School of Sustainable Development of Society and Technology

Master Thesis in Business Administration

Green Supply Chain Management

Factors Critical to the Implementation of GSCM Practice in Heinekens International

Presented by

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Acknowledgements

Above all, we thank God. We would like to thank our supervisor Konstantin Lampou for his guidance, support and patience throughout this research. We would also like to send much gratitude to Heineken International Amsterdam especially Herman Van den Bergh and Krista Valk.
Abstract

Date; March 2012

Authors: Shellybrown Ekane
Vanessa Nshimirimana

Title: Factors Critical to the Implementation of GSCM Practice in Heinekens International

Introduction: The initiative of Green Supply Chain Management (GSCM) practice originated due to increased environmental awareness regarding pollution accompanying industrial development, being addressed together with the supply chain management. Heinekens international has been one of the key brewery industries in the world that have adopted this initiative aimed at brewing for a better future.

Purpose: The main objective of this research is to describe and analyze the set of factors identified to be critical to GSCM, adopted by Heineken International to fine-tune the implementation process of their own GSCM practice.

Research Question: Which factors were taken into consideration by Heineken International when adopting GSCM practice and what are the environmental and economic benefits associated with this practice?

Research design: This is a qualitative approach of research which does not include any statistical tools and methods. This research is based on both primary and secondary data collection method, and information has been sourced from semi-structured interview with officials at Heinekens, articles, journals, conference papers and annual reports from both the university database and the company.

Conclusion: The research identified the core factors critical to GSCM practice adopted by Heinekens international. The correlation between the implementation of the Green Supply Chain Management and the insertion of factors is evident as the factors function for Heineken as indicator of GSCM benchmark. The economic and environmental benefits of GSCM practice were not yet matured enough and measured by Heineken international.

Keywords: Green Supply Chain Management (GSCM), Factors critical to Green Supply Chain Management.
## Table of Contents

1.0 General Introduction/Background .............................................................................................................. 7

1.1 Problem statement ........................................................................................................................................ 8

1.2 Research Question ...................................................................................................................................... 9

1.3 Objective/Purpose of the Research ........................................................................................................... 9

1.4 Research Outline ...................................................................................................................................... 10

2.0 Research Design/Method ................................................................................................................................. 11

2.1 Choice of Company .................................................................................................................................. 11

2.2 Choice of respondents ............................................................................................................................... 11

2.3 Research process ...................................................................................................................................... 11

2.4 Data collection and source .......................................................................................................................... 12

2.4.1 Primary source .................................................................................................................................... 12

2.4.2 Secondary source ................................................................................................................................. 14

2.5 Access of information ................................................................................................................................. 15

2.6 Data analysis ............................................................................................................................................. 15

2.7 Validity and Reliability of Research ...................................................................................................... 15

2.8 Method Critique ...................................................................................................................................... 16

3.0 Frame of Reference ..................................................................................................................................... 17

3.1 Green Supply Chain Management (GSCM) .............................................................................................. 17

3.1.1 What is GSCM? .................................................................................................................................. 17

3.2 The Concept of GSCM ............................................................................................................................... 18

3.3 Motives for GSCM ................................................................................................................................... 19

3.4 GSCM Practice ......................................................................................................................................... 21

3.4.1 Green Procurement ............................................................................................................................ 22

3.4.2 Green Manufacturing .......................................................................................................................... 22

3.4.3 Green Distribution .............................................................................................................................. 23

3.4.4 Reverse logistic .................................................................................................................................. 23
3.5 Critical factors of GSCM Implementation ................................................................. 23
   3.5.1 Suppliers meeting ................................................................................................. 23
   3.5.2 Environmental audit for suppliers ....................................................................... 23
   3.5.3 Compliance statement ......................................................................................... 24
   3.5.4 Top Management support .................................................................................. 24
   3.5.5 Environmental education and training ................................................................. 24
   3.5.6 Cross-function integration .................................................................................. 25
   3.5.7 Environmental policy for GSCM ......................................................................... 25
   3.5.8 Collaborative R&D with suppliers ...................................................................... 25
   3.5.9 Green purchasing ............................................................................................... 25
   3.5.10 Green design .................................................................................................... 25
3.6 Environmental and Economic benefit of GSCM practice .............................................. 26
3.7 Conceptualization and Operationalization .................................................................... 27
4.0 Empirical Findings ....................................................................................................... 29
   4.1 Heinekens International .......................................................................................... 29
      4.1.1 Company Background ...................................................................................... 29
      4.1.2 GSCM concept in Heinekens .......................................................................... 29
      4.1.3 Critical factors of GSCM practice in Heinekens ................................................. 30
      4.1.4 GSCM Practice in Heinekens .......................................................................... 30
5.0 Analysis .......................................................................................................................... 33
   5.1 Critical success factors of GSCM Practice ............................................................... 33
   5.2 Environmental and Economic Benefits of GSCM practice ...................................... 35
6.0 conclusions ...................................................................................................................... 36
7.0 Suggestions for further research .................................................................................. 37
8.0 Reference .......................................................................................................................... 38
Appendix .................................................................................................................................. 41
List of acronyms

GSCM Green Supply Chain Management

BaBF Brewing a Better Future

List of figures and illustrated materials

Figure 3: Environmental impact at each stage of the supply chain

Figure 4: Motivations for undertaking GSCM

Figure 5: GSCM Practice

Figure 6: Activities of GSCM
1.0 General Introduction/Background

The issue of environmental awareness nowadays has been at the forefront of most organizations as they strive to make significant contributions towards the reduction of toxic substances (waste) to the environment. The aspect of global warming also stem from the fact that so much waste through pollution and other bio-substances have been emitted to the environment due to human action. As result of these degrading effects, a systematic approach integrating environmental concerns into the supply chain was envisaged and adopted by some organizations (Zhu et al., 2010).

The initiative of Green Supply Chain Management (GSCM) practice originated due to increased environmental awareness regarding pollution accompanying industrial development, being addressed together with the supply chain management (Sheu et al., 2005). GSCM practice has been look upon of late by some enterprises as a new approach to increase profit margins and market shares by reducing environmental risk and impact (Van Hoek, 1999; Sheu and Hu, 2010). GSCM has been adopted by some leading multinational enterprises as a strategy, as they invest in researching and the development of green product, establishing standard restrictions towards the usage of hazardous substances and demanding suppliers provide products void of hazardous materials along the supply chain (Sheu and Hu, 2010). Thus the implementation of GSCM practice by firms has been viewed as an initial strategy in compliance with the requirements of legislation imposed by most industrialized nations, thereby resulting to a competitive advantage (Hsu and Hu 2008).

