FACTORS INFLUENCING HUMANITARIAN SUPPLY CHAIN PERFORMANCE:
CASE OF THE REFUGEE ASSISTANCE PROGRAMME IN KENYA

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ABSTRACT

Effective management of Supply Chain performance is rapidly becoming a competitive advantage for many organizations today. This study examined factors that influence Supply Chain performance in the humanitarian sector based on a case study of the Refugee assistance Programme in Kenya. The general objective of the study was to assess the impact of; customer-supplier relationship, Information Technology, corporate culture and Security on the performance of humanitarian supply chains. The research approach adopted both qualitative and quantitative method and made use of a standard questionnaire for data collection. The study population consisted of various agencies working in the Refugee operation in Kenya. The research adopted a census survey method of the target population and as such all companies in the sampling frame was included. Data processing and analysis was done using Statistical Package for Social Sciences (SPSS) version 22. The analysis was geared at establishing the degree of influence each identified independent variable bears on the independent variable, in this case performance. The study found that supplier relationships has the highest effect on humanitarian supply chain performance followed by organizational culture, then information and communication technology while security had the least effect on humanitarian supply chain performance. With regard to supplier
relationship the study established that skill level of the suppliers in the delivery of services influenced the trust KPI in their organization to a great extent. In regard to information & communication technology, the study established that most of employees of the agencies interviewed have an internal ICT platform to support Supply Chain activities (80%). In relation to organizational culture, the study established that the organizations are a very controlled and structured place and that formal procedures generally govern what people do as shown by a mean score of 3.8000. The study concludes that skill level of the suppliers in the delivery of services influenced the trust KPI in their organization to a great extent. The study also concludes that the efforts made by Suppliers in their commitment to contracts is great and the loyalty of their Suppliers to the organization is great as well. This study recommends that each of the interviewed agencies institute a firm code of conduct for all its employees and operations they undertake. This study also recommends that the leadership of the organization to take close and thorough supervisory role of the activities and decisions undertaken by such a team.

Key words: Humanitarian, Supply Chain, Performance, Refugee Assistance Programme,

INTRODUCTION

Humanitarian Supply Chains have a major contribution to the effectiveness and efficiency of humanitarian operations (Tomasini & van Wassenhove, 2009). Global companies’ ability to optimize performance and cost in their entire supply chain will be key to helping them become more competitive and resilient. The supply chain is going to be absolutely critical in the future (KPMG, 2013). Supply Chain Management (SCM) is an effective business philosophy that has gained tremendous amount of attention from academics, consultants, practitioners and business managers in the recent years in order to help enterprises survive under continuous pressures and achieve the common goal of enhanced customer satisfaction (Agami et al, 2012).

This study focuses on the Humanitarian Supply Chain for the Refugee assistance Programme in Kenya and aims at determining the key factors that influence the Humanitarian Supply Chain. The study aims at determining how the success factors can be applied to build a competitive advantage based on Quality; Time; and Cost drivers (Frazelle, 2002).

Emergency relief involves many of the same Supply Chain processes encountered in the private sector, but modern Supply Chain practices have only recently been applied to disaster aid and recovery. Humanitarian Supply Chain Management is slowly emerging as its own discipline within Supply Chain Management (Rodman, 2004). Supply Chain uncertainty is an issue with which every practicing manager wrestles (Hult, Craighead & Ketchen, 2010), deriving from the
increasing complexity of global supply chain networks, which include increased potential for delivery delays and quality problems (Bhatnagar & Sohal, 2005). The world has witnessed humanitarian catastrophes since the advent of the world wars (I & II). Humanitarian Supply Chains have existed in support of Relief operations. According to Little (2008), the origins of international humanitarian relief can be found in the American-led response to the grave and growing crisis affecting European civilians and soldiers in World War I. This study is aimed at finding out how Supplier Relationships, Information Communication and Technology, Organizational Culture and Security affects the performance of humanitarian supply chains based on a case study of several agencies working within the refugee assistance Programme in Kenya. The study makes assumption that constructs from Supply Chain Management from the corporate sector do not make a best fit solution in the humanitarian sector. Beamon (2004) and Charles et al (2009) in their studies noted that, the applicability of existing solutions from the corporate sector to the humanitarian sector is limited though, due to the fundamental differences between the Humanitarian Sector and the corporate Sector.

Statement of the Problem

The complexity of Supply Chain performance in the context of humanitarian operations is compounded by several factors. Delays in service delivery and running costs have greatly impacted the humanitarian supply chain. According to the Fritz Institute (2008), several short comings within the Supply Management process in the Refugee assistance programme were revealed in their study. Of great concern was the ultimate effect these short comings had in the delivery of services to the beneficiaries. The process of service delivery is riddled with challenges stemming from Government bureaucracy, focus on accounting and administrative transactions, inventory management, lead times, transport network among others. These challenges riddling the Supply Chain, have lead to sub-optimal performance of the Supply chain with the end result being poor or sub-standard service delivery to the persons-of-concern.

