					
D3	Alfil Millers manages its liabilities by structuring its activities and programs in ways that reduce theft of raw materials by truck drivers on transit.					
D4	Use of an insurance company has helped Alfil Millers to reduce the effect of truck break downs.					
D5	Trivial and small supply risks with relatively low probability and insignificant consequences are ignored at Alfil since this has low cost effect on operations.					

SECTION E: Operational Efficiency in Alfil Millers

This section focuses on the extent to which Operational Efficiency in terms of Quality, Cost and time have been attained at Alfil Millers as a result of supply risk management.

10. What is the relationship between the supply risk management and Operational Efficiency at Alfil millers (u) limited? (Use the scale of: 1- Strongly Disagree, 2- Disagree, 3- Not sure, 4- Agree, 5- Strongly agree).

THANK YOU

S/N	Cost	SD	D	NS	A	SA
E1	Supply risks management has helped Alfil Milers to forecast production activities which encourages reduced inventory costs.					
E2	A well-managed supply risk management has helped Alfil Millers to reduce its transportation costs.					
E3	Supply risk management has enabled Alfil Millers to reduce on its inventory cost					
E4	At Alfil Millers, supply risk management has ensured manufacturing costs are reduced.					
E5	Supply risk management has helped Alfil Millers to achieve a great customer service which reduces cost of running out of stock.					

S/N	Quality	SD	D	NS	A	SA
E6	Supply risk management has helped Alfil Millers to meet quality performance standards of its products.					
E7	At Alfil Millers supply risk management has enabled detection of defects per unit produced per unit purchased.					
E8	At Alfil Millers supply risk management has resulted into quality awards standards been achieved.					
E9	Supply risk management strives hard to ensure continuous improvements of operations at Alfil Millers.					
E10	At Alfil Millers supply risk management has helped to ensure products produced are fit for use for customers.					

S/N	Time	SD	D	NS	A	SA
E11	Supply risk management has helped reduce order lead time at Alfil Millers.					
E12	At Alfil Millers supply risk management has helped to reduce the procurement process.					
E13	At Alfil Millers supply risk management has helped reduce transit time.					
E14	Supply risk management ensures that there is always faster order response time at Alfil Millers.					
E15	At Alfil Millers Supply risk management encourages on-time response to company needs.					

APPENDIX 2

INTERVIEW GUIDE FOR RESPONDENTS

Dear Sir/Madam,

I am **Hawa Tuku,** a student of Kyambogo University conducting research on "supply risk management and Operational Efficiency" at Alfil Millers (U) Limited in particular. I am kindly requesting you to take some time and give your honest opinion and response to the questionnaire below in order to support my research and build a body of knowledge in the area of study. Any relevant information provided will be treated with utmost confidentiality as it is only going to be used for academic purposes. Therefore, you are required to answer the following questions:

1. Introduction Questions

i) For how long have you worked in this organization?
ii) Which department are you from?
iii) Are you familiar with supply risk management at Alfil Millers?
iv) Are u aware of supply risk management activities in your organization?
v) Is supply risk management one of the fundamental activities in your company?

2. Supply Risks Identification Strategies

i) What strategies do you use to identify supply risks at Alfil Millers?
ii) How do you select these strategies for supply risk identification?
iii) What relationship does the supply risk strategies have with Operational Efficiency?

3. Supply Risks Analysis Undertaken.

i) How does your company analyze the identified supply risks?
ii) In your own opinion what relationship does supply risk analysis have on Operational Efficiency?

4. The supply risk mitigation used and Operational Efficiency.

i) What mitigation means does your company use to handle supply risks?
ii) How do you understand Operational Efficiency?
iii) What relationship does supply risk management have with Operational Efficiency at your organization?

5. Challenges of supply risk management

i. What challenges are embedded in the supply risk management activities in your company?
ii. What suggestions can you put forward to overcome the above challenges in your organization?

END

Thank you for your cooperation

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Date: 05th October, 2018

Ms Hawa Tuku

Reg No. 16/U/13558/GMSC/PE

Kyambogo University

Dear Sir/Madam,

RE: ACCEPTANCE LETTER TO CONDUCT YOUR ACADEMIC RESEARCH

Reference is made to your introduction letter dated 4th October 2018, requesting to carry out your academic research under the topic **"Supply Risk Management and Operational Efficiency at ALFIL Millers".**

Your request has been granted with a condition of using the gathered information for purely academic purposes and should remain confidential.

We wish you all the best in your academic journey.

Yours sincerely,

ALFIL MILLERS (U) LIMITED
15 OCT 2018
Plot 85, Block 338 Kabojja A Village,
Nsangi S/County, Wakiso
P. O. Box 3865, Kampala

BYAMUGISHA AMON

Human Resources /Operations Manager

Cc: MD

Cc: GM

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Office of the Dean, Graduate School

4th October 2018

To Whom It May Concern

RE: LETTER OF INTRODUCTION

Dear Sir/Madam,

This is to introduce **Ms Hawa Tuku** Registration Number **16/U/13558/GMSC/PE** who is a student of Kyambogo University pursuing a Masters Degree.

She intends to carry out research on **"Supply Risk Management and Operational Efficiency at Alfil Millers"** as partial fulfillment of the requirements for the award of the Master of Science in Supply Chain Management.

We therefore kindly request you to grant her permission to carry out this study in your institution.

Any assistance accorded to her will be highly appreciated.

Yours sincerely,

KYAMBOGO UNIVERSITY
04 OCT 2018
OFFICE OF THE
DEAN GRADUATE SCHOOL

Assoc. Prof. Muhamud N. Wambede
DEAN, GRADUATE SCHOOL