EFFECTS OF TOTAL QUALITY MANAGEMENT ON LOGISTICS PERFORMANCE IN HUMANITARIAN ORGANIZATIONS IN KENYA: A CASE OF WORLD FOOD PROGRAM KENYA CHAPTER

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ABSTRACT

Logistics plays a key role in supporting organizations as they strive for more efficient management systems in business practices. To Humanitarian organizations, logistics is as crucial, these organizations have a vital role to play in alleviating the suffering of vulnerable people in natural and man-made calamities like famine arising from prolonged periods of drought, earthquakes and tsunamis, floods, civil conflicts and more recently in Kenya terrorist attacks. The WFP delivers food aid to drought stricken areas and to refugees in camps yet it continues to face logistical challenges leading to late deliveries. The main objective of this study was therefore to investigate the effects of TQM on logistics performance at WFP Kenya chapter. The specific objectives were to determine if continuous improvement has an effect on logistics performance, to find out if team involvement was a factor affecting logistics performance, to establish whether customer focus affects logistics performance and to investigate if fact- based decision making affects logistics performance at WFP Kenya. The study adopted a descriptive research design. This design was preferred because it allows an in-depth study of the subject. The population of the study was staff at WFP involved directly or indirectly with logistics activities. The sampling frame of this study was a staff list from
WFP human resources department. Self-administered questionnaires were dropped and picked so as to collect both qualitative and quantitative data. Qualitative data was analyzed using content analysis while quantitative data was analyzed using descriptive statistics and inferential statistics in the Statistical Package for Social Sciences (SPSS) version 22 to generate information which was presented using tables, frequencies and percentages multiple regression model was used to show the relationship between the dependent variable and the independent variables. The response rate of the study was 83.3%. The findings of the study indicated that continuous improvement, team involvement, customer focus and fact-based decision making have a positive relationship with logistics performance at WFP Kenya. Finally, the study recommended that humanitarian organizations should embrace data collection and analysis so as to be able to make fact-based decisions to improve on their logistics performance. Further research should be carried out on in other humanitarian organizations to find out if the same results can be obtained.

**Key Terms; Critical Success Factors, Extended Delivery Point, Final, Delivery Point, Humanitarian Aid supply chain**

**Background of the Study**

This chapter contains the background of the study in a local, regional and global perspective. The statement of the problem as to why the study has been pursued is also described. The general and specific objectives of the study and research questions are also presented and the significance of the study. The scope of the study giving a relationship between the dependent and independent variables and the limitations of the study are also discussed.

This study will seek to examine logistics performance in humanitarian aid organizations and more specifically at WFP Kenya. Humanitarian relief organizations are more present in people’s lives as disasters are occurring more often and the number of people they affect has increased continuously. Emergency logistics requires delivery of the appropriate supplies in good condition, when and where they are needed. As the demand for assistance increases, it is important that not only is more aid made available, but the logistics system and supply
chains for delivering the required commodities from source to recipients are both effective and efficient. Unfortunately, there is clear evidence that many humanitarian supply chains are less efficient than they could be (Cozzolino, 2012).

There are often operational difficulties ranging from degradation or destruction of information communication systems, difficulties in coordinating physical supply lines and associated damage to the physical infrastructure, to a lack of logistics management expertise. Nevertheless, improving the operational performance of aid supply chains is an area that must be addressed by aid organizations in their continuing quest to both improve the service to the beneficiaries and to provide increasing confidence to donors by demonstrating efficient use of resources. This focus is particularly true given that as much as eighty percent of the activity of their activities is logistic related (Cozzolino, 2012).

This research was necessitated by the need to improve the performance of delivery of humanitarian aid generally in the face of increasing frequency of humanitarian crises globally, the need for more accountability to donors and in light of apparent shortcomings with regard to late deliveries, high logistics costs and the challenging environment to which aid is delivered.