In the refugee assistance programme, excessive delivery lead-times impact beneficiary distribution. Lack of pipeline visibility frequently results in materials being held in transit, Supply Chain performance management is critical. This research was therefore aimed at identifying the
factors that influence Humanitarian Supply Chain Performance, case study of the Refugee assistance programme in Kenya.

**General Objective**
To determine the factors that influence humanitarian Supply Chain performance in the context of the Refugee assistance programme in Kenya.

**Specific Objectives**
The specific objectives of this study were to;

i) Establish the influence of customer-supplier relationship management on humanitarian Supply Chain performance in Kenya;

ii) Determine the influence of Information and Communication Technology on the performance of humanitarian Supply Chains in Kenya;

iii) Establish the influence of corporate culture on humanitarian Supply Chain performance in Kenya;


**Research Questions**
The research was guided by the following questions:

i) How does customer-supplier relationship management influence the humanitarian Supply Chain performance in Kenya?

ii) How does Information and Communication Technology influence the performance of humanitarian Supply Chains in Kenya?

iii) How does corporate culture influence the performance of humanitarian Supply Chains in Kenya?

iv) How does Security influence humanitarian Supply Chain performance in Kenya?

**Justification of the study**
While this study has been prompted by the need to improve Supply Chain Performance within the Humanitarian sector. There is great need to improve Supply Chain performance in the broader perspective, more so in Kenya, a country that has been hosting a great number of humanitarian assistance programmes since the early nineties. This study will go a long way into providing
information by identifying the key factors that influence Supply Chain Performance within this sector. The influencing factors in performance in the humanitarian sector may differ significantly from the commercial sector, or not, and therefore this study will be useful to the Humanitarian community policy makers alike.

The study will aid manager and donor community alike in, that they will not rely on expert judgment or past experiences, but rather on concrete knowledge of issues and facts that influence the humanitarian supply chain performance and adopt remedial or appropriate action as the case maybe. The study is expected to contribute to the existing pool of literature in the field of Supply Chain Management and more specific in the factors influencing performance.

**Scope of the Study**

This study takes the form of research in which in-depth theoretical and empirical literature review is used to examine how Customer-Supplier relationships, Information & Communication Technology, corporate culture and Security influence the performance of humanitarian Supply Chains. The study focused on Relief Agencies operating within the refugee assistance programme in Kenya.

**Literature Review**

**Conceptual framework**

The conceptual framework for this study is drawn from variables derived from existing literature on factors influencing Supply Chain Management. The performance of the Supply Chain is directly linked to the independent variables as graphically portrayed in the conceptual framework below:
**Figure 2.1 Conceptual Framework**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPPLIER RELATIONSHIPS</td>
<td>SUPPLY CHAIN PERFORMANCE</td>
</tr>
<tr>
<td>• Defined Supply Network;</td>
<td>• Quality Management</td>
</tr>
<tr>
<td>• Relationship Building;</td>
<td>• Cost Reduction;</td>
</tr>
<tr>
<td>• Development of Partners.</td>
<td>• Time (Delivery Time Management.)</td>
</tr>
<tr>
<td>INFORMATION &amp; COMMUNICATION TECHNOLOGY</td>
<td></td>
</tr>
<tr>
<td>• Investment in ICT;</td>
<td></td>
</tr>
<tr>
<td>• ICT Linkages with Suppliers;</td>
<td></td>
</tr>
<tr>
<td>• ICT systems in place.</td>
<td></td>
</tr>
<tr>
<td>ORGANIZATIONAL CULTURE</td>
<td></td>
</tr>
<tr>
<td>Organizational Culture Profile</td>
<td></td>
</tr>
<tr>
<td>• Innovation;</td>
<td></td>
</tr>
<tr>
<td>• Aggressiveness</td>
<td></td>
</tr>
<tr>
<td>• Outcome Oriented</td>
<td></td>
</tr>
<tr>
<td>• Stability</td>
<td></td>
</tr>
<tr>
<td>• People Orientation</td>
<td></td>
</tr>
<tr>
<td>• Team Orientation</td>
<td></td>
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<tr>
<td>• Detail Orientation</td>
<td></td>
</tr>
<tr>
<td>SECURITY</td>
<td></td>
</tr>
<tr>
<td>• State security network;</td>
<td></td>
</tr>
<tr>
<td>• Existence of protagonists;</td>
<td></td>
</tr>
<tr>
<td>• Information dissemination.</td>
<td></td>
</tr>
</tbody>
</table>
Supplier Relationships

According to Tummala et al. (2006), organizations need first to develop a Supply Chain Management process map describing the activities of all members involved in the supply chain and the relationships among them in successfully achieving the SCM goals and objectives. This initial process is a requisite step in ensuring that all players in the supply chain are captured and the broad picture is visible at the decision making level. This broad picture is according to Slack and Lewis (2008) referred to as supply network and further defined as an interconnection of organizations which relate to each other through upstream and downstream linkages between the different processes and activities that produce value in the form of products and services to the ultimate customer. This supply network concept is graphically depicted in figure 2.2.

