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Received: 15th December, 2013   Accepted: 10th January, 2014 Published Online: 15th January, 2014

URL: http://www.adrri.org/journal

Abstract
The purpose of this study was to assess risk in supply chain management processes, the Case of Coca Cola Bottling Company Ghana Limited (TCCBCGL), Accra. It was to examine the supply chain structure of Coca Cola Bottling Company, to identify the various risk associated with the current supply chain and the mechanisms to manage risk in the selected organization. The study obtained information from forty respondents from staff of Coca Cola and some selected suppliers in the Greater Accra Region through the use of questionnaires and interviews. The results indicated that, the supply chain department plays an important role in contributing to profitability in the company and it was also realized that the supply chain department is characterized by lots of risks which includes uncertainty of sales trends, breakdown of machines and so forth. Among the recommendations made were that Coca Cola Limited as a company should have a risk management department with effective risk plan to handle all forms of risk that may arise during its operations, more so information or communication flow should be enhanced to improve upon it operations as information or communication is important in the line of production.

Keywords: Risk, Risk Management, Supply Chain, Beverage Industry, Processes
INTRODUCTION

(Hopkins, 2010: p3) asserts that organizations face a wide range of risks that can impact the outcome of their operations. The events that can impact an organization may inhibit what it is seeking to achieve (hazard risks), enhance that aim (opportunity risks), or create uncertainty about the outcomes (control risks). Supply chain risk includes factors such as sudden scarcity of raw materials, rising costs due to increased demand from competitors, and risk related to human factors, such as worker strikes which slow down operational processes. Sudden crisis may interrupt distribution and delivery of materials due to energy shortages brought on by high demand. Effective approach to risk and risk management will lead to improvement in operations that will reduce events that can cause disruption. Consideration may be given to all forms of risk, strategy will be fully analyze and better strategic decision will be reached. Managing the risk of these events occurring in the supply chain has become known as supply chain risk management (SCRM) and may be defined as “the management of supply chain risks through coordination or collaboration among the supply chain partners so as to ensure profitability and continuity” (Tang, 2006). Therefore, it is important for the single company to monitor the entire supply chain from natural resources till the time it reaches the final customer. If a disruption occurs, the effect can be devastating, with lost market shares as a consequence, it can reduce the company’s revenue, inflate the costs, send the company over budget and threaten production and distribution.

The beverage industry in Ghana is faced with numerous challenges. For instance, it is believed that climate change will worsen the number of problems currently facing the brewing industry. Water is an essential ingredient in brewing. Brewing companies will have to start finding strategic solutions on how increased demand for water in the future because this will affect their supply chain. Again breweries are faced with changes in consumer consumption pattern. Drinkers today are looking for more in their beverage choices. The preferences of consumers are changing, and, as a result, the beverage industry needs to change accordingly. There are many means available to control risks within supply chains in a brewery.

Every business, no matter what type and in what industry it operates, is vulnerable to risk. Those risks can come from within the business; from outside due to a rise or fall of their customer demand, or from the supply chain itself, which provides the raw materials and energy that underlie in the production of goods or services. The focus of this research is on risk associated with supply chain processes at TCCBCGL beginning from the supplier and ends at the level of production.

The research was set to achieve the following objectives:

1. To examine the supply chain structure of TCCBCGL.
2. To identify the various risk associated with the current supply chain of TCCBCGL.
3. To assess the mechanisms adopted by TCCBCGL in managing risk in its supply chain.

The research sought to address the following research questions:

1. How is TCCBCGL supply chain structured?
2. What are the risks associated with the current structure of TCCBCGGL supply chain?
3. How does TCCBCGGL manage risk in its supply chain?

This study is of utmost importance due to the fact that TCCBCGGL will be able to identify, manage, reduce and or avoid risk in its supply chain. By managing risk in its supply chain, TCCBCGGL will indirectly remove threats that could have proved costly in the near future and this will cut down cost in the long run. Findings from the study will lead to acquisition and increase in knowledge of all stakeholders in the brewery industry. It can be used as a guide by other beverage industries in the management of their supply chain risks.

LITERATURE REVIEW

Supply Chain Risk
Supply chain management is responsible for the movement of materials all the way from initial suppliers through to final customers. Supply chain risk appears as any event that might affect this movement and disrupt the planned flow of materials. Donald Waters (2007) stated that there are risks in the supply chain when unexpected events might disrupt the flow of materials on their journey from initial suppliers through to final customers. An interruption to the supply chain can have widespread effects, Hendricks and Singhal (2003).