GSCM practice is an emerging field of studies that stem from the conventional supply chain practice. The quest for quality revolution by firms in the late 80’s and the supply chain revolution in the 90’s ignited business to be environmentally conscious. GSCM practice gain steam from both academicians and practitioners, as it focus on waste reduction, and preservation of product life and natural resources. In order for organizations to achieve best practice, they need to be eco-efficient and adopt remanufacturing process (Srivastava, 2007; Fortes 2009). The first GSCM article was written by Kelle and Silver’s in 1989 which became the foundation of today’s GSCM practice, which ”developed an optimal forecasting system for organizations to use to forecast products that can be potentially reused” (Fortes 2009).
Ho et al., (2009), came out with some of the major difference between, the conventional supply chain management and the green supply chain management process, which could be seen below.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Conventional SCM</th>
<th>Green SCM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives and values</strong></td>
<td>Economic</td>
<td>Economic and ecological</td>
</tr>
<tr>
<td><strong>Ecological optimization</strong></td>
<td>High ecological impacts</td>
<td>Integrated approach</td>
</tr>
<tr>
<td></td>
<td>Low ecological impacts</td>
<td>Low ecological impacts</td>
</tr>
<tr>
<td><strong>Supplier selection criteria</strong></td>
<td>Price switching suppliers quickly</td>
<td>Ecological aspects (and price)</td>
</tr>
<tr>
<td></td>
<td>Short-term relationships</td>
<td>Long-term relationships</td>
</tr>
<tr>
<td><strong>Cost pressure and prices</strong></td>
<td>High cost pressure</td>
<td>High cost pressure</td>
</tr>
<tr>
<td></td>
<td>Low prices</td>
<td>High prices</td>
</tr>
<tr>
<td><strong>Speed and flexibility</strong></td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

*Figure 1:* Difference between conventional and green SCM (source Ho et al., 2009)

The table above shows the different characteristics that have been taken into consideration when comparing the conventional SCM to the GSCM. The core difference could be envisaged at the level of ecological impact on the different characteristics.

Heinekens international being one of the world leading portfolios of beer brands as well as leading brewer in terms of sales and profit margin started over 150 years ago in 1864 in the heart of Amsterdam. The company bears its founders family name *HEINEKENS* as the brand name, is available in almost all the continent. The company brews and sells over 200 international premium beers and ciders (About Heinekens, 2011).

**1.1 Problem statement**

Significant benefits have been envisaged by series of authors regarding green supply chain practice. The practice of green supply chain is still a myth to most company’s in developing nations to adopt, as they still maintain conventional way of the supply chain with little or no care about the ecological impact to environment. It is worth noting that the application of the concept ‘green’ on supply chain does not necessarily change the conventional supply chain to its entity. Rather some adaptations are made as the practice involves aspects like internal environment management, external environment management, investment recovery and Eco-Design (Zhu and Sarkis 2004).
Recent studies on GSCM practice indicated the improvement of collaborative relationships between manufacturers and suppliers and also explore how to bridge the gap so as to support managerial decision. The studies also mentioned some performance measures to determine the efficiency and effectiveness of the existing GSCM system (Ninlawan, 2010).

Although GSCM practice is a much more recent aspect of academic research, it still has some severe implications. So far, no common ground definition to the concept of GSCM has been reached by researchers as well as industry standards have not been fully determined. Yet some organizations use the concept of GSCM as a marketing strategy by brandishing their selves as environmental and social conscious organization and strive to be greener than their competitors despite the exotic cost they may incur in the process (Shrivastava 1995; Sarkis & Zhu, 2004; Manget et al., 2009).

However, GSCM practice could be beneficial to organizations implementing it, as well as the society if properly managed, but could also be detrimental to the environment if the concept of green is not applicable to all aspects of the supply chain. In order to streamline the implementation process of GSCM practice, a proactive approach is necessary, by taking into consideration the factors critical to the implementation process.

A strategic question could be how organizations like Heinekens successfully adopted GSCM practice and what critical factors were taken into consideration during the implementation process with emphasis on the benefits they reaped from the process.

1.2 Research Question

Which factors were taken into consideration by Heineken International when adopting GSCM practice and what are the environmental and economic benefits associated with this practice?

1.3 Objective/Purpose of the Research

The environmental impacts of supply chain management practices have been visualize by most organizations as well as the society. To minimize and mitigate environmental concerns, the concept of GSCM practice was introduced. The main objective of this research is to describe and analyze the set of factors identified to be critical to GSCM, adopted by Heineken International to fine-tune the implementation process of their own GSCM practice.
1.4 Research Outline

This research has been divided into six different parts to give a clear picture to reader regarding the different sections.

<table>
<thead>
<tr>
<th>Section 1-Introduction</th>
<th>This section is to give the reader an overview of the subject matter to its entity. Stretching from the background to the purpose of the research.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 2- Research Design/Method</td>
<td>This section gives a comprehensive approach to the techniques used in collecting and analyzing the data for the research. These techniques involve both primary and secondary source of data. With the primary focusing typically on semi-structured interview and the secondary on articles, conference papers etc. It also involves the research process.</td>
</tr>
<tr>
<td>Section 3- Frame of Reference</td>
<td>This section constitutes scientific literature review and theories with models that helps to provide an understanding of the entire concept of GSCM practice.</td>
</tr>
<tr>
<td>Section 4-Empirical findings/Company Background</td>
<td>This section represents findings from the case study, through interviews and information from Heineken International web page.</td>
</tr>
<tr>
<td>Section 5-Analysis and Discussion</td>
<td>In this section, theories and the empirical findings will be analyzed and discussed in order to provide answer to the research question.</td>
</tr>
<tr>
<td>Section 6-Conclusion and Recommendation</td>
<td>This section summarizes the answer to the research question, derived from the analysis and discussion. Tailored in such a way to meet the objectives of the research. The recommendation will also provide an idle frame for future research derived from the strategic question.</td>
</tr>
</tbody>
</table>
2.0 Research Design/Method

2.1 Choice of Company

The choice of the company, we took into consideration the different activities of the supply chain from procurement, manufacturing and distribution. The elected company is involved in the aforementioned activities. Selection of the company was also based on its involvement on environmentally friendly activities to comprehend the concept of GSCM practice.

Heineken International is among one of the oldest and most successful establishment in the Beer industry around the world. It was chosen due to its long history and its outstanding competence to sustain and provide a quality product in the Beer sector.

Heineken International is a vivid example of a company that has written a successful story for many years but remain very conscious with its supply chain activities in order to reduce and avoid environmental hazards.

2.2 Choice of respondents

The right respondents that could provide in depth and useful information regarding Green Supply Chain Management practice was driven by the necessity of the authors of deriving the right answer to the research question. The respondents were chosen based on the internal insight that was provided to the authors. Two respondents were selected, which were well thought-out to contribute with essential insights and right inputs into the study and made it viable to explore the research question.

Herman Van de Bergh is a Manager Global Energy & Water Programme, Global Supply Chain at Heineken International Amsterdam. He has a long term experience and work closely with the Green Supply Chain Management and Brewing a Better Future and therefore considered the best apt correspondent.

Krista Valk is an Analyst Sustainable Development at Heineken at Global Corporate Relations at Heineken International. She has an extensive insight in Green Supply Chain Management Practice as well.

2.3 Research process

Different methodological approaches to carrying out research were mentioned by Fisher (2007) and he went further to explain two types of discoverers; explorers and surveyors. With surveyors more focused and structured, and are aware of what they are going to find out
whereas explorers have an open approach to their findings with no knowledge about the possible outcome of the research. It is on this note that we remain convinced that, this piece of work is exploratory as it relies on both primary and secondary sources.