Figure 2.2 Supply Networks

Adapted from Slack and Lewis (2008)

Maloni and Benton (1997) perceive SC Supplier partnerships and strategic alliances as a cooperative and more exclusive relationship between organizations and their upstream suppliers and downstream customers with numerous firms having taken bold steps to break down both inter and intra firm barriers to form alliances, with the specific objectives of reducing uncertainty and
enhancing control of supply and distribution channels. They further argue that such alliances are usually created to increase the financial and operational performance of each channel member through reductions in total cost and inventories and increased sharing of information. Which corroborates the Supply Networks Theory as advance by Slack and Lewis (2008).

In the process of building customer-supplier relationships certain steps must be undertaken by the organisation. Communicating benefits of relationships, clarifying customer needs and expectations, assisting in problem solving and conflict resolution, improving performance measures with suppliers, and creating competitive advantage help to maintain effective relationships (Stuart and McCutcheon, 2000; Lester, 2000; Vokurka, 1998). Developing partners is a difficult task especially in the rapidly changing business environment. Developing partnerships requires considerable resources and may involve significant risks (Stuart & McCutcheon, 2000).

**Information & Communication Technology**

Information and communication technology (ICT) is a very important strategic factor in managing supply chains; it acts as the disseminator and enabler for process and product communication along with reducing paperwork and lead times (Handfield & Nichols, 1999). More recently, a significant body of research has attempted to link firms’ investments in information technology (IT) with overall competitive advantage in the pursuit of superior performance (Kohli & Devaraj, 2003; Melville et al, 2004; Piccoli & Ives, 2005). While there is clear evidence of a measurable correlational relationship between IT investment activities and firm performance on several strategic dimensions (Barua et al. 1995; Fracalanci & Galal, 1998) the relationship is often found to be indirect, mediated by the effectiveness of implementation (Brynjolfsson & Hitt, 1998; Mooney et al., 1996) and subject to severe measurement issues (Bharadwaj, 2000).

This literature brings out the fact that investment in IT has a direct co-relation with the success of process; however the concept of implementation and measurement is also brought about. According to Lester (2000), the goal of implementing systems is to facilitate quick and accurate decision making by management. He goes on to borrow from Wal-Mart who gained a strong cost advantage over competitors from progressive buying, shipping and storage; which were built on supply chain advantages in inventory management. Some consider this as Wal-Mart’s core
competency to gain an edge over its competitors. Wal-Mart is one of the leaders in Supply Chain Management. Shapiro (2001) categorized information technologies into transactional and analytical information technologies. The role of transactional IT is to acquire process and disseminate raw data about the company’s supply chain and to compile reports to summarize these data. An analysis of the profitability of ICT investments in an empirical study that explicitly considered the competitive dynamics in a market showed that the profits of non-adopters of ICT are reduced as other firms adopt new ICT. Furthermore, the gross profit gains of ICT adoption are related to firm and industry characteristics and the number of other users of the technology (Stoneman & Kwon, 1996). Along similar lines, another study suggests that early adopters of ICT are likely to benefit, but once the technology becomes common the competitive advantage is lost (Weill, 1992).

**Organizational Culture**
Culture is the system of shared values, beliefs and habits within an organisation that interacts with the formal structure to produce behavioral norms (Lysons & Farrington, 2006). This research used a modified version of the Organizational Culture Assessment Instrument (OCAI) developed by Cameron and Quinn’s (2006). Which is based on the premise that strong organizational culture is a key to corporate Profitability. Organizational culture “is the set of key values, beliefs, and norms shared by members of an organization. Organizational cultures serve two critically important functions integrates members so that they know how to relate to one another and to help the organization adapt to the external environment(Daft, 2006). Studies show that congruence between individual and organizational culture contributes to higher levels of performance (Cameron & Quinn, 2006).

Employees are able to take Supply Chain Management initiatives more seriously if they see their superiors supporting them, which includes providing recognition of employees that accept changes in their roles. This commitment by employees needs to be translated into actions that reinforce collaboration (McIvor & McHugh, 2000). The corporate culture created by harmonizing synergies is important towards achieving of results, more so in the humanitarian organisations where the firms are not motivated by profits, but rather by the delivery of services. Monczka and Morgan (1996) allude to the fact that responsibility for SCM goes beyond one department; the firms have
to evaluate their organizational values to create an environment that supports cross-functional coordination between internal and external partners.

Security

The author sought to examine security as an independent variable towards the overall success of humanitarian Supply Chains. This variable is synthesized into the research by the author due to the fact that humanitarian supply chains operate partly in areas of great human risk. According to the Aid Worker Security Database (AWSD), the number of major attacks against aid workers rose in 2011, reversing a two-year decline. Worldwide there were 151 major incidents of violence against civilian aid operations, and the total number of victims of these attacks, 308, is the highest yet recorded. Of these, 86 aid workers were killed, 127 were seriously wounded, and 95 were kidnapped as per figure 2.6.