Statement of the Problem

Although WFP has introduced reforms, it continues to face the challenge of overcoming the time lag between disasters occurring, donations coming in and delivery of Aid (WFP, 2013). According to Fritz institute (2010), there has been failures in aid delivery systems following major humanitarian crises in different parts of the world. According to a worldwide expenditure review on humanitarian aid, logistics costs represent a very high proportion of aid budgets – up to 40 per cent, compared to 15 per cent as more
common in commercial sector (Christopher & Tatham 2011). Deficiencies in humanitarian logistics activity have become very apparent in a number of recent disasters and highlight the need for improvements in logistics performance, inter-agency collaboration, needs assessment and the use of ICT. The significant increase of natural disasters, complex and cost intensive humanitarian logistics operations, responsibility and reporting towards donors and beneficiaries are reasons for humanitarian organizations to become more efficient in their operations (Scholten, 2010). Operations also face hindrances from some governments in the developing world relating to the use of their country’s road network as a passage of relief food aid into other fellow countries, at one time, WFP relief trucks bound for Somalia were stranded for months at the Kenyan borders after the Kenyan government decided to close its boarders for security, political and infrastructure damage reasons (WFP, 2009). Inability for UN staff to access Mandera because of high residual security risk (terrorism) prevented WFP from monitoring its programs for the first half of 2015. The need for escorted convoys also prolongs transit times. Moreover, only a limited number of long-haul transport companies are willing to work in the region as the long-haul trucks are often unsuited for the bad road infrastructure (WFP, 2015).

It is possible that WFP will be stretched operationally and financially during 2016 when the impacts of the El Niño event translate into increased food assistance needs across most of its areas of operation (WFP, 2015). This raises the need for better logistics performance that relates to needs assessment, preparedness in terms of adequate purchasing, storage and distribution in Humanitarian Organizations to ensure logistics performance has attained the expected threshold. This study therefore sought to identify the effects of total quality management on logistics performance specifically in WFP in order to try and bridge the time
gap between disasters occurring, donations coming in and the delivery of the actual aid as well as the high costs of logistics activities among humanitarian aid organizations.

**Objectives of the study**
The specific objectives of this study were:

i. To examine the influence of continuous improvement on logistics performance at World Food Programme Kenya.

ii. To ascertain the effects of team involvement on logistics performance at World Food Programme Kenya.

iii. To evaluate how customer focus affects logistics performance at World Food Programme Kenya.

iv. To establish the influence of fact-based decision making on logistics performance at World Food Programme Kenya.

**Research Questions**
The study answered the following research question.

(i) How does continuous improvement affect logistics performance at World Food Programme Kenya?

(ii) What is the effect of team involvement on logistics performance at World Food Programme Kenya?
(iii) How does customer focus affect logistics performance at World Food Programme Kenya?

(iv) To what extent does fact-based decision making affect logistics performance at World Food Programme Kenya?

**Conceptual Framework**

According to Kothari (2006), conceptual framework is the diagram that is used to show the relationship between the dependent and the independent variable. The study is based on the following conceptual framework that explains how TQM practices have an effect on logistics performance. TQM is a management system for a customer-focused organization that involves all employees in continuous improvement of all aspects of the organization. The elements of TQM to be studied here are continuous improvement, customer focus, team involvement and fact-based decision making.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Continuous Improvement</strong></td>
<td></td>
</tr>
<tr>
<td>· Technology improvement</td>
<td></td>
</tr>
<tr>
<td>· Participative change</td>
<td></td>
</tr>
<tr>
<td>· Innovation</td>
<td></td>
</tr>
</tbody>
</table>
Continuous Improvement

Organizations using a TQM system engage in incremental improvements continuously to affect the quality of the business’s processes and products. A continuous improvement approach requires employees to strive for zero defects and efficiency in all processes. Continuous-improvement activities seek areas requiring improvement in a proactive manner, it drives the organization to be both analytical and creative in finding ways to become more competitive and more effective at meeting stakeholder expectations (Hackman, 2010).
Meeting customer requirements is supported by a thorough learning orientation, including substantial investments in training and the widespread use of statistical and interpersonal techniques designed to promote individual and team learning (Hackman, 2010). Continuous improvement is achieved through an integrated effort among personnel at all levels to increase customer satisfaction by continuously improving performance. This focuses on process improvement, customer and supplier involvement, teamwork, and training and education in an effort to achieve timely delivery, cost effectiveness and defect-free work. It also provides the culture and climate essential for innovation and for technology advancement.