Risk and Uncertainty
Zsidisin (2003) addressing the supply chain context more specifically defines risk as ‘the potential occurrence of an incident or failure to seize opportunities with inbound supply in which its outcomes result in a financial loss for the purchasing firm. MacCrimmon and Wehrung, (1986) maintained that risk comprise three common elements:
- Likelihood of occurrence of a particular event or outcome,
- Consequences of the particular event or outcome occurring,
- Exposure or Causal pathway leading to the event. Understanding the nature, sources and causes of factors that generate the events or circumstances which might influence the type and scale of consequences (both positive and negative), and the likelihood of their occurrence are fundamental requirements for effective risk management.

Risk and Outcomes
Outcome relates to an infinite range of performance measures and not just those associated with financial performance. Ritchie and Brindley, (2008) as risk management is increasingly applied in more diverse fields (e. g. Supply Chain Management). Secondly, the adverse consequences need not necessarily be negative or indeed significantly lower than the positive outcomes sought, providing that the degree of the positive outcomes is sufficiently attractive to accept the possible consequences of failure. In other words, if we are indifferent to the range of outcomes that may materialize then there is no reason to contemplate actions which seek to influence the nature or likelihood of these outcomes. Thirdly, risk is somewhat meaningless if divorced from those involved in taking the decision. Consideration of the nature of the impact on the individuals or the group involved represents an important dimension of risk appraisal. Personal perceptions of the likelihood and the potential impact will vary between individual group members and hence groups.

Supply Chain Risk Management Process
Supply chain risk management (SCRM) is defined as “the process of risk mitigation achieved through collaboration, co-ordination and application of risk management tools among the partners, to ensure continuity coupled with long term profitability of
the supply chain” (Faisal et al., 2007). Hallikas et al., (2004) stated that Supply risk management process consists of four components: (1) Risk identification; (2) Risk assessment; (3) Risk management decisions and implementation; and (4) Risk monitoring. According to Institute of Risk Management (IRM 2002), risk management protects and adds value to the organization and its stakeholders through supporting the organisations objectives. Chapman and Ward (1997) believe that there are eight phases in the risk management process. Each phase is associated with broadly defined deliverables (may be targets not achieved initially), and each deliverable is discussed in terms of its purpose and the tasks required to produce it. Chapman and Ward (2007) further stated that these eight processes define, focus, identify, structure, ownership, estimate, evaluate and plan need to be addressed before a project is sanctioned. The (IRM, 2002) provides the following risk management model as shown in figure 1

Risk Management Model

![Risk Management Model](http://example.com/risk_management_model.png)

**Figure 1 Risk Management Model**  
*Source: (Institute of Risk Management, 2002)*

The (Institute of Risk Management, 2002) defined Risk Assessment as cited by the ISO/IEC Guide 73 as the overall process of risk analysis and risk evaluation. Risk identification sets out to identify an organization’s exposure to uncertainty. This requires an intimate knowledge of the organisation, the market in which it operates, the legal, social, political and cultural environment in which it exists, as well as the development of a sound understanding of its strategic and operational objectives, including factors critical to its success and the threats and opportunities related to the achievement of these objectives. When the risk analysis process has been completed, it is necessary to compare the estimated risks against risk criteria which the organisation has established. The risk criteria may include associated costs and benefits, legal requirements, socioeconomic and environmental factors, concerns of stakeholders, etc. Risk evaluation therefore, is used to make decisions about the significance of risks to the organisation and whether each specific risk should be accepted or treated. Risk treatment is the process of selecting and implementing measures to modify the risk. Risk treatment includes as its major element, risk control/mitigation, but extends further to, for example, risk avoidance, risk transfer, risk financing, etc. Effective risk management requires a reporting and review structure to ensure that risks are effectively identified and assessed and that
appropriate controls and responses are in place. Regular audits of policy and standards compliance should be carried out and standards performance reviewed to identify opportunities for improvement.