2.4 Data collection and source
Data collection depends on the type of research and could either be from a primary or secondary source. Data could be collected via numerous methods such as interviews, panels, questionnaire, documentary and observational research (Fisher 2007).

2.4.1 Primary source
In order to gain a better understanding of how the Green supply chain Management is applicable in Heineken International, data was collected by conducting interviews.

Three forms of interviews exist according to Fisher (2007) and they could either be open or unstructured interview, with the respondent and interviewer engaged into informal conversation, with the respondent leading the direction of the interview; pre-coded or structured interview where the interviewer reads from script prepared by him with no deviation from it; Lastly semi-structured interview, which is both open and structured with the interviewer taking into consideration a schedule to remind the respondent of the main issues that needs to be addressed.

Semi-structured interviews were conducted as our intention was to extract as useful and detailed information from the respondents keeping in mind the time allocated for the interview. In order to retrieve as much as useful information as possible, the semi-structured format interviews provided depth into the information gathered. The information gathered gave significant substance to the research as the questions for the interview was in alliance with the chosen theories.

Yin (1993) shed a light on this matter that interviews are measured as the most significant and starting place of proof and indispensable in sequence when conducting case-study analysis.

Interview design
The interview questions were based on the theories developed in this research and they were centered on the core variables related to the theories, in the quest of answering the research question. Moreover, the interview was conducted in English and took 67 minutes respectively.
The respondents had the questions before hand to enable them prepare and motivate their answers. The questions were sent to the respondents one week (working days) prior to the interview. The questions covered in the interview session were relevant to the research in accordance to the chosen theories.

The variables fragmented in the interview session were the motives of GSCM which are internal and external, the activities of GSCM, and the critical factors of the GSCM. The questions could be seen in the appendix of the report.

**General Information**

Heineken International is situated in the center of Amsterdam the Netherlands. The interviews with Herman Van de Bergh and Krista Valk took place in the head office of Heineken International. The face to face interview with both respondents occurred the same day at different time. The interviews took place on the 8th of November 2011.

The interviews were conducted in English language and annotations were taken during the interviews additionally the interviews were recorded to ensure that the information gathered during the conversation provide critical input to the research.

The interview session started in an open discussion to enable both the counterparts to freely emerge in a dialogue that allowed the authors to attain substantial information to the research. The representatives from Heineken International were involved in the conversation and since the authors’ task was to keep in mind the essential questions to ask by keeping the flow of the conversation, they were successfully able to obtain significant empirical insight on the Green Supply Chain practice. A glimpse of the key topics touched upon during the interviews was motives for GSCM, activities in GSCM and critical factors of implementation of GSCM.

**Motives for GSCM**

The motives of GSCM are both internal and external. Companies adopt the GSCM Practice perhaps for both or single reason. Internal and external motives are interconnected and integrated with economic and environmental benefit of GSCM, thereby the companies adopt GSCM for economic benefit of their own and environmental for the society.

In this section, we asked the representatives of Heineken International the motives behind the adoption of GSCM. Furthermore, we found out that the internal and external motivations were
taken into consideration which may have resulted to economic and environmental benefits once GSCM was adopted.

**Activities in GSCM**

The four main activities in the GSCM are as followed:

- Green Procurement
- Green manufacturing
- Green Distribution
- Reverse logistics

Green Procurement is the environmental purchasing. Green manufacturing is the ability to manufacture in an environmentally conscious manner, Green distribution is the aspect of greening the packages and green logistics and Reverse Logistics is related to Green recycling.

**Critical Factors of GSCM Implementation**

The critical factors of GSCM implementation which have been developed in the theories provided a significant insight to the study as it will be seen in the empirical section.

The questions in this section were centered on the factors that were taken into consideration by Heineken International.

2.4.2 Secondary source

Secondary data has been collected from scientific articles, journals and conference papers with focus on the GSCM practice. This form of data also played a significant role to provide answers to the research question and justified the studies.

Denscombe (2000) did mention that a research approach could either be qualitative or quantitative depending on the nature of the research. This research focused mainly on qualitative approach as the intention of the study was to convert what has been observed, reported and registered into written words not figures.

The core secondary sources used in this research process came from Heinekens annual report for 2010, internal report produced by the supply chain department and the BaBF report.
2.5 Access of information

The access of information for this research was extracted from full text database of Mälardalens University and Google scholar. Most of the articles, journals and conference papers was collected from EMERALD, ELIN and PORTAL SUTL. Literature books related to the field of studies from the university library was also be used. Heineken web page for both has also provided access to some vital information about the organization activities.

Going through extensive literature search, to develop the theoretical framework, the articles were search based on the following titled based criteria;

- Search keywords included ´´Green supply chain management´´
- It also contained ´´GSCM and critical factors´´
- It contained ´´benefits of GSCM´´
- It contained ´´environmental management systems (EMS)´´
- It contained ´´supply chain environmental management (SCEM)´´

2.6 Data analysis

Data in this research was be analyzed through description of Green Supply Chain Management, Green Supply Chain Management and its factors in Heineken International, and it involved qualitative approach since it was never the intention of the authors to apply any statistical tools.

2.7 Validity and Reliability of Research

Validity and reliability are two measuring instrument to determine the level of trustworthiness and credibility of the research (Yin, 1993).

In order to validate and make the research more reliable, different scientific articles on Green Supply Chain Management practice have been review with theories and concepts envisaged and expressed to reinforce the validity of the research. The articles and books that the authors made used of, during the research were accessed from databases such as Mälardalen University’s databases, Google scholar. These scientific articles and annual reports from the company used during the research are reliable as they have been reviewed numerous times before publishing them for academic purpose. Diverse articles on GSCM were retrieved to
ensure trustworthiness of the theories selected. Furthermore, the research is built upon semi-structured interviews that has gone a long way to added value to the research and strengthened it as the representatives of Heineken equipped us with relevant information in the field of the GSCM. The choice of the respondent was also important as it strengthens the reliability and validity of this research based on the position and the contribution the respondents have made in the company, and their efforts to promote the concept of brewing for a better future. The measuring instrument (interview) for the research was reliable as it creates a platform for indebt information about the company from the respondents.

2.8 Method Critique
In this research, we could not claim that a comprehensive study has been conducted in identifying the factors critical to GSCM implementation. However, the research helped the authors to identify some of the factors cited by a series of authors which has also been used in the current case study. Due to the time limitation, we were unable to include more case studies in all the different activities of the GSCM system or conduct multi case studies which have restricted acquisition of further knowledge. Limited number of respondents in the interview, which restricted the acquisition of further knowledge on the implementation process of GSCM in the different departments of the company.

Finally access to certain articles which could have made significant contribution to the theories was restricted as prior payment was required to access these articles.
3.0 Frame of Reference

According to Fisher (2007), “Describing and mapping literature relevant to the chosen topic is a step by step process that moves from general to specific”. However, it is relevant to identify the appropriate literature for the research, without going into so much detail.

This frame of reference encompasses theories that have evolved around GSCM concept alongside the benefits, which may have accrued as a result of this practice. It is important to note that, the core concepts have been gathered from scientific articles and literature books.