Table 2.1 Major attacks on Aid workers: Summary statistics, 2000-2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of incidents</th>
<th>Total aid worker victims</th>
<th>Total killed</th>
<th>Total injured</th>
<th>Total kidnapped*</th>
<th>International victims</th>
<th>National victims</th>
<th>UN staff</th>
<th>International NGO staff</th>
<th>LNOG and RCS staff**</th>
<th>ICRC staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>42</td>
<td>91</td>
<td>57</td>
<td>23</td>
<td>11</td>
<td>21</td>
<td>70</td>
<td>31</td>
<td>45</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>2001</td>
<td>29</td>
<td>90</td>
<td>27</td>
<td>20</td>
<td>43</td>
<td>28</td>
<td>62</td>
<td>28</td>
<td>48</td>
<td>2</td>
<td>11</td>
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<tr>
<td>2002</td>
<td>46</td>
<td>85</td>
<td>38</td>
<td>23</td>
<td>24</td>
<td>17</td>
<td>68</td>
<td>31</td>
<td>54</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>2003</td>
<td>63</td>
<td>143</td>
<td>87</td>
<td>23</td>
<td>23</td>
<td>27</td>
<td>116</td>
<td>18</td>
<td>69</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2004</td>
<td>63</td>
<td>125</td>
<td>56</td>
<td>46</td>
<td>23</td>
<td>24</td>
<td>101</td>
<td>31</td>
<td>69</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2005</td>
<td>75</td>
<td>173</td>
<td>54</td>
<td>46</td>
<td>23</td>
<td>15</td>
<td>158</td>
<td>28</td>
<td>69</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2006</td>
<td>107</td>
<td>240</td>
<td>87</td>
<td>96</td>
<td>26</td>
<td>26</td>
<td>214</td>
<td>21</td>
<td>112</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2007</td>
<td>123</td>
<td>220</td>
<td>87</td>
<td>87</td>
<td>23</td>
<td>26</td>
<td>185</td>
<td>61</td>
<td>110</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2008</td>
<td>165</td>
<td>278</td>
<td>127</td>
<td>91</td>
<td>23</td>
<td>26</td>
<td>227</td>
<td>39</td>
<td>65</td>
<td>3</td>
<td>11</td>
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<tr>
<td>2009</td>
<td>154</td>
<td>295</td>
<td>107</td>
<td>94</td>
<td>23</td>
<td>26</td>
<td>221</td>
<td>35</td>
<td>65</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2010</td>
<td>129</td>
<td>245</td>
<td>72</td>
<td>94</td>
<td>23</td>
<td>26</td>
<td>208</td>
<td>44</td>
<td>101</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2011</td>
<td>151</td>
<td>308</td>
<td>86</td>
<td>95</td>
<td>95</td>
<td>127</td>
<td>280</td>
<td>91</td>
<td>140</td>
<td>77</td>
<td>5</td>
</tr>
</tbody>
</table>

Adapted from www.humanitarianoutcomes.org (2013)

The biggest challenges to humanitarian operational security derive from weak governance environments where state institutions have neither the resources nor capacities to manage the insecurity within their borders. Combining those challenges with the presence of extremist, violent groups creates significant insecurity for aid operations. When states cannot pacify or police large parts of their territory, aid organizations can become especially appealing targets for perpetrators seeking material or political spoils.
In the new nation of South Sudan, for example, aid agencies have struggled with the government’s lack of capacity and lack of observance of responsibilities regarding security of aid operations. Poorly equipped and paid governmental security forces commandeer agency vehicles and other communications assets and detain aid agency staff with no legal basis, along with other harassments and threats. This has made engaging with the state on security issues increasingly difficult for aid agencies. As a result, very few approach government officials for security advice or support, and most agencies try to avoid association with the central government. At the local level, relations tend to be better, however, and most agencies will heed officials’ advice if there are limitations on travel (Pinker, 2011).

**Supply Chain Performance**

Neely *et al* (1995) defines Supply Chain Performance Measurement (SCPM) as the process of quantifying the efficiency and effectiveness of actions. In the definition effectiveness is the extent to which customer’s requirements are met, while efficiency measures how economically a firm’s resources are utilized to achieve a predetermined level of customer satisfaction. It is highly important to determine performance measures to monitor the plans and to take corrective actions if deviations occur against the planned outcomes. As research shows, the most effective relationships exist where supply chain partners have been made aware of what performance standards they are being held accountable for (Stuart & McCutcheon, 2000).

The humanitarian Supply Chain is riddled challenges and therefore it’s imperative to ensure that the process of realizing coordination of goals needs to be achieved in order to build confidence and realize that the transition to a strategic alliance is worthwhile (Whipple & Frankel, 2000). Performance measurement in this case was adopted by the author to reflect the need to achieve predetermined milestones which will ultimately lead to the accomplishment of the corporate goal. Gunasekaran *et al* (2004) in their study came up with the conclusion that performance measurement can be used to determine the effectiveness of a supply chain. In recent years, organizational performance measurement framework and factors have received much attention from researchers and practitioners.
Empirical Review

In a study conducted by Maloni and Benton (1997), supply chain partnership and strategic alliance was perceived as a cooperative and more exclusive relationship between organizations and their upstream suppliers and their downstream customers. The study showed that numerous firms take bold steps to break down both inter and intra firm barriers to form alliances, with specific objectives of reducing uncertainty and enhancing control of supply and distribution channels. From this study it was evident that firms invest in Customer-Supplier relationships to not only increase financial performance but to also increase operational performance of each channel member.