Supply Chain Risk Mitigation Strategies
A risk management system is basically an action plan that specifies which risks can be addressed, and how to address them (Shi, 2004). (Kleindorfer and Saad, 2005) for supply chain risk management comprise three main tasks that have to be practiced continuously and concurrently as the foundation of disruption risk management. The three tasks are: Specifying sources of risk and vulnerabilities, Assessment, and Mitigation (SAM). Implementing three SAM risk management and supply chain strategies that aim to improve a firm’s capability to better manage supply and/or demand under normal circumstances and to enhance a firm’s capability to sustain its operations under risk (Tang, 2006). With so many related risks and risk-mitigation approaches to consider, managers must do two things when they begin to construct a supply-chain risk management strategy. First, they must create a shared, organization-wide understanding of supply-chain risk. Then they must determine how to adapt general risk-mitigation approaches to the circumstances of their particular company.

METHODOLOGY
The target population of the research includes: supply chain and procurement staff, production and customers of TCCBCGL. The target population for study was 40. The researchers employed the cross-sectional survey method. The research benefited from two main data sources; primary and secondary. Primary data was collected through structured questionnaire and personal interviews. The secondary data on the other hand was used to help bring a general understanding to the research. Qualitative data was gathered and used as part of the research. The research approach was descriptive and explanatory study. Also, data was solicited from text books and relevant academy journals which relate to the research topic mainly for the literature review. The researchers used frequencies to present the descriptive data and cross tabulation to analyse the relationship between the variables i.e. purchasing processes and supply chain risk and the other variable indicated in the research objectives. Statistical Package for Social Science (SPSS) and excel software were then used to generate frequency tables, percentage distribution of responses, bar charts, pie charts.

RESULTS AND DISCUSSION
Demographic Data
On demographic data, questions were asked on gender and job title held by respondents. From the population size of 40, the number of respondents from Coca Cola Limited was 30 while the suppliers had 10 respondents. In dealing with gender, respondents from Coca Cola had 9 females with 21 males. The suppliers had 5 females and 5 males. Table 1 throws more light on the gender distribution of respondents.
Table 1: Gender Distribution of Respondents

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>26</td>
<td>65</td>
</tr>
<tr>
<td>Females</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Researchers field work, 2013

Table 1 shows that 26 of respondents representing 65% of participants were males while 14 respondents representing 35% were females. This clearly shows that there were more male participants than females in this survey and it may be as a result of the sampling technique used or Coca Cola having more male employees than females. The study sought to find out the job titles of respondents. Responses are illustrated in Figure 2.

Figure 2 below shows that three respondent’s occupied managerial positions thus Procurement Manager, Production Manager and Supply Chain Manager, 6 respondents were procurement supervisors, 11 were from the stores department, 10 from the supply office while the other 10 were suppliers of Coca Cola Ghana Limited.

Source: Researchers field work, 2013

Research Question One: The Supply Chain Structure of TCCBCGL, Accra.

In an interview with the Supply Chain Manager of Coca Cola, he stated that the supply chain structure of Coca Cola is mainly as follows, first is requisition where a department makes known the items needed, second is sourcing on the part of company, third is approval, fourth a firm order for delivery of items, fifth is delivery and inspection, followed by storage and later production.

The Production Manager in an interview also shared similar ideas, the respondents stated that the production department undertakes a weekly production plan based on sales forecast from the commercial department, materials are then sourced, item are then transported to the company and left under the care of warehouse or stores and later production based on demand.
Research Question Two: The Various Risks Associated with the Supply Chain of TCCBCGL, Accra

Uncertainty of Sales Trend
This was to find out from respondents if uncertainty of sales trend was a major risk in the current supply chain for Coca Cola Company, responses are as follows; Out of 30 respondents, 7 strongly agreed with the statement that uncertainty of sales trend is a major risk factor for the company, 17 agreed with the statement while 4 respondents were not sure if uncertainty of sales trend is a risk for the company. Two respondents however disagreed with the statement that uncertainty of sales trend was a major risk factor for Coca Cola Company Limited. Figure 2 illustrates the responses of respondents.

Figure 3: Uncertainty of Sales Trend

Source: Researchers field work, 2013
Figure 3 shows that the majority of respondents agreed with the statement that uncertainty of sales trend is a major risk for Coca Cola Company Limited.