3.1 Green Supply Chain Management (GSCM)

The ideology of GSCM practice has been envisaged in different dimensions by a handful of scholars, with some of them with the opinion that, it stems from the conventional supply chain management practice. In this case, environmental criteria’s are being integrated into organizations purchasing decision, alongside long term relationships with suppliers. It was further reiterated that, the ideology of GSCM was aimed at confining waste in order to conserve energy within industrial systems and prevent the dissipation of hazardous materials into the environment (Ho et al., 2009).

3.1.1 What is GSCM?

According to Skjoett-Larsen (2000), Greening (referring to GSCM) “will comprise all links from the manufacturer of raw materials to the end user and include products, processes, packaging, transport and disposal”.

Srivastava (2007) on his part perceived GSCM as “Integrating environmental thinking into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life”

Müller & Seurling, (2008) rather saw GSCM in different perspective as “The management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements”.
According to Patrick Penfield of the Whiteman School of Management, cited in (Cognizant white paper 2008), he defines GSCM as "the process of using environmentally friendly inputs and transforming these inputs into outputs that can be reclaimed and re-used at the end of their lifecycle thus, creating a sustainable supply chain". He further indicated the integration of ecological factors to the conventional supply chain principles to understand how organizations supply chain impact the environment.

3.2 The Concept of GSCM

The concept of GSCM has been envisaged to have generated from the perspective of product life cycle, taking into consideration the entire process from raw material, product design and manufacturing, product sales and transportation, product use and recycling of products. With the help of green technology and the conventional supply chain management principles, environmental hazards could be reduced by companies. A lot of importance to environmental protection and green philosophy has been attached to the concept of GSCM practice (Li and Wang, 2008).

![Figure 3: Environmental impact at each stage of the supply chain (Source: LMI 2005)](image)

The above diagram shows the activities involved in a conventional supply chain from the concept to the disposal stage, and how these activities affect the environment negatively.

From the input stage, there is a constant usage of energy and water, particularly at the raw material extraction stage as well as the manufacturing stage where the product is being developed.
From the Impact stage, it tells us the hazardous effect of the supply chain activities to the environment. The impact could be seen at the different stages of the chain and what aspect of the environment it affects. It could be noticed that air, water and waste pollution that comes from raw material extraction, manufacturing, customer and disposal stages of the chain and air pollution (emission of carbon dioxide) from the transport stage of the chain. These activities are responsible for the environmental hazard, thus the application of GSCM principle was deemed necessary to curb these effects on the environment.

Many enterprises nowadays strive to implement the GSCM system, not just to solve environmental problems but also to create some degree of competitive advantage. Many now go as far as seeking guidance on how to implement a sustainable supply chain. It is important to understand that a sustainable supply chain is one that does not necessarily need to be optimal just for the organization but also optimal relative to its limited environmental impact (Li and Wang, 2008; Cognizant white paper 2008).

According to Zhu and Cote (2004) balancing market performance with environmental issues can only be achieved by greening the supply chain. Hence it is always a daunting task to handle issues like instant energy conservation, and pollution alongside economic performance.

### 3.3 Motives for GSCM

According to Bowen et al (2001), the reason d’être for implementing the GSCM process maybe influenced from outside the firms normal supply chain management process, provided the firm has not gotten enough capabilities to pilot its own green supply chain process.

According to New Zealand Business council of Sustainable development (NZBCSD 2003), the reason for organizations to embark on GSCM practice could vary but the focal point remains the same irrespective of the conditions. The areas of focus are;

- Improving the performance of the business’s own operations
- Ensuring that the goods and services provided by suppliers are sustainable and working with suppliers to increase efficiency and competitiveness.
- Working effectively with customers and sales channels to design sustainable products and services.

The Green Business Network (2001) indicated two principal motivations for the adoption of GSCM practice as primary and secondary.
<table>
<thead>
<tr>
<th>Primary Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal</strong></td>
</tr>
<tr>
<td><strong>Risk management</strong></td>
</tr>
<tr>
<td>➢ Supply interruption</td>
</tr>
<tr>
<td>➢ Long term risk to human health and the environment</td>
</tr>
<tr>
<td>➢ Competitive disadvantage</td>
</tr>
<tr>
<td><strong>Regulatory stance</strong></td>
</tr>
<tr>
<td>➢ Desire to go beyond compliance</td>
</tr>
<tr>
<td>➢ Suppliers knowingly or unwittingly provide materials containing problematic substances</td>
</tr>
<tr>
<td>➢ Supplier non-compliance poses production risks</td>
</tr>
<tr>
<td><strong>External</strong></td>
</tr>
<tr>
<td><strong>Enhanced brand image</strong></td>
</tr>
<tr>
<td>➢ Corporate culture of forecasting trends and moving proactively</td>
</tr>
<tr>
<td>➢ Potential for harm to public image due to environmental concerns</td>
</tr>
<tr>
<td><strong>International purchasing restrictions</strong></td>
</tr>
<tr>
<td>➢ Eco-labeling and product take back gaining momentum</td>
</tr>
<tr>
<td>➢ May drive the creation of systems for collection</td>
</tr>
<tr>
<td>➢ Frequently focused on high-profile brands transport, disassembly or recycling</td>
</tr>
<tr>
<td><strong>Customer pressure</strong></td>
</tr>
<tr>
<td>➢ Often appears in conjunction with a threat to brand image</td>
</tr>
<tr>
<td>➢ Frequently focused on high-profile brands</td>
</tr>
<tr>
<td><strong>Secondary Motivation</strong></td>
</tr>
<tr>
<td><strong>Cost reduction</strong></td>
</tr>
<tr>
<td>➢ As suppliers apply pollution prevention</td>
</tr>
<tr>
<td><strong>Increased innovation</strong></td>
</tr>
<tr>
<td>➢ Can result from supplier participation in new product development</td>
</tr>
</tbody>
</table>
**Figure 4:** Motivations for Undertaking GSCM (Source: Green Business Network 2001)

The above diagram shows the motivations for adopting the GSCM practice streamline into primary and secondary motivations, with each section having both internal and external factors which affects the motivation process.

### 3.4 GSCM Practice

The practice of GSCM has been view by some organizations in the developing world as a daunting task, since they find it almost difficult to cope with the challenges that may be generated as a result of acting in an environmentally sound way. The world is a dynamic and competitive place as companies strive to innovate in order to remain competitive, by so doing, adopting properly designed environmental standards, can prompt innovation that will add value to products (Porter & Van der Linde 1995).

In order to adopt the GSCM practice, organizations should follow environmental supply chain guidelines. Series of studies indicating GSCM practice in organizations indicated that environmental and quality management systems are of utmost importance as they enhance organizations environmental performance. It was also noted that accurate quality control can influence organizations to embark on environmental practice by learning from experience in their quality control programs, thus facilitate the implementation of GSCM practice (Zhu and Sarkis 2004; Zhu et al., 2008).

According to Zhu and Sarkis (2006), the practice of GSCM involves; internal environmental management, green purchasing, cooperation with customers including environmental requirements, investment recovery, and eco-design practices.