Handfield and Nichols (1999) state in their studies that ICT is a strategic factor in managing supply chains. Kohli et al, (2003) linked investment in ICT with overall competitive advantage in pursuit of superior performance, however in studies by Brynjolfsson and Hitt (1998); Mooney et al (1996), the relationship of investment in ICT was found to be indirect to firm performance. The mediating factor in this was found to be the effectiveness of ICT implementation. These studies brought about the divergence between ICT investment and ICT implementation. Lester (2000) in his study stated that the goal of implementing systems is to facilitate quick and accurate decision making by management. These studies clearly bring out the need to examine the degree of influence ICT has on humanitarian Supply Chain performance.

Culture was identified by Tan et al. (1998) as one of the single most important prerequisite for change, without which it is difficult for management to establish change management process and forge necessary relationships between customers and suppliers. This commitment by employees needs to be translated into actions that reinforce collaboration (Mclvor & McHugh, 2000). These studies were further cemented by Dunning (2013) who stated that corporate culture has more to do with success of a company than any other single factor. This study sought to examine the degree to which corporate culture influences the performance of humanitarian Supply Chains drawing from the previous studies as cited above.

Performance measurement according to Neely et al. (1995) involves the process of quantifying the efficiency and effectiveness of actions. It is important to determine performance measures to monitor the plans and to take corrective actions if deviations occur against the planned outcomes.
Security as an independent variable has received little attention in this field of study, the biggest challenges to humanitarian operational security is derived from weak governance environments where state institutions have neither the resources nor the capacity to manage the insecurity within their borders or regions of operations. This study seeks to correlate performance of humanitarian supply chains to the ambient security.

**Research Gaps**

Previous studies have been undertaken in this area by various researchers, (Gunasekaran, Patel & McGaughey, 2004) approached the subject by adopting a framework for Supply Chain Performance measurement. The emphasis of their study was bent on performance measurement. However, their study was based on corporate Supply Chain Management. Additional research areas included practitioner-driven initiatives in designing new measures and new programs for assessing the performance of the supply chain as well as the collaborative participation in addressing the measurement and improvement of Supply Chain Performance. This study drew from these areas to examine the factors influencing Supply Chain Performance in the Humanitarian context.

Humanitarian supply chain management has attracted a number of researchers. Stuart and McCutcheon (2000) on the other hand conducted a study on performance measurement system for the evaluation of humanitarian supply chains. Kiura (2012) investigated the impact of supply chain management challenges on humanitarian organizations in Kenya, Mohamed (2012) in his study aimed at establishing the supply chain management practices and their impact on performance among humanitarian organizations in Kenya and Nyamwange and Nyaguthie (2004) in their study on humanitarian logistics challenges focusing on lessons learnt from Somalia and concluded that logistics of humanitarian aid are faced by many challenges and stressed the need for further knowledge and standards to help in effective and efficient humanitarian supply chains.

The above studies have not focused specifically on factors that influence humanitarian Supply Chain performance in the context of the Refugee assistance programmes. Though these factors have been mentioned in the studies, most of these studies have been done in other countries whose strategic approach and financial footing is different from that of Kenya. None of these studies focused on the factors that influence humanitarian Supply Chain performance in the context of the
Refugee assistance programmes. It is evident therefore that a literature gap exists on the factors that influence humanitarian Supply Chain performance in the context of the Refugee assistance programmes in Kenya. This study therefore seeks to fill this gap by focusing on the factors that influence humanitarian Supply Chain performance in the context of the Refugee assistance programmes in Kenya.

Research Methodology

Research Design

This research adopted a Descriptive research which included surveys and fact-finding enquiries of different kinds (Kothari, 2007). The use of a descriptive study was selected due to the fact that, this being a case study in which information was collected without changing the environment and was best suited to demonstrate the correlation of the variables. The research took on a Case study approach; an in-depth investigation of an individual, group, institution or phenomenon (Mugenda, 2008).

This design was been adopted due to the fact that its best suited in answering the research questions. A descriptive design is concerned with determining the frequency with which something occurs or the relationship between variables (Bryman & Bell, 2007). Thus, this approach was suitable for this study, since the study collected comprehensive information through descriptions which was helpful for identifying variables. According to Polit and Beck (2013), in a descriptive study, researchers observe, count, delineate, and classify. They further describe descriptive research studies as studies that have, as their main objective, the accurate portrayal of the characteristics of persons, situations, or groups, and/or the frequency with which certain phenomena occur.