Breakdown of Machines
Figure 4: Breakdown of Machines

Source: Researchers field work, 2013
The researchers wanted to find out from respondents if breakdown of machines and equipment is a risk factor in the current supply chain of Coca Cola. 23 respondents constituting 77% of the population agreed with the statement that breakdown of machines and equipment is a risk in the current supply chain of the company, two respondents who formed 6% of the population were not sure breakdown of machines and equipment was a major risk in the supply chain management of the company. 5 respondents who made up 17% of the population however disagreed with the statement that breakdown of machines is a risk in supply chain process of Coca Cola Company Limited. Figure 4 above illustrates further.

**Poor Communication/Information**

Respondents were asked if poor communication or information is a risk in the current supply chain of Coca Cola Company Limited. Out of 30 respondents, 11 respondents who formed 37% of the population strongly agreed with the statement that poor communication and information is a risk in the current supply chain of Coca Cola Company, the majority of 60% of the population constituting 18 respondents agreed with the statement while one respondent who formed 3% of the population disagreed with the statement that poor communication or information is a risk in the current supply chain of the company. Figure 5 explains further.

**Figure 5: Poor Communication/Information**

![Figure 5: Poor Communication/Information](image)

Source: Researchers field work, 2013

**Shortage of Raw Materials**

The researchers wanted to find out if shortage of raw materials constituted a risk in the current supply chain of TCCBCGL. Answers from respondents are discussed below;

Out of 30 respondents, five strongly agreed that with the statement that shortage of raw materials constituted a risk in the supply chain of TCCBCGL, the majority of 19 respondents agreed with the statement that shortage of raw materials is a risk to the company, six respondents however were not sure shortage of raw materials is a risk to TCCBCGL as indicated below.
Table 2: Shortage of Raw Materials

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Agree</td>
<td>19</td>
<td>63</td>
</tr>
<tr>
<td>Not Sure</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Researchers field work, 2013

Damage of Products during Transport
This was to find out from respondents (suppliers) their activities that constituted risk to the supply chain of Coca Cola Company Limited. Responses are as follows; Out of 10 respondents, four strongly agreed with the statement that products that are damaged during delivery is a risk to Coca Cola Company Limited while the majority of six respondents agreed with the statement that damaged products during delivery or transportation is a great risk in the supply chain of Coca Cola Limited.

Research Question Three: The Effect or Impact of Risk on the Operations of TCCBCGL
This section was to find out from respondents the effects of risk on the operations of TCCBCGL.

Delay in the Delivery of Products
This was to find out from respondents if delay in the delivery of products to customers in terms of production is an effect of risk on the operations of TCCBCGL. Out of 30 respondents, four strongly agreed with the statement that risk delay the delivery of products to customers, the majority of 20 respondents constituting 67% of the population agreed with the statement while some respondents disagreed with the statement that some risks lead to the delay in the delivery of products to customers and clients. Figure 4 illustrates further.

Figure 5: Delay in the Delivery of Products

Source: Researchers field work, 2013

Figure 4 shows that majority of respondents agreed with the statement that risks if not properly handled leads to the delay in the delivery of products.
Loss in Confidence by Customers and Clients
This was to find out from respondents if risk affects the confidence level of customers and clients if shortages and delays are experienced in the supply chain processes. Seven respondents out of 30 who formed 23% of the population agreed with the statement that delays and shortages and other risks leads to loss in confidence in customers or clients, six respondents forming 20% of the population were not sure if risks lead to loss of confidence on the part of customers and clients. The majority of 16 respondents constituting 54% of the sampled size however disagreed with the statement that shortages and other risks do not lead to loss of confidence on the part of customers and clients. One respondent on the other hand strongly disagreed with the statement. Figure 5 illustrates the above discussions.

Figure 6: Loss in Confidence by Customers and Clients

Source: Researchers field work, 2013

Image of Coca Cola
The researcher wanted to find out from respondents if the image of coca cola is affected by risks on the operations of TCCBCGL. Out of 30 respondents, 17 agreed with the statement that the image of Coca Cola is affected when risks such as delays and shortages of materials along with other risks affects its operations, four respondents were not sure that risks affects the image of Coca Cola. Six respondents however disagreed with the statement that the image of Coca Cola is affected by risks in its operations. Three respondents strongly disagreed with the statement that the image of Coca Cola is affected in its operations by risks. Figure 6 illustrates further.
Figure 6 shows that the majority of respondents agreed that the image of Coca Cola is affected by risks in its operations.