Ninlawan et al (2010), on their part reiterated that, the practice of GSCM has been divided into five major dimensions, with each dimension highlighting the different components necessary for the practices which could be seen in the table in the appendix.
The activities of GSCM can be envisaged from the diagram below.

**Figure 5**: Activities of GSCM (source Ninlawan et al 2010)

From the diagram above we can see four principal categories of activities in GSCM process.

**3.4.1 Green Procurement**

Green procurement, been perceived as environmental purchasing, entailing activities that include reduction, reuse and recycling of materials in the process of purchasing. However, individual firms have the latitude to ensure that their suppliers are in compliance with environmental standards if not they will be required to adopt the ISO 14001 certification, indicating the requirements for the selection and maintenance of suppliers (Srivastava 2007; Ninlawan et al 2010).

**3.4.2 Green Manufacturing**

Green manufacturing often referred to as environmentally conscious manufacturing which strive to control pollution in the entire process with advanced technology. Green manufacture could as well lead to low raw material cost, gain in production efficiency, improve corporate image, and reduce environmental and occupational safety expense (Srivastava 2007; Ninlawan et al 2010). According to Li and Wang (2008), the designation of green production varies in different countries, but the basic principles remains the same, as it involves the increasing efficiency of production at a minimal human and environmental risk.
3.4.3 Green Distribution
This aspect constitutes green packaging and green logistics. Quality packaging and loading pattern will also go a long way to reduce material usage and space utilization in the warehouse. It is worth noting that green transportation is intended to achieve purification of transport environment by the reduction of carbon dioxide emission during the transportation of the goods (Ninlawan et al 2010).

3.4.4 Reverse logistic
Often referred to as green recycling which involves retrieving the used product from the consumer for proper disposal. This aspect takes into consideration collection, combined inspection/selection/sorting, re-processing/direct recovery, redistribution, and disposal (Ninlawan et al 2010). Recycle has a significant role in the product life cycle and in the entire supply chain as waste product could be the path for the usage of resources and also pathway to harm the environment (Li and Wang, 2008). According to Fortes (2009) reverse logistic is aimed at sorting products that can be reused so as to minimize cost of making new ones.

3.5 Critical factors of GSCM Implementation
A variety of critical factors for implementing GSCM practice have been mentioned by numerous authors, aimed at mitigating associated risk with the supply chain, thereby protecting the organizations brand image and reputation from public controversy (Hu et al 2010). A variety of factors have been envisaged but the choice of the factors shortlisted below is based on the degree of relevance in conjunction with the case study.

These factors will be discussed below in detail.

3.5.1 Suppliers meeting
This is a sensitive issue, as the organization has to convince its suppliers to comply with the environmental requirements stipulated for the product in question. Suppliers meeting are initiated as the organization considers it as an effective tool in communicating expectations and sharing information’s with the suppliers regarding environmental issues (Lippmann 1999; Hu et al 2010).

3.5.2 Environmental audit for suppliers
The aim of this is to ensure that the suppliers practice green manufacturing, by integrating auditing approach into the supplier’s management in the GSCM scheme. It is worth noting
that the GSCM practice entails the introduction and integration of environmental issues, by auditing the suppliers with the use of environmental performance metrics, though some of the suppliers maybe reluctant to engage in such practice. Finally some organizations thought of a collaborative approach for these audits, presenting them as a joint learning approach that will strengthen the relationship between the organization and its supplier (Lippmann 1999; Handfield et al.2005).

3.5.3 Compliance statement
This is a very important aspect of GSCM practice that is being requested from suppliers by the organizations. The statement includes date of compliance alongside the modalities like the verification method of compliance outlined in the supplier’s requirement. Through this process, there is some sort of assurance or guarantee by the suppliers that all materials, and product manufactured are in compliance with the regulations enforced in the statement. If not, the organization will hold the suppliers responsible for the liability they might cause them to incur. Moreover, compliance documentation from the supplier could also be used to justify the lead-free compliance self-certification (Evans and Johnson 2005; Eveloy et al. (2005; Hu et al 2010).

3.5.4 Top Management support
The understanding of Top management and its support makes a vital difference to the success of GSCM program (Lippmann 1999). For organizations to comply with the restriction of hazardous substance, directives from senior management was necessary to support the initial assessment and someone in the management crew must be responsible for directing the efforts (Evans and Johnson 2005). Top management on their part should recognize the relevance of environmental issues in the supply chain (Handfield et al. 2005; Hu et al 2010).

3.5.5 Environmental education and training
Organizations are often faced with huge challenges when implementing GSCM practice; since the practices are often complex and most employees are not familiar with the green principle. Because of these challenges, it was necessary for organizations to organize environmental awareness workshops and training programs for their staffs and suppliers to help them understand the GSCM concept better. This will go a long way to improve the staff’s environmental awareness (Lippmann 1999; Hu et al. 2010).
3.5.6 Cross-function integration
There have been a lot of complexity and difficulty surrounding the implementation of GSCM practice. Hence a cross-functional team of personnel in the relevant departments such as sales, environmental and purchasing personnel should be integrated in the process which may lead to sharing sustainability-oriented information (Yuang and Kielkiewicz-Yuang 2001). However, most successful organizations that implement the GSCM practice takes into consideration environmental issues with their existing supply chain strategies applicable in design, procurement and distribution process (Lippmann 1999; Hu et al. 2010).

3.5.7 Environmental policy for GSCM
Organizations are required to draw up environmental policy for GSCM practice for both suppliers and customers; this will go a long way to create awareness regarding environmental issues among suppliers, customers and staff of the organization. Furthermore, the establishment of environmental policy for its suppliers could be seen as a manifestation of the organizations position to ensuring green purchase, green design, and supplier audit so as to facilitate GSCM practice (Yuang and Kielkiewicz-Yuang, 2001; Hu et al. 2010).

3.5.8 Collaborative R&D with suppliers
Collaborative R&D is necessary in this case between the suppliers and the customers or organization to aid them understand the environmental effects and consequences in the supply chain provided a joint approach is used in purchasing. It is important to note that engaging suppliers in the design process can generate important economic and environmental benefits. This initiative may finally result to the development of more environmentally friendly products in compliance with the environmental regulations (Lamming and Hampson, 1996; Lippmann 1999; Yuang and Kielkiewicz-Yuang 2001).

3.5.9 Green purchasing
Organizations could provide design specification to suppliers which include environmental requirements since they intend to incorporate green principle in purchasing practice. Such strategy could enable them decide on the choice of the supplier to collaborate with, in case of material, equipment, parts, and services that support environmental goals (Lamming and Hampson, 1996; Handfield et al., 2002; Hu et al. 2010).

3.5.10 Green design
Green design also known as ecological design aimed at minimizing environmentally destructive impact in the designing process. Green design has also considered seriously a
A systematic approach for organizations to reduce the environmental impact of their products and process. Cutting down costs and increasing product marketability concurrently, through the incorporation of green issues into new product development has been the strongest testament of greening ((Brezet and Hemel, 1997; Lewis et al., 2001; National Research Council Canada, 2003; Hu et al., 2010).