Data Analysis And Interpretations

This chapter presents analysis of the factors that influence humanitarian Supply Chain performance in the context of the refugee assistance programme in Kenya. The chapter also provides the major findings and results of the study.

Reliability Analysis

A pilot study was carried out to determine reliability of the questionnaires. The pilot study involved...
the sample respondents from the chosen agencies within the humanitarian sector for refugee assistance in Kenya. Reliability analysis was subsequently done using Cronbach’s Alpha which measures the internal consistency by establishing if certain item within a scale measures the same construct.

Coefficient of 0.6-0.7 is a commonly accepted rule of thumb that indicates acceptable reliability and 0.8 or higher indicated good reliability (Chandran, 2004), thus forming the study’s benchmarked. Cronbach Alpha was established for every objective which formed a scale. Table 4.1 shows that customer-supplier relationship management had the highest reliability (α= 0.915), followed by Information and Communication Technology (α=0. 835), corporate culture (α=0. 819) while security had the least reliability (α=0. 798). This illustrates that all the four variables were reliable as their reliability values exceeded the prescribed threshold of 0.6.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Cronbach's Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and Communication Technology</td>
<td>0.835</td>
</tr>
<tr>
<td>Security</td>
<td>0.798</td>
</tr>
<tr>
<td>corporate culture</td>
<td>0.819</td>
</tr>
<tr>
<td>customer-supplier relationship management</td>
<td>0.915</td>
</tr>
</tbody>
</table>

Inferential Statistics
The study used inferential statistics to come up with the model explaining the relationship between humanitarian supply chain performance (dependent variable) and supplier relationships, information and communication technology, organizational culture and security (independent variables).

Factor Analysis
Factor analysis is a systematic, statistical procedure used to uncover relationships amongst several variables. This procedure enables numerous correlated variables to be condensed into fewer dimensions known as factors. The purpose of factor analysis is to discover simple patterns in the pattern of relationships among variables (Anderson, 2004). In the context of this research, the variables are the degree of agreement with various specific perception statements while the factors are the general underlying constructs. The factor analysis was conducted to confirm the suitability
of the earlier chosen actors and to pick the parameters to be used for the regression and correlation analysis. In its procedure, rotation is applied to identify meaningful factor names or descriptions.

**Communalities**

The table in Appendix III helps to estimate the communalities for each variance. This is the proportion of variance that each item has in common with other factors. For example, ‘The organization emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued’ has 98.2% communality or shared relationship with other factors. This value has the greatest communality with others, while ‘How often does the organization communicate with the supplier in the duration of a contract’ has the least communality with others of 70.4%.

**Total Variance Explained**

In the Appendix IV, the Kaiser Normalization Criterion is used, which allows for the extraction of components that have an Eigen value greater than 1. The principal component analysis was used and 10 factors were extracted. As the table shows, these 10 factors explain 91.24% of the total variation. Factor 1 contributed the highest variation of 42.267%. The contributions decrease as one move from one factor to the other up to factor 10.

**Component Matrix**

The initial component matrix was rotated using Varimax (Variance Maximization) with Kaiser Normalization. The results in Appendix V allowed for the identification of which variables fall under each of the 10 major extracted factors. Each of the 57parameters was looked at and placed to one of the 10 factors depending on the percentage of variability; it explained the total variability of each factor. A variable is said to belong to a factor to which it explains more variation than any other factor. All items in the 10 factors identified had factor loadings above the cut-off value (0.4) impressing their importance and meaningfulness to the factors in the light of recommendations by Hair et al. (1998). The component distribution is shown in figure 4.1.
Figure 4.1: Scree Plot

The interpretable factors that explain the maximum amount variability in the data according to the component matrix can be summarized into our factors:

Factor 1 – Supplier Relationships

Factor 2 – Information & Communication Technology

Factor 3 – Organisation culture

Factor 4 - Security

**Correlations Analysis**

Correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2-tailed.

*Table 4.2: Correlations Matrix*
According to the result in Table 4.41, there is a positive relationship between all the four factors and humanitarian supply chain performance. The positive relationship indicates that there is a correlation between the factors and the humanitarian supply chain performance. Based on the correlation coefficients, supplier relationships have the highest effect on humanitarian supply chain performance at $r = 0.763$ and $p = 0.040$, followed by organizational culture at $r = 0.632$ and $p = 0.009$, then information and communication technology at $r = 0.614$ and $p = 0.022$ while security had the least effect on humanitarian supply chain performance at $r = 0.596$ and $p = 0.016$.

**Multicollinearity Test**

Problem may arise when two or more predictor variables are correlated. Heteroscedasticity means that previous error terms are influencing other error terms and this violates the statistical assumption that the error terms have a constant variance. Greene (2003) argues that the prediction is not affected, but interpretation of, and conclusions based on, the size of the regression coefficients, their standard errors, or the associated z-tests, may be misleading because of the potentially confounding effects of multicollinearity. In the presence of multicollinearity, Mason and Perreault (2011) demonstrates that the coefficient estimates may change erratically in response to small changes in the model or the data. However, the decision to finally drop an item also depends on a second step, where we apply the variance inflation factor (VIF) according to Greene.
The VIF detects multi-collinearity by measuring the degree to which the variance has been inflated.