Leaders are expected to set quality as a priority while allocating adequate resources to continuous quality improvement and evaluating employees based on their performance (Hendricks, 2011). Many organizations have failed in implementing TQM because of the reluctance of top management in delegating some authorities and involvement of employees. This is a very crucial aspect as the managers are committed in empowering the employees by involving them, the employees are responsible for the quality of their work and this always goes a long way to enhance continuous improvement. TQM initiative programs always emphasize on the importance of top management as the main driver of TQM activities (Hendricks, 2011)

**Customer Focus**

External and internal customers are the focus of TQM systems. External customers are businesses or individuals who place orders for products from an organization. Internal customers in an organization are co-workers or departments that accept work as it moves through the company. For example, in a production line, an internal customer is the co-worker at the next stage in the manufacturing process. In a business that practices Total Quality
Management, each employee must identify his customers and determine the best way to satisfy their quality needs. Employees must identify their customers and communicate their quality needs to the supplier (Dale, 2010).

It is fundamental to understand that the customer ultimately determines the level of quality. No matter what an organization does to foster quality improvement like training employees, integrating quality into the design process, upgrading software or buying new tools, the customer ultimately decides whether the efforts were worthwhile (Juran, 2010).

In service sector, employee-customer interaction influences satisfaction more than actual product or service obtained. This one-on-one or face-to-face contact between customer and deliverer of service (nurse, flight attendant, retail clerk, restaurant server) is extremely important. Poor service quality causes customer defection, which in turn has a substantial impact on costs or profits (Dale, 2010).

The ultimate outcome of customer focus and satisfaction is to achieve profit in the private sector and productivity in the public or non-profit sector. The one thing which is proven as a result of various studies is the relationship between customer retention and profit. Employee retention is achieved through good human resources management practices and organization development methods such as team building, job development, and empowerment. Employee retention depends on employee satisfaction, which in turn can be related to external services and customer satisfaction (Dale, 2010). For humanitarian organizations, accessing their beneficiaries who are their customers is very crucial because their lives depend on them.

Team Involvement
Team involvement refers to participation of all employees in working toward common goals. This can be achieved after fear has been driven from the work place, when empowerment has occurred, and the management has provided the right environment. High performance work systems integrate continuous improvement efforts with normal business operations (Dale, 2010).

TQM systems rely on the people working in an organization to improve quality and processes. Every individual from top-level managers to the lowest level employee is involved in the continuous improvement process in organizations using this system. Companies provide training in the tools, concepts and techniques of the quality management system to all employees. TQM companies create an atmosphere of teamwork and empower workers to take the initiative to improve processes and quality. These systems cannot function without the involvement and encouragement of upper management (Hendricks, 2011).

Humanitarian organizations’ investment in employee education and training is to pursue long-term overall business excellence. In fact, employees are valuable resources worthy of receiving education and training throughout their career development. Feigenbaum (2011) argued that a brief and general course for first-line supervision is modern methods of planning and controlling quality, concentrating essentially upon the physical elements affecting product quality. Cherrington (2010) suggested that training and development require a systematic approach. The development of a sound education and training program requires systematically gathering data about the employees’ or the firm’s needs. A good assessment is also needed and includes an analysis of how well the firm is achieving its goals, the skills needed by the workforce to accomplish these goals, and the strengths and weaknesses of the current
workforce. A careful analysis of these items provides valuable information to design effective training activities.