3.6 Environmental and Economic benefit of GSCM practice

The benefits of GSCM practice have been enormous to firms mostly in the industrialized world. Findings have also indicated there has been some improvement in competitive economic performance through the GSCM practice by some firms and this should equally serve as a catalyst to encourage more companies to engage in the practice (Rao 2002). According to Zhu et al (2007) addressing environmental issues by firms could go a long way to provide new opportunities for competition as well as add value to the business entirely, as GSCM seems to have a positive relationship with organizations economic performance.

From Bowen et al (2001) reiterated that economic benefits are not achieved in the short run in terms of profitability but in the long run as there are possibilities of financial gains when adopting the GSCM concept in inbound logistic perspective. Adopting the concept of GSCM has a series of benefits to organizations from cost reduction to integrating suppliers in environmental decision making process of the organization. Most of the companies nowadays try to encourage their core suppliers to manage their environmental performance to ensure the supply of environmentally friendly materials and equipment’s. Strategic environmental procurement can also improve on organizational competitiveness and reduced risk (Rao & Holt, 2005).

Applying the concept of green manufacturing process or cleaner production process aimed at reducing waste and pollution. This also go a long way to contribute significantly towards cost avoidance of storing, managing and disposing processed waste, as waste disposal becomes increasingly expensive nowadays (Beamon 1999).

The aspect of outbound logistic apparently green packaging and distribution, might improve environmental and economic performance, though using environmentally friendly packages might be costly because of the intense contribution to solid waste streams. The approach towards close loop was eminent since all waste is reused and recycled that may support economic performance in the sense that managing waste through reverse logistic could lead to cost reduction (Rao & Holt 2005; Zhu et al 2006).
According to Rettab and Ben Brik (2008) findings, indicated that GSCM practice remains beneficial to organizations that implement it as it reduces cost in areas like Transport and logistics, Energy, and Operational facilities.

According to Porter & van der Linde (1995), the benefits of GSCM practice increases resource productivity and could be categorized as seen below:

**Process Benefits**

- Materials savings resulting from more complete processing, substitution, reuse, or recycling of production inputs.
- Increases in process yields.
- Less downtime through more careful monitoring and maintenance.
- Better utilization of by-products.
- Conversion of waste into valuable forms.
- Lower energy consumption during the production process.
- Reduced material storage and handling costs.
- Savings from safer workplace conditions.
- Elimination or reduction of the cost of activities involved in discharges or waste handling, transportation, and disposal.
- Improvements in the product as a byproduct of process changes (such as better process control).

### 3.7 Conceptualization and Operationalization

From the theories one could easily identify that, four core aspects (concept, critical factors, activities in the chain and the practice or implementation process) regarding the GSCM process have been visualize and these aspect will go a long way to serve as the foundation to which the conceptual framework is built.

The concept of GSCM itself was generated due to emission of waste materials to the environment. In order to curb this situation in the course developing a product, organizations had to look for alternative means of production that will not be hazardous to the environment.
The aspect of the critical factors required to be taken into consideration when adopting the GSCM practice becomes the core tool and the measuring instrument for the research. Since organizations adopting or in the process of adopting the GSCM practice, they are poised to take into consideration some of these factors in one way or the other, which will enable them to be successful in the process.

The activities involved in the process of GSCM practice were also eminent in the conceptual frame as it provides an understanding of the different activities involved in the practice and how the organizations strive to green these different activities.

The last aspect of the framework which is the practice of greening the supply chain by organizations with the aim to reap both environmental and economic benefits as well as being environmentally cautious in production process.

However, the factors critical to the implementation of GSCM, as well as the benefits that might have accrue after the adoption of the GSCM concept, are considered the core variables for the research. The choice of the variables from the theories was based on the frequency these factors have been cited and used by different authors which determines their degree of relevance. There are other factors out of the ten cited but the relevance of these other factors was trivial as they have not so much significant role to contribute to the case study, as Heinekens international does not take into account those factors for adoption process of GSCM. The benefit of GSCM has been subjective and cannot be quantified based on any measuring instrument, as it comes as the rewards that follow suit if the implementation process is successful.
4.0 Empirical Findings

4.1 Heinekens International
Heinekens being one of the world’s most famous international brewery brand, with huge international presence through its global network of distributors. The company also manages and leads a portfolio of beer brands in terms of sales and profitability, with two core international brands Amstel and Heinekens. Heinekens group also has brew and sells over 200 international premiums with some regional and local beers (About Heinekens, n.d).

4.1.1 Company Background
Heinekens started in 1864, when Gerald Adriaan Heineken bought a brewery business in Amsterdam. Over a century and a half, three generation of Heineken family have built and expanded the company across Europe and the world at large. Over these years the company has succeeded in building a brand image across the world. It is worth noting that, the company started through acquisition as Gerald Heineken bought over Haystack brewery, by 1868 when consumer demand increased, a new brewery was built in Buitensingel-Amsterdam. The company has grown tremendously over the years through acquisition and joint ventures to ensure value creation. The acquisition of Brau-Beteiligungs A.G (BBAG) in Austria has been the largest so far in the history of the company (History of Heinekens, n.d).

4.1.2 GSCM concept in Heinekens
Heineken International has been involved in supply chain activities from inception in 1884. The acquirement of ISO 1400 certification brought into light to Heineken that there is a shift in terms of the consumers demand and the society as a full. The Green Supply Chain Management in Heineken arises from a mixture of motives, both on an internal and external level. External motivated by the rapid and constant change of consumer demand.

Internal being that Heineken’s ambition is “To be the greenest (International) brewer in the world. “. Thus their time horizon for their internal strategy is long-term ambition.

Brewing a Better Future (BaBF) is a scheme designed by Heineken International to “ensure a feasible environment for future generations, businesses and communities to embrace more sustainable ways of producing and consuming. “.

Brewing a Better Future (BaBF) is built on three pillars in order to enable Heineken International to play its part in the world.
The pillars found its roots in Heineken business. The three pillars are interconnected and are:

- **Improving** the environmental impact.
- **Empowering** people and communities
- **Impacting** the role of beer in society.

The environmental impact will be achieved by endlessly improving the environmental impact of Heineken's brands and business while people and communities will be empowered in the way Heineken operate, which will develop a relatively positive impact of beer in the society.

The pillars will function through a strategy that has a focus on environmental aspects of Heineken’s business as its heart.

BaBF is a functional and operational scheme that started on a global level at Heineken International in 2010; it will spread in all of the Operating Companies (Opcos) of Heineken around the world and has a 2020 target (Brewing a better future, 2010).

**4.1.3 Critical factors of GSCM practice in Heinekens**

According to Herman Van de Bergh, Manager Global Energy and Water program, Global Supply Chain. The factors critical to GSCM practice in Heinekens include; green purchase, green design, environmental policy for GSCM, collaborative R&D with suppliers, suppliers meeting, environmental audit suppliers, compliance statement, top management support environmental education and cross-function integration. These factors served as the cornerstone towards achieving the company’s corporate goal of the world’s greenest brewer with the aim of brewing a better future.