Table 4.3: Summary of Collinearity Statistics

<table>
<thead>
<tr>
<th>Model</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier relationships</td>
<td>0.924</td>
<td>2.728</td>
</tr>
<tr>
<td>Information and communication technology</td>
<td>0.786</td>
<td>1.423</td>
</tr>
<tr>
<td>Organizational culture</td>
<td>0.634</td>
<td>1.352</td>
</tr>
<tr>
<td>Security</td>
<td>0.780</td>
<td>3.427</td>
</tr>
</tbody>
</table>

A VIF greater than 10 is thought to signal harmful multi-collinearity suggested by Baum (2006). The Variance inflation factor (VIF) was checked in all the analysis as computed and the results displayed in table 4.42 showing it is not a cause of concern according to Baum (2006) who indicated that a VIF greater than 10 is a cause of concern.

Regression Analysis

Table 4.4: Goodness of fit of the model

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.853a</td>
<td>0.728</td>
<td>0.673</td>
<td>1.673</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Supplier relationships, Information and communication technology, Organizational culture, Security.

Table 4.43 is a model fit which establish how fit the model equation fits the data. The adjusted $R^2$ was used to establish the predictive power of the study model and it was found to be 0.673 implying that 67.3% of the variations in humanitarian supply chain performance are explained by supplier relationships, information and communication technology, organizational culture and security leaving 32.7% unexplained. Therefore, further studies should be done to establish the other factors (32.7%) affecting humanitarian supply chain performance.
Table 4.5: Summary of One-Way ANOVA results of the regression analysis between humanitarian supply chain performance and predictor variables

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>172.152</td>
<td>4</td>
<td>43.038</td>
<td>13.366</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>64.4</td>
<td>20</td>
<td>3.220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>236.552</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Supplier relationships, Information and communication technology, Organizational culture, Security

b. Dependent Variable: Humanitarian supply chain performance

The probability value of 0.000 shown in table 4.44 indicates that the regression relationship was highly significant in predicting how supplier relationships, information and communication technology, organizational culture and security influenced humanitarian supply chain performance. The F calculated at 5 percent level of significance was 13.366 since F calculated is greater than the F critical (value = 2.87), this shows that the overall model was significant.
Table 4.6: Coefficients of regression equation

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.329</td>
<td>0.473</td>
<td>2.825</td>
<td>0.0105</td>
</tr>
<tr>
<td>Supplier relationships</td>
<td>0.638</td>
<td>0.172</td>
<td>0.205</td>
<td>3.709</td>
</tr>
<tr>
<td>ICT</td>
<td>0.576</td>
<td>0.155</td>
<td>0.693</td>
<td>3.716</td>
</tr>
<tr>
<td>Organizational culture</td>
<td>0.605</td>
<td>0.187</td>
<td>0.222</td>
<td>3.235</td>
</tr>
<tr>
<td>Security</td>
<td>0.537</td>
<td>0.159</td>
<td>0.468</td>
<td>3.377</td>
</tr>
</tbody>
</table>

a. Dependent Variable: humanitarian supply chain performance in Kenya

The regression findings in table 4.45 has established that taking all factors into account (supplier relationships, information and communication technology, organizational culture and security) constant at zero humanitarian supply chain performance will be 1.329. The findings presented also show that taking all other independent variables at zero, a unit increase in supplier relationships would lead to a 0.638 increase in humanitarian supply chain performance and a unit increase in information and communication technology would lead to a 0.576 increase in the humanitarian supply chain performance. Further, the findings shows that a unit increase in organizational culture would lead to a 0.605 increase in humanitarian supply chain performance while a unit increase in security would lead to a 0.537 increase in the humanitarian supply chain performance.

In terms of magnitude, the findings indicated that supplier relationships have the highest effect on humanitarian supply chain performance followed by organizational culture, then information and communication technology while security had the least effect on humanitarian supply chain performance. All the variables were significant as their P-values were less than 0.05.

The established optimal model for the study was:

\[ Y = 1.329 + 0.638X_1 + 0.576X_2 + 0.605X_3 + 0.537X_4 \]
Summary, Conclusions and Recommendations
This section provides a summary of the findings on the influence of customer-supplier relationship management, information and communication technology, corporate culture and security on humanitarian supply chain performance.

Summary
The study established that for most (72%) of the agencies interviewed, the direction that the communication is dominated is bi-directional, that is from agency to supplier/ supply to agency. Further, the study established that for most of the agencies interviewed, communication is sent between the Agency and Supplier formally (88%). As well, the study found out that for most of the agencies interviewed, future plans or changes are communicated with Suppliers directly - suppliers are briefed on expected changes, plans (80%).

In regard to information & communication technology, the study established that for most of employees of the agencies interviewed have an internal ICT platform to support Supply Chain activities (80%). Additionally, the study established that most of employees (64%) of the agencies interviewed had an Enterprise Resource Planning (ERP such as SAP) tool.