Investment in training and developments important for ensuring the success of training programs. According to Hackman (2010), training is the second most commonly used TQM implementation practice in the United States. Firms that implement TQM invest heavily in training for employees at different levels. Deming (2011) spoke often of the importance of properly training workers in performing their work. Otherwise, it is difficult to improve their work. The cross-functional quality teams among the characteristics of TQM firms were in favor of learning by the simple fact that they are cross-functional, individual members are exposed to more and more diverse points of view than would be the case if they worked mostly by themselves or in within-functional teams (Hackman, 2010).

Learning is the ability and willingness of the firm to engage in knowledge seeking activities at the individual, group or team, and organizational levels (Anderson, 2011). In order to have effective learning activities, a firm should continually encourage employees to accept training and development. The TQM aspiration of continuous improvement in meeting customer requirements is supported by a thorough learning orientation, including substantial investments in training and the widespread use of statistical and interpersonal techniques designed to promote individual and team learning (Hackman, 2010).

According to Dale (2010), Japanese firms obviously regard their employees as their most significant competitive assets and provide good general orientation as well as training in specific skills. Investment in employee training and development is to pursue long-term overall business excellence. In order to use various quality tools or methods effectively, employees should be trained in these methods. More training should be given to employees
such as quality inspectors, supervisors, and production operators. It is important to provide training to employees just at the time they need it, namely, just-in-time training. In order to perform their work well, employees at different levels should accept specific work-skills training (Hackman, 2010). In addition, employees should accept quality consciousness education in order to improve their commitment to quality. Newly recruited employees should accept more education on quality awareness. Newsletters, posters, slogans and quality day are commonly used for training and development of employees (Zhang, 2010). Training and development have failed if they do not result in a change of behavior (Juran, 2010).

**Fact-based Decision Making.**

TQM organizations use measurable data to make decisions for the company’s improvement efforts. Tools such as statistical process control, process mapping and bar graphs help employees and management identify quality issues and provide a method to measure the success of a quality initiative. Flow charts help quality improvement teams understand a process and identify weaknesses such as duplications of steps in the workflow. Businesses use data to track quality defects and find areas that need improvement (Juran, 2010).

In order to know how well an organization is performing, data on performance measures is necessary. TQM requires that an organization continually collect and analyze data, facts figures and evidence in order to improve decision making accuracy, achieve consensus and allow prediction based on past history (Juran, 2010). If we collect all the necessary data and have modern technology to help us structure all that information, we can make our decisions with more confidence. We can add more certainty to our decision-making (Warner, 2013).
On the operational level this is often easier than on the strategic level. In business operations, consisting of clear business processes, there are fewer factors influencing operational decisions (Warner, 2013). Based on historic data, the effect of operational decisions can be calculated, and a fact-based decision can be taken. “Decisions follow facts”, you could say. Strategic decision-making tends to be very different. Based on strategic insight certain directions are favorite, and analysts help calculate the consequences in various scenarios. Moreover, powerful companies can somewhat influence their environment simply by deciding for a certain direction. “Facts follow decisions”, in some cases. It would be great if analytics would give us more grips on our environments so we could eliminate some of that strategic uncertainty (Warner, 2013).

Understanding strategic decision-making is less obvious than one would think. Decision support professionals sometimes focus more on data and technology than on grasping the actual decision-making process. Between absorbing information, quantitatively and qualitatively, through formal systems or informal conversations, and taking an actual decision, there are multiple steps in between (Frank, 2012). Offering users information to analyze in any way they want is not enough. Decision-makers need to understand which mental model of the business they have, by being aware of the assumptions they use in their decision making process. These conditions need to be tested and questioned. Decision-makers each have different styles. Some are very analytic of nature and come to strategic decisions independently, others are more inclusive of nature and facilitate a consensus-based decision making process. However, each would go through a number of steps (Frank, 2012). Existence of centrally captured data from operations could go a long way in making logistics related decisions like preparedness, planning and implementation more practical.
Logistics Performance