**4.1.4 GSCM Practice in Heinekens**

So far Heinekens have been involved in the practice of GSCM for many years, as they continuous strive to improve the activities of green brewer and green commerce with the aim of increasing the scope and scale of their work on sustainability. So far the company’s greatest ambition is to become the world’s greenest brewer as the continuously strive to improve the environmental impacts of their brands and business. The aspect of renewable energy is another area of interest that has been delved into with adequate research by the company, as they strive to change the form of energy to either biomass, geothermal or hydropower. This change in energy supply will go a long way to enable them attain the 2020 target.
emission target which might account for about 25 percent improvements (Brewing a better future, 2010).

Green Procurement, Green Manufacturing, Green Distribution and Green Logistics are the activities along the GSCM scheme.

Heineken is involved in all the activities above. Heineken is the pioneer among the brewery industry to establish the ecofriendly energy consumption fridges in the world.

The Green procurement is the environmental purchasing. It is achieved through the collaboration of Heineken and its suppliers. In the same school of thought of reducing the carbon footprint, and pave a way to more sustainable production. Heineken realized that the if it can reduce the two thirds of carbon footprint that arise, during the value chain not in the brewing process, that it will provide a good indication on how to reduce the carbon footprints over time and the 2020 target. The target of becoming the Greenest brewer in the world and reduced the CO$_2$ emissions in its breweries to 6.4 kg CO$_2$/hl which is expected to result in a 50 per cent of energy reduction.

One of the initiatives taken by Heineken is the supplier code. It is a code that all suppliers have to fulfill based on the BaBF.

According to Van de Bergh and Valk, Green manufacturing and Green Procurement go hand in hand as Green manufacturing is the ability to manufacture in an environmental manner; it is directly impacted by the raw materials provided by the suppliers. Hence the supplier code was implemented based on the fact that Heineken decoded that emission was higher in value chain rather than the brewing process. The Green manufacturing will be partly achieved through the success of Green Procurement.

Green Distribution which involves the reduction of carbon footprint and energy consumption in the way Beer is distributed. Heineken tackled it by implementing a policy of purchasing new fridges (all things being equal) that will have a “hydrocarbon refrigerant, LED Illumination and a thermostat with an energy management system.” This will have a positive impact on the longer timeline for the fridges, minor preservation costs and a 35 per cent of energy reduction (Brewing a better future, 2010).

Herman Van de Bergh and Valk further explained that the execution of the new rolled out policy yielded that 80 per cent of the new purchased fridges met at least one of the
requirements imposed by the new policy. The implemented policy has the intention to verify and optimize the energy consumption of the current fridges and the new ones.

Green Distribution involves the distribution of beer through roads and freight. Van de Bergh highlighted that a carbon footprint model was designed to enable managers around the world in the logistics process to spot the possibilities of CO$_2$ reduction. Today, the model is in application.

Van de Bergh stated that Heineken is clearly in a constant battle of positive impact in terms of sustainability and its duty to make the beer industry green and better, that it was obvious that collaboration and partnership with other companies in the environmental routine of the transport, ocean freight as well as road freight was needed.

For the reverse logistics, it is clearly stated that the beer cans were recycled which have an economic and environmental benefit as the turnover of Heineken in Bulgaria showed it its results. Heineken Bulgaria being the pilot of the initiative, the recycling is spreading in other facilities of Heineken around the world (Brewing a better future, 2010).
5.0 Analysis

5.1 Critical success factors of GSCM Practice

Heineken has taking into consideration the core critical factors for implementing the GSCM practice. Implementing these factors is aimed at mitigating risk associated with supply chain delays or interruption, thereby protecting the companies brand image. Some of these factors were perceived and envisage from different authors perspectives as well as that of Heinekens as a brewery manufacturer. The factors have been rank in accordance with the degree of relevance to the company as some of the factors are more important than others.

Top Management support
The understanding and support of top management are eminent in Heinekens in the implementation of GSCM practice. If management does not support the initiative as some of the managers are part of the team to direct the effort of GSCM practice. In the case of Heinekens the board gives the green light in compliance with the supply chain department. Aside the GSCM practice top management also supports the concept of brewing for a better future, which is a comprehensive integrated strategy creating a more sustainable future in the company (enablers, 2010; Hu et al 2010).

Green purchasing
According to Herman Van de Bergh, acquiring adequate materials may result to appropriate production. Heinekens incorporated green purchase as part of the company’s green principle, which enabled suppliers to meet design specification that fall in line with the environmental requirements for a better brewing future. He green purchase strategy is just an add-on the procurement in the conventional supply chain process. This enables the company to source for its raw materials in an environmentally friendly way (Handfield et al., 2002; Srivastava 2007; Ninlawan et al 2010; Hu et al. 2010).

Green design
Heinekens consider this aspect as a systematic method to reduce environmental impact in the process of brewing, thereby cutting cost and increasing product marketability. The cane where the drink is often marketed is often recycled after the product is consumed (Hu et al. 2010).

Environmental education and training
The implementation of the GSCM practice was very complex at the very beginning according to Herman Van de Bergh, as Heinekens encountered much challenges when the concept was
introduced in the conventional supply chain model. Training programs and workshops were introduced to school the employees of the company the need for this green principle. Heinekens did involve its suppliers in this training as well as coordinating quality and environmental performance. This education and training formed the bases of the success in Heinekens GSCM practice as well as the concept of brewing for a better future (Lippmann 1999; Hu et al. 2010).

**Compliance statement**
Heinekens takes into consideration, what the suppliers offer them, but became much concern if the practice of GSCM was followed. In that essence they requested their suppliers provide a compliance statements, indicating supplier’s requirement and method of verification. According to Herman Van de Bergh, the principal aim of this process was to be sure that, the materials used by the suppliers and the products produced are in conformity with the regulations binding the compliance statement (Evans and Johnson 2005; Eveloy et al. (2005; Hu et al 2010).

**Suppliers Meeting**
Heinekens meets more often with it suppliers, to keep them abreast with the changes in mode of production and a follow up or quality check, to ensure their suppliers are up to standard i.e. meeting the companies specification. This method aids Heineken and its suppliers to share information for a better brewing future and also improve the content of the supplier code. These meetings according to Herman Van de Bergh also help in addressing some common environmental issues patenting to brewing (Lippmann 1999; Hu et al 2010).

**Collaborative R&D with suppliers**
Heinekens engage strongly in effective collaboration in R&D with its suppliers, to stay abreast with the fast changing dynamics in brewing, as they strive for better brewing process, which is perhaps green. The involvement of the suppliers in R&D by Heinekens reaped multiple benefits as this process aid supplier to design products that are environmentally friendly in accordance with the company’s requirement (Lippmann, 1999; Hu et al. 2010).

**Environmental audit for suppliers**
According to Herman Van de Bergh, the aim of this was to ensure suppliers are fully engaged in the practice of green manufacturing. This process could be achieved with the help of environmental performance metrics put in place by Heinekens to enhance third-party auditing.
Though some of the suppliers were not satisfied by this process according to Heinekens officials, the company then adopted a collaborative approach for this audit in the form of joint learning to strengthen their relationship with the suppliers (Lippmann 1999; Handfield et al. 2005). In compliance with this environmental audit pursuit, Heinekens have also explored ways of building breweries which are carbon dioxide neutral and breweries that use zero fossil fuels (improve green brewer, 2010).