**Research Question Four: The Mechanisms adopted by TCCBCGL in Managing Risk in Supply Chain**

This was to find out from respondents the mechanisms in place to manage risk faced by Coca Cola in its supply chain. Responses are discussed as follows;

**Good Maintenance**

This was to find out from respondents, if Coca Cola Company embarked on good maintenance culture to ensure that machines and equipment are in good shape to avoid delays in production. Responses are as follows;

Out of 30 respondents, nine strongly agreed with the statement that Coca Cola Company embarked on good maintenance culture to ensure the smooth running of operations at company, the majority of 21 respondents agreed that Coca Cola ensure good maintenance of machines and equipment to forestall any risk that might arrive due to poor maintenance of machines and equipment. Table 4 explains further.

| Source: Researchers field work, 2013 |

Table 4 shows that all respondents agreed to the statement that Coca Cola embarked on good maintenance culture in order to ensure any risks that might arrive from the machines or equipment’s used.

<table>
<thead>
<tr>
<th>Table 3: Good Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
</tr>
<tr>
<td>Strongly Agree</td>
</tr>
<tr>
<td>Agree</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

| Source: Researchers field work, 2013 |
Effective Demand Forecast

The researcher wanted to find out from respondents, if Coca Cola as a company used effective demand forecast in avoiding risks. Responses are as follows;
Out of 30 respondents, 13 strongly agreed with the statement that the company relied or used effective demand forecast in planning production of goods and services. The majority of 17 respondents constituting 57% of the population agreed with the statement. Figure 7 illustrates further.

Figure 8: Effective Demand Forecast

Source: Researchers field work, 2013

Figure 7 show that all respondents agreed that Coca Cola rely on effective demand forecast in order to avoid risk of over production and under-production.

Competitive Bidding Processes

This was to find out from respondents thus staff and suppliers if Coca Cola Company invites suppliers to bid for all contracts to ensure good completion and effective delivery of materials.
22 respondents of Coca Cola agreed with the statement, while eight strongly agreed with the statement.
On suppliers, six agreed with the statement that Coca Cola invites suppliers to bid for all contracts, three strongly agreed with the statement while one respondent was not sure whether Coca Cola Company invites suppliers to bid in order to ensure fair competition. Figure 8 explains further.
Figure 8: Competitive Bidding Processes

Source: Researchers field work, 2013

Figure 8 shows that that the majority of respondents agreed with the statement that Coca Cola Company invites suppliers to ensure competitiveness in the bidding process.

THE LIKELIHOOD AND IMPACT OF BEVERAGE SUPPLY CHAIN RISK
(Paul Hopkins, 2010: p3) argues that Organizations face wide range of risks that can impact the outcome of their operations. The desired overall aim may be stated as a mission or a set of corporate objectives. The events that can impact an organization may inhibit what it is seeking to achieve (hazard risks), enhance that aim (opportunity risks), or create uncertainty about the outcomes (control risks). The risk identified can be categories using the table below (risk rating matrix) to show the likelihood of occurrence, impact and the consequences in the event that it occurs.
### Risk Rating Matrix (Identified Risk)

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>LIKELIHOOD</th>
<th>Rare</th>
<th>Unlikely</th>
<th>Possible</th>
<th>Likely</th>
<th>Almost Certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic</td>
<td>Rare</td>
<td></td>
<td></td>
<td></td>
<td>3,5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Unlikely</td>
<td></td>
<td></td>
<td></td>
<td>2,10</td>
<td>6,7,11</td>
</tr>
<tr>
<td></td>
<td>Possible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Almost Certain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>Rare</td>
<td></td>
<td></td>
<td></td>
<td>4,8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unlikely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Possible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Almost Certain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td>Rare</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Unlikely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Possible</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Almost Certain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insignificant</td>
<td>Rare</td>
<td></td>
<td></td>
<td></td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unlikely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Possible</td>
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<tr>
<td></td>
<td>Likely</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Almost Certain</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

These identified risks with numbers 2, 4, 8, 10, and 12 have the likelihood of occurrence and a moderate impact on the operations of the company. These are the second priority risk of the company that requires some level of attention and management. Identified risk numbers 1, 3, 5, 6, 7, and 11 will a significant impact on the operations of the company and their likelihood of occurrence is almost certain. These risks are the highest priority and should receive the majority of risk management resources during response planning and risk monitoring or control. On the other hand, identified risk 9 and 13 above has a low impact and the probability of its occurrence is also very low. The above interpretation is based on the responses on...
Interview and questionnaire that were administered to the selected employees and suppliers of the Coca Cola Bottling Company Ghana Limited, Accra. The following table also depicts the individual risk, likelihood of occurrence, impacts and their significance.