Humanitarian logistics is the process of planning, implementing and controlling the efficient, cost effective flow and storage of goods and materials, as well as related information, from point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people. Christopher, (2011) suggested that logistics performance starts from purchasing efficiency and effectiveness in order to change from being reactive to being proactive to attain set performance levels in an entity. According to Weele (2014), logistics performance is considered to be the result of two elements: effectiveness and efficiency. Performance measurement provides the basis for an organization to assess how well it is progressing towards its predetermined objectives, identify areas of strengths and weaknesses and decide on future initiatives with the goal of finding ways on how to initiate performance improvements. This means that logistics performance is not an end in itself but a means to effective and efficient control and monitoring of the logistics function (Weele, 2014).

Logistics efficiency and purchasing effectiveness represent different competencies and capabilities for the logistics performance. CIPS, (2011) presents the differences between efficiency and effectiveness. Efficiency reflects that the organization is doing things right whereas effectiveness relates to the organization doing the right thing. This means an organization can be effective and fail to be efficient, the challenge being to balance between the two. Organizations which do not have performance measures in their processes, procedures, and plans experience lower performance and higher customer dissatisfaction and employee turnover (Artley & Stroh, 2010, Amaratunga & Baldry, 2008 and CIPS, 2011). Measuring the performance of the logistics function yields benefits to organizations.
such as cost reduction, enhanced profitability, assured supplies, quality improvements and competitive advantage (Batenburg & Versendaal, 2010).

**Methodology**

The research design for this study was descriptive design. The method is more analytic and focuses on a particular variable or factor and also focuses on respondents views (Sekaran, 2012). The sampling frame in this study is 120 employees at WFP Kenya directly or indirectly involved in logistics activities.

A Stratified random sampling was used to select 100 respondents because the respondents are in different logistics departments or units and performing different roles within the organization. The study used both secondary and primary data. Secondary data had been done through review of existing relevant literature sourced from books, journal articles and authentic websites. This study used questionnaires to collect primary data. Descriptive statistics such as the measures of central tendency (mean, median and mode), and measure of dispersion was used to determine the variation of the scores.

Multiple regressions was done to determine whether the four independent variables together predict the dependent variable. Logistics performance was regressed against four variables of TQM namely continuous improvement, team involvement, customer focus and fact-based decision-making. The multiple regression model was presented as follows:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \]

\( Y = \) Logistics Performance

\( Bo = \) Constant (Co-efficient of intercept)
\( X_1 = \) Continuous improvement

\( X_2 = \) Team involvement

\( X_3 = \) Customer focus

\( X_4 = \) Fact-based decision making

\( \beta_1 \ldots \beta_4 = \) Regression co-efficient of four variables or change induced in Y by each X.

\( \varepsilon = \) error term

The \( \beta_0 \) represents the amount of change to be expected in logistic performance when the independent variable are held constant, while the \( \beta_i \) represent the change expected with the manipulation of each of the independent variable.

### Findings

#### Continuous Improvement

The first objective of the study was to examine the influence of continuous improvement on logistics performance at World Food Programme Kenya..

#### Table 1: Continuous Improvement Respondents

<table>
<thead>
<tr>
<th>Continuous Improvement</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous improvement increases speed of logistics activities</td>
<td>1</td>
<td>5</td>
<td>3.13</td>
<td>1.032</td>
<td>120</td>
</tr>
<tr>
<td>Technology improvement reduces cost of logistics activities</td>
<td>2</td>
<td>5</td>
<td>3.12</td>
<td>0.892</td>
<td>120</td>
</tr>
<tr>
<td>Participative change improves on flexibility</td>
<td>1</td>
<td>5</td>
<td>2.27</td>
<td>0.795</td>
<td>120</td>
</tr>
<tr>
<td>Innovation affect dependability of logistics performance</td>
<td>2</td>
<td>5</td>
<td>4.13</td>
<td>0.768</td>
<td>120</td>
</tr>
</tbody>
</table>
Continuous improvement does not affect logistics activities

2 5 3.51 0.691 120

The study endeavored to find out the continuous improvement elements used by the staff to improve logistics performance at WFP. The responses on continuous improvement being utilized by WFP to enhance logistics performance were then evaluated so as to understand the continuous improvement element that was mostly utilized by WFP.