**Environmental policy for GSCM**

This policy was introduced by Heinekens in order to mitigate some of the floors associated with implementing GSCM practice. This was achieved by increasing awareness for need of environmental issues to be taken into consideration by suppliers, customers and employees of the company. The environmental policy introduced by Heinekens to its suppliers was used as a stepping stone to fine-tune the company’s position regarding green purchase, green design etc. (Hu et al. 2010).

**Cross functional integration**

In the case of Heinekens, cross functional integration was envisaged, as the entire brewery process takes into consideration all the actors in the process. Information sharing is achieved in this process so that company goals are successfully achieved. The success of the GSCM practice by Heinekens was achieved through the incorporation of environmental issues within the conventional supply chain process (Lippmann 1999; Hu et al. 2010).

**5.2 Environmental and Economic Benefits of GSCM practice**

According to Krista Valk, adopting the concept of GSCM practice by Heinekens was not a regrettable concept as some of the benefits could be envisaged along the process. The economic performance of Heinekens has so far witness an increment as value has been added on to the entire company. So far not so much economic benefits have been envisage as the practice is still on going, but much anticipated benefits is being forecast in the long run. The aspect of green manufacturing process has so far helped in reducing waste and pollution for the company and the environment. Reverse logistic has also helped in the reduction of cost as most of the packages are being recycled to be reused (Zhu et al 2007).
6.0 conclusions

So far the concept of GSCM practice remains a new paradigm to management as is lacks comprehensive theories for companies because of the uncertainty regulations in different countries. The research thus identified that the GSCM is practiced in Heineken institution. The analysis of the data collected has prevailed that the set of factors presented in our theoretical outline have been taken into consideration while implementing the Green Supply Chain Management. However, since other actors of the value chains have to adhere to the factors, it was established that Heineken certainly be in the need of the other counterparts to successfully run the GSCM Practice and sustain it. Concluding that there is interdependence between Heineken and the actors of the Supply Chain does contribute to the achievement of the 2020 target.

The correlation between the implementation of the GSCM and the insertion of factors is evident. The motive being that Heineken could not put into operation Green Supply Chain solely. The factors functions for Heineken as indicator of GSCM benchmark. The theory clearly stated that the factors will serve as the foundation to the concept of Green Supply Chain Management.

The economic and environmental benefits of GSCM were not yet matured and measured by Heineken. The empirical data touched upon the scheme through GSCM is accomplished, in relation to the novelty of the scheme, one can argue and conclude that the maturity of the scheme will reap and yield enormous benefits over time.
7.0 Suggestions for further research

The authors of this research will recommend a broader research with a multiple institutions in different areas of business that involve the GSCM Practice and identify how the factors are carried along with the practice. Also, it will be a brilliant idea to have a scope of the GSCM in emerging markets such as China, Brazil, and India or in North America.
8.0 Reference


Appendix

Interview questions with Heineken International representatives

Name and position of the respondent in the company:

- Could you please give us a brief rundown of your activities within Heineken International?
- For how long has Heineken International been involved in supply chain related activities?
- Along the supply chain activities does Heineken International take into consideration environmental issues? (Yes or No).
- Is Heineken International involved in Green Supply Chain Management (GSCM) activities? (Yes or No)
- Is Heineken in possession of ISO14000 certification? (Yes or No)
- For how long have Heineken been involved in GSCM activities? And was this practice adopted from the inception of the Heineken International or along the borders of innovation and/or competition?
- What were the motives or reasons for the Heineken International to adopt GSCM practice?
- Was Heineken International somehow motivated in adopting GSCM, internally or externally or both? ------------

NB: internal motivation represents economic benefits and external motivation environmental consideration.

- Which of these activities is Heineken International involved in? along the GSCM scheme
  Green procurement
  Green manufacturing
  Green distribution
  Reverse or Green logistics

NB: Green Procurement can be considered as environmental purchasing, Green manufacturing is the ability to manufacture in an environmentally conscious manner, Green distribution is the aspect of greening the packages and green logistics and Reverse Logistics is related to Green recycling.

- How is/are the above selected activity carried out in Heineken International?
How is the entire practice of GSCM carried out in the Heineken International? Does it take into consideration aspects like internal environmental management, green purchase, eco-design, corporations with customers, and investment recovery?

In the course of implementing GSCM practice by company’s some factors are taken into consideration in the process. What factors were taken under consideration by this Heineken International when implementing GSCM? (check the options that apply)

A. Suppliers meeting  
B. Environmental audit for suppliers  
C. Compliance statement  
D. Top management support  
E. Environmental education and training  
F. Cross-function integration  
G. Environmental policy for GSCM  
H. Collaborative R&D with suppliers  
I. Green purchasing  
J. Green design

Are there any other factors taken under consideration not short-listed? If so name them.

How useful were these factors?

Are they any specific European and or Dutch Environmental law you followed in the implementation of GSCM?

Can you outline the environmental and economic benefits of GSCM practice to this company?

Rate the practice of GSCM in comparison to the expected company goals or objectives

A. 1% to 30%  
B. 31% to 50%  
C. 51% to 70%  
D. 71% to 85%  
E. 86% to 99%  
F. 100%

THANK YOU FOR YOUR TIME AND CONTRIBUTION
| Internal environmental management | ➢ Commitment of GSCM from senior managers  
➢ Support for GSCM from mid-level managers  
➢ Cross-functional cooperation for environmental improvements  
➢ Total quality environmental management  
➢ Environmental compliance and auditing programs  
➢ ISO 14001 certification  
➢ Environmental Management Systems exist  
➢ Eco-labeling of Products  
➢ Support of regulations environment |
| Green purchasing | ➢ Cooperation with suppliers for environmental objectives  
➢ Environmental audit for suppliers’ internal management  
➢ Suppliers’ ISO14000 certification  
➢ Second-tier supplier environmentally friendly practice evaluation |
| Eco-design | ➢ Design of products for reduced consumption of material/energy  
➢ Design of products for reuse, recycle, recovery of material, component parts  
➢ Design of products to avoid or reduce use of hazardous of products and/or their manufacturing process  
➢ Design of product for support regulation  
➢ Design the products that weight and the least capacity for decrease taking time, the area stores, and the energy between the transportation leas  
➢ Design the products to be easy set up for the users in the most energy saving way  
➢ Design usability of part particularly for Extend using products, repair easy and increase efficiency |
| Cooperation with customers | ➢ Cooperation with customer for eco-design  
➢ Cooperation with customers for cleaner production  
➢ Cooperation with customers for green packaging |
Investment recovery

- Investment recovery (sale) of excess inventories/materials
- Sale of scrap and used materials
- Sale of excess capital equipment

**GSCM practice (source Ninlawan et al 2010)**

(Brewing a Better Future 2010)
Heineken is committed to treating all individuals with respect and continuously improving the environmental impact. We believe these principles should be reflected throughout our entire value chain and embraced by all Heineken suppliers.

Marc Gross
Direct Supply Chain Officer

David Spencey
Director Global Purchasing

Amsterdam
8 July 2010