**Individual Risk Rating**

<table>
<thead>
<tr>
<th>BEVERAGE SUPPLY CHAIN RISK</th>
<th>IMPACT (Rating)</th>
<th>LIKELIHOOD (Rating)</th>
<th>SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty of sales trend</td>
<td>Catastrophic</td>
<td>Almost Certain</td>
<td>Severe</td>
</tr>
<tr>
<td>Breakdown of Machines</td>
<td>Catastrophic</td>
<td>Likely</td>
<td>Severe</td>
</tr>
<tr>
<td>Shortage of Raw Materials</td>
<td>Catastrophic</td>
<td>Likely</td>
<td>Severe</td>
</tr>
<tr>
<td>Delays of Products during Transportation</td>
<td>Major</td>
<td>Likely</td>
<td>Major</td>
</tr>
<tr>
<td>Delays in delivery of Products</td>
<td>Major</td>
<td>Likely</td>
<td>Major</td>
</tr>
<tr>
<td>Ineffective Demand Forecast</td>
<td>Major</td>
<td>Likely</td>
<td>Major</td>
</tr>
<tr>
<td>Internal Control Processes of Impact</td>
<td>Major</td>
<td>Possible</td>
<td>Major</td>
</tr>
<tr>
<td>Bad Maintenance</td>
<td>Major</td>
<td>Possible</td>
<td>Major</td>
</tr>
<tr>
<td>Poor Communication and Information</td>
<td>Moderate</td>
<td>Possible</td>
<td>Moderate</td>
</tr>
<tr>
<td>Loss of Confidence by Customers and Client</td>
<td>Moderate</td>
<td>Possible</td>
<td>Moderate</td>
</tr>
<tr>
<td>No Competitive bidding processes</td>
<td>Minor</td>
<td>Possible</td>
<td>Minor</td>
</tr>
<tr>
<td>Image of Coca Cola Company, Accra</td>
<td>Minor</td>
<td>Possible</td>
<td>Minor</td>
</tr>
<tr>
<td>Lack of Incentive for Performance</td>
<td>Insignificant</td>
<td>Unlikely</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>

**Source:** Researchers field work, 2013

**The Supply Chain Structure of TCCBCGL, Accra.**

The analysis revealed that the supply chain process of The Coca Cola Bottling Company Ghana Limited (TCCBCGL), Accra starts from the origin of need by the production department to the point where the procurement processes complete when the items are available for use (Production / User department). Respondents explained that the process starts with requisition, second is sourcing on the part of company, third is approval, fourth a firm order for delivery of items, fifth is delivery and inspection, followed by storage and later production. The production manager also in an interview also shared the above view, the respondents stated that the production department undertakes a weekly production plan based on sales forecast from the commercial department, materials are then sourced, item are then transported to the
company and left under the care of warehouse or stores and later production based on demand. In short, TCCBCGL, Accra practices supply chain management and that they ensure that the required items are supplied at the right time in order to meet the needs and expectations of its wide customer base. However, with greater uncertainty in the market any disruption in the upstream will have a domino effect on the company operations.

Risk Associated with the Current Supply Chain of TCCBCGL, Accra
In spite of the role of the stores and supply department in contributing to effective operations of TCCBCGL, Accra, one major risk is uncertainty of sales trend, this is a risk faced by most organizations and companies as the rate of demand and supply can rise and fall at any time. Another risk faced by TCCBCGL, Accra, is breakdown of machines, the failure of machines though can be managed cannot be completely ruled out as human error or mechanical fault and other pressures can lead to the breakdown of machines. Breakdown of machines impact a lot on production companies as most customers could be left unsatisfied or lead to shortages products on the market and subsequent losses on profitability. Another source of risk that could be encountered is poor communication or information. From the analysis it was realized that the sales forecast of TCCBCGL, Accra comes from the commercial department and therefore any information given to production should be accurate and timely manner to avoid any repercussions on the company resulting from incorrect information especially on production data. Other risks include shortage of raw materials and the damage of goods during transportation. Despite the fact that most contract with suppliers for the delivery of materials occurs at the premises of TCCBCGL, Accra, any disruption during transporting goods means that delivery date and time will change that and this consequences on the chain.