It was evident that continuous improvement done at WFP enabled improve on the speed of logistics activities (mean = 3.13). Technology improvement reduced cost of logistics (mean = 3.12), however, participative change could not enable them improve on flexibility (mean = 2.27). Most (mean = 4.13) respondents felt that innovation affected dependability of logistics. Still, according to some (mean = 3.51) of the respondents, WFP continuous improvement does not affect logistics activities. These finding simply that continuous improvement is achieved through an integrated effort among personnel at all levels to increase customer satisfaction by continuously improving performance.

These findings also showed that employees were responsible for the quality of their work and this always went a long way to enhance continuous improvement. TQM initiative programs always emphasize on the importance of top management as the main driver of TQM activities through participative change and innovation (Hendricks, 2011)

**Team involvement at WFP**

The study also sought to ascertain the effects of team involvement on logistics performance at World Food Programme Kenya. The results on this are summarized in Table 2.
Table 2: Team involvement at WFP

<table>
<thead>
<tr>
<th>Team involvement</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team involvement affects logistics performance</td>
<td>1</td>
<td>5</td>
<td>3.43</td>
<td>0.792</td>
<td>120</td>
</tr>
<tr>
<td>Staff orientation and training affects the speed of logistics activities</td>
<td>1</td>
<td>5</td>
<td>4.52</td>
<td>0.698</td>
<td>120</td>
</tr>
<tr>
<td>Staff orientation and training affects the cost of logistics activities</td>
<td>1</td>
<td>5</td>
<td>3.39</td>
<td>0.795</td>
<td>120</td>
</tr>
<tr>
<td>Employee empowerment affects the flexibility of logistics</td>
<td>1</td>
<td>5</td>
<td>4.41</td>
<td>0.793</td>
<td>120</td>
</tr>
<tr>
<td>Staff motivation affects the dependability/reliability of logistics</td>
<td>1</td>
<td>5</td>
<td>3.58</td>
<td>0.699</td>
<td>120</td>
</tr>
</tbody>
</table>

The WFP helped spot and compare team involvement components as indicated in Table 2 by majority (mean = 3.43) of the respondents. However, most (mean = 4.52) felt that with the help of knowledge about different segments through staff orientation and training, this enabled them enhance the speed of logistics activities which affected the cost (mean= 3.39). The findings also indicated that employee empowerment affected the flexibility of logistics according to majority (mean = 4.41) of the respondents who strongly agreed with this construct. Thus, they were able to develop appropriate staff motivation packages as staff motivation affected the dependability and reliability of logistics (mean = 3.58). These findings concur with Hendricks, (2011) that by companies creating an atmosphere of teamwork and empowerment of workers, systems function to their capacity with the
involvement and encouragement of upper management. Thus workers can take the initiative to improve processes and quality.

**Customer Focus**

There was also need to evaluate how customer focus affected logistics performance at World Food Programme Kenya. The results on this are summarized in Table 3.

<table>
<thead>
<tr>
<th>Customer focus</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-time delivery reduces cost of logistics activities</td>
<td>2</td>
<td>5</td>
<td>3.62</td>
<td>0.575</td>
<td>115</td>
</tr>
<tr>
<td>On-time delivery affects logistics performance</td>
<td>2</td>
<td>5</td>
<td>3.58</td>
<td>0.648</td>
<td>115</td>
</tr>
<tr>
<td>Quality customer service affects the flexibility of logistics</td>
<td>2</td>
<td>5</td>
<td>3.53</td>
<td>0.652</td>
<td>115</td>
</tr>
<tr>
<td>Effective complaints process affect logistics performance</td>
<td>2</td>
<td>5</td>
<td>3.47</td>
<td>0.683</td>
<td>115</td>
</tr>
<tr>
<td>Customer service affects dependability of logistics</td>
<td>1</td>
<td>5</td>
<td>3.51</td>
<td>0.706</td>
<td>115</td>
</tr>
</tbody>
</table>