In relation to organizational culture, the study established that the organizations is a very controlled and structured place and that formal procedures generally govern what people do as shown by a mean score of 3.8000. Also, the study established that the organization is very results oriented; a major concern is with getting the job done and that people are very competitive and achievement oriented as shown by a mean score of 3.6800. The study further established that the organization is a very personal place. It is like an extended family; that people seem to share a lot of themselves as shown by a mean score of 2.9600. As well, the study established that that the organization is a very dynamic entrepreneurial place and that people are willing to stick their necks out and take risks as shown by a mean score of 2.8800.

With regard to security the study established that information dissemination on security issues/incidents influences on the performance in the organization to a great extent as shown by a mean score of 4.2800. Additionally, the study established that safe and secure working environment influences on the performance in the organization is to a great extent as shown by a mean score of 4.1600. Further, the study found out that uncertainty in security influences on the
performance in the organization to a great extent as shown by a mean score of 3.9583. As well, the study established that existence of Radical/Extremist elements in the area of operation influences on the performance in the organization to a great extent as shown by a mean score of 3.7917. Furthermore, the study established that reinforcement of state provided security influences on the performance in the organization to a great extent as shown by a mean score of 3.7600. The study also found out that physical security has a moderate effect on Supply Chain performance (48%). Additionally, the study found that the security situation be addressed internally (68%).

**Supply chain performance**

The study additionally found out that loss of goods in transit poses the greatest challenges in supply chain performance (52%). The study also established that SC customer relationship management is important in the organization to a very great extent as shown by a mean score of 4.3600. As well, the study established that quality management is key to the organization to a great extent as shown by a mean score of 4.3200. Lastly, the study established that SC customer relationship management is important in the organization to a great extent as shown by a mean score of 4.1200. Furthermore, the study found out that employees in the organizations interviewed sometimes receive Goods/Services that do not meet the specifications (40%). In addition, the study established that employees in the organizations interviewed were moderately aware of Total delivery cost management strategies (44%). The study also established that the Supply Chain Strategy has a major effect on Cost of Goods/Services (56%). Further, the study found out that customers are satisfied with the delivery of Goods/Services in general in most of the organizations studied (56%). Moreover, the study established that stock out of essential items to their core business is sometimes experienced (48%).

**Conclusion**

With regard to supplier relationship the study concludes that skill level of the suppliers in the delivery of services influenced the trust of KPI in their organization to a great extent. As well, the study concludes that from engagement with suppliers, the level of experience of employees is great. Further, the study concludes that the suppliers observe strict ethical principles to a great extent. Also, the study concludes that the suppliers’ company policies were expressed clearly to a great extent.
In regard to information & communication technology, the study concludes that for in the agencies interviewed, there is an internal ICT platform to support Supply Chain activities. Additionally, the study concludes the agencies interviewed have the Enterprise Resource Planning (ERP such as SAP).

In relation to organizational culture, the study concludes that the organizations is a very controlled and structured place and that formal procedures generally govern what people do. Also, the study concludes that the organizations are very results oriented; a major concern is with getting the job done and that people are very competitive and achievement oriented. The organization is a very personal place. It is like an extended family; that people seem to share a lot of themselves. As well, the study concludes that that the organization is a very dynamic entrepreneurial place and that people are willing to stick their necks out and take risks.

The study additionally concludes that loss of goods in transit poses the greatest challenges in supply chain performance. The study also concludes that SC customer relationship management is important in the organization to a very great extent. As well, the study concludes that quality management is key to the organization to a great extent. SC customer relationship management is important in the organization to a great extent.

**Recommendations**

The study established that the suppliers observe strict ethical principles to a great extent. This shows that the suppliers have no tolerance for any form of unaccountability. There is a need for humanitarian agencies to maintain utmost integrity in all their operations in all their branches. This will ensure that refugee assistance activities will not be subjected to legal cases that may prolong the delivery of the services and goods. This study therefore recommends that each of the interviewed agencies institute a firm code of conduct for all its employees and operations they undertake.

In establishing the most ideal ICT investment in enhancing Supply Chain performance in an organization the study recommends training staff, improving ICT platforms within the organization and having an ERP that can provide speed analysis and performance reports based on key performance indicators, from the pre-set key performance deliverables/Areas.
The study found out that the Supply Chain related problems are treated as Supply Unit problems and not organizational problems. This strategy has its advantages and disadvantages. The strategy may make the organizational leadership fail to realize pointers of something going wrong in future with regard to the supply chain if the whole issue is left to team responsible for supplies. This may happens especially when the team is not qualified enough or adequately skilled. This study therefore recommends that the leadership of the organization to take close and thorough supervisory role of the activities and decisions undertaken by such a team.

The study established that information dissemination on security issues/incidents influences on the performance in the organization to a great extent. Therefore this study recommends that the process disseminating information with regard to security issues be enhanced. The process should be fast, effective and real time. This will put the organization in a better place to deal with security issues and/or incidents.

REFERENCES