The Effect of Risk on the Operations of TCCBCGL, Accra
It was realized from the study that risks have great effects on the operations of companies including the Coca Cola Company Ghana limited, (TCCBCGL), and Accra. It was revealed that risks often leads to the delays in the delivery of goods both on the part of suppliers of Coca Cola Limited and on the part of TCCBCGL, Accra to its customers and clients. Another effect of risk with its attending shortages and delays lead to loss of confidence on the part of customers and on the part of organizations. Some risks can easily be managed while others cannot be foreseen or managed. Persistent delays and shortages and other risks that can easily be solved when not handled properly impact on consumers and the organizations as a whole. Another effect of risk on the operations of TCCBCGL, Accra is that it affects the image of the company, it was realized that the majority of respondents agreed that this is particularly true in the case of Coca Cola limited as most customers and clients complain.

Mechanisms adopted by TCCBCGL, Accra in Managing Risk in Supply Chain
The analysis revealed that Coca Cola has several measures in place to manage risks in its operations. The first was good maintenance culture, it was realized that good maintenance help put machines and equipment in order to forestall any breakdowns during operation or production. Another way to manage risk is through effective
demand forecast, demand forecast is very important as that goes a long way to determine the production levels and operations of companies with the right forecast companies can improve and make huge profits but the wrong forecast affects the company involved. Another way to ensure or manage risk is through competitive bidding of contracts to select the best organization in the supply of goods or items.

CONCLUSION AND RECOMMENDATION

The increasing pace of change, customer demands and market globalization all put risk management high on the agenda for forward-thinking companies. It is necessary to have a comprehensive risk management strategy to survive in today’s market place. In addition, the Cadbury Committee’s Report on Corporate Governance (1992) states that having a process in place to identify major business risks as one of the key procedures of an effective control system is paramount.

The study was about assessing risk in supply chain management processes, the case of Coca Cola Bottling Company Ghana Limited, Accra. The issues studied included examining the supply chain structure of TCCBCGL, Accra identifying the various risk associated with the current supply chain of TCCBCGL, Accra ascertaining the effect of risks on the operations of TCCBCGL, Accra and the mechanisms to manage risks. Supply chain risk management is looking for events or issues which could cause the supply chain any disruptions and coming up with a plan to minimize and mitigate any loss due to these disruptions. Risk management is attempting to identify and then manage threats that could severely impact or bring down the organization. Generally, this involves reviewing operations of the organization, identifying potential threats to the organization and the likelihood of their occurrence, and then taking appropriate actions to address the most likely threats.

The study revealed that TCCBCGL, Accra as a company is faced with lots of risks and this include uncertainty of sales trend, breakdown of machines, poor communication or information, damage of materials during transportation and shortage of materials. It is therefore important that these are managed to help in the smooth running of the organization as it impacts on its image, on customers and causes delay in the delivery of products.

From the study, it is realized that risks have great impact on the performance of organization, and supply chain process is of great importance to organizations as well. It is therefore important to ensure that risks are properly managed to ensure the growth of the businesses and organizations.

These recommendations are therefore made. Coca Cola as a number one beverage company in the country should have a risk management plan in place to handle all forms of risk that may arise in its productions or operations. Risk management plan will identify, analyse, plan and monitor and control risk at all times. This would help the company analyse various risks and find possible solutions to them. Information and communication flow should be improved to ensure that the proper demand forecast are properly communicated, this would help ensure the right production of goods or products are done to avoid under-production, over production of products and the bull whip effect. Production plan is based on the commercial department information and therefore there is the need to support the department in order to
provide accurate and reliable information. There is the need to integrate the suppliers into their processes and early supplier involving in the design and manufacture of products with suppliers. Where appropriate depending on the nature of items supplying and quantity involved, TCCBCGL, Accra should develop some of the suppliers to take advantage of supply development benefits such as prompt delivery and quality of items etc. The company must also come out with other motivational and incentive measures to reward effective supplier and staff on effective service delivery and outstanding performances. Even though risk some risks are unavoidable, Coca Cola Company should help minimize and maximize associated cost by analysing possible risk solutions rather than using the same procedure for solving all challenges.

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