Table 3: Customer focus at WFP

The findings in Table 3 suggest that most (mean = 3.62) of the respondents were of the opinion that on-time delivery reduced cost of logistics activities. This was so as on-time delivery affected logistics performance (mean = 3.58). Also according to the respondents, quality customer service affects the flexibility of logistics (mean = 3.53) and that effective complaints process affected logistics performance (mean = 3.47). A number of respondents felt that customer service affected dependability of logistics (mean = 3.51).

These findings implied that in the service sector, employee-customer interaction influences satisfaction more than the actual product or service obtained, this affects how one reacts...
towards dependability and delivery of service. This was extremely important as poor service quality caused delay in time of delivery, which in turn had a substantial impact on costs or profits (Dale, 2010). All these combined factors affect logistics performance.

**Fact-based decision making**

Establishing the influence of fact-based decision making on logistics performance at World Food Programme Kenya was the fourth and last objective of this study. This objective was described in terms of data collection and analysis, ease of access to data, process control and mapping and was rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The results on this are summarized in Table 4.

**Table 4: Fact-based Decision Making**

<table>
<thead>
<tr>
<th>Fact-based decision making</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fact-based decision making affects logistics performance</td>
<td>2</td>
<td>5</td>
<td>3.48</td>
<td>0.808</td>
<td>115</td>
</tr>
<tr>
<td>Easy access to data affects the cost of logistics activities</td>
<td>2</td>
<td>5</td>
<td>3.42</td>
<td>0.73</td>
<td>115</td>
</tr>
<tr>
<td>Data collection and analysis affects the cost of logistics activities</td>
<td>3</td>
<td>5</td>
<td>4.45</td>
<td>0.667</td>
<td>115</td>
</tr>
<tr>
<td>Data collection and analysis affects the flexibility of logistics</td>
<td>3</td>
<td>5</td>
<td>4.68</td>
<td>0.548</td>
<td>115</td>
</tr>
<tr>
<td>Process control and mapping affects logistics performance</td>
<td>2</td>
<td>5</td>
<td>3.39</td>
<td>0.781</td>
<td>115</td>
</tr>
</tbody>
</table>

According to the results in Table 4, it was evident that fact-based decision making affected logistics performance (mean = 3.48). The easy access to data affected the cost of logistics activities (mean = 3.42). Most of the respondents also strongly agreed with the statement, “Data collection and analysis affected the cost of logistics activities” (mean = 4.45). It also
appeared that in most cases, data collection and analysis affected the flexibility of logistics as the obtained information was necessary for improving the services (mean = 4.68). Process control and mapping affected dependability of logistics performance. This they felt could happen as the importance given to a delivery point by the distribution channel was not under the logistics control (mean = 3.39). Powerful shareholders can somewhat influence their environment simply by deciding for a certain direction. This supports (Warner, 2013), on “Facts follow decisions”, in some cases. It would be great if analytics would give us more grips on our environments so we could eliminate some of that strategic uncertainty.

**Logistics Performance of WFP Kenya**

Lastly, there was need to establish the logistics performance of WFP Kenya. This was the dependent variable and was determined by certain parameters namely; Speed, cost, dependability and flexibility. The results on this are summarized in Table 5.

**Table 5: Logistics Performance of WFP**

<table>
<thead>
<tr>
<th>Logistics performance</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed of delivery of relief aid increased between 2012 and 2015</td>
<td>2</td>
<td>5</td>
<td>3.36</td>
<td>0.729</td>
<td>120</td>
</tr>
<tr>
<td>Cost of delivery decreased between 2012 and 2015</td>
<td>2</td>
<td>5</td>
<td>3.54</td>
<td>0.627</td>
<td>120</td>
</tr>
<tr>
<td>Number of failed deliveries decreased between 2012 and 2015</td>
<td>1</td>
<td>5</td>
<td>3.35</td>
<td>0.892</td>
<td>120</td>
</tr>
<tr>
<td>Routing flexibility-ability to accommodate different routes has improved between 2012 and 2015</td>
<td>2</td>
<td>5</td>
<td>3.59</td>
<td>0.579</td>
<td>120</td>
</tr>
<tr>
<td>Capacity flexibility-ability to accommodate variation in traffic</td>
<td>1</td>
<td>5</td>
<td>3.42</td>
<td>0.866</td>
<td>120</td>
</tr>
</tbody>
</table>
demand improved most between 2012 and 2015.

The results in Table 5 suggest that the speed of delivery of relief aid increased between 2012 and 2015 (mean = 3.36). This also led to decrease in cost of delivery (mean = 3.54). The results also show that the number of failed deliveries decreased between 2012 and 2015 (mean = 3.35) and more importantly led to improved routing flexibility - ability to accommodate different routes (mean = 3.59). It is also evident that capacity flexibility-ability to accommodate variation in traffic demand improved (mean = 3.42).

**Correlation Analysis**

Correlation analysis was used to determine both the significance and degree of association of the variables and also predict the level of variation in the dependent variable caused by the independent variables. The correlation technique is used to analyze the degree of relationship between two variables. The results of the correlation analysis are summarized in Table 6.

**Table 6: Summary of Correlations**

<table>
<thead>
<tr>
<th></th>
<th>Continuous Improvement</th>
<th>Team Involvement</th>
<th>Customer Focus</th>
<th>Fact Based Decision</th>
<th>Logistics Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Improvement</td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Involvement</td>
<td>Pearson Correlation</td>
<td>.147</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.040</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>120</td>
<td>120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Focus</td>
<td>Pearson Correlation</td>
<td>.132</td>
<td>-.084</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.066</td>
<td>.242</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Fact Based Decision</td>
<td>Pearson Correlation</td>
<td>-.015</td>
<td>.112</td>
<td>.118</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Correlation Summary

<table>
<thead>
<tr>
<th>Logistics Performance</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.105</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.350</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.179</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.462</td>
<td>0.000</td>
</tr>
</tbody>
</table>

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

The correlation summary shown in Table 6 indicates that the associations between each of the independent variables and the dependent variable were all significant at the 95% confidence level. Most of the inter-correlations between the independent variables had p-values greater than 0.05, this meant that the inter-variable correlations between the independent variables were not strong enough to affect the predictions of the independent variables on the dependent variable.

The correlation analysis to determine the relationship between continuous improvement and logistics performance of WFP shows that there is a significant correlation existing between the two (r = 0.105, p < 0.05). However, the Pearson’s product moment coefficient of correlation was low suggesting that a weak relationship existed between continuous improvement and logistics performance of WFP.

The correlation analysis to determine the relationship between team involvement and logistics performance of WFP yielded a Pearson’s product moment coefficient of correlation, r = 0.35, p < 0.05 indicating that a moderate and positive relationship existed team involvement and logistics performance of WFP.

The study also sought to determine the relationship between customer focus and logistics performance of WFP. The correlation analysis showed that the relationship was a significant (r = 0.179, p < 0.05). This showed that a weak relationship existed between customer focus and logistics performance of WFP.
In addition, the study sought to determine the relationship between fact based decision and logistics performance of WFP. It yielded a Pearson’s product moment coefficient of correlation, \( r = 0.462, p < 0.05 \), suggesting that a moderate and positive relationship existed between fact based decision and logistics performance of WFP.

Hence, it is evident that all the independent variables could explain the changes in the logistics performance of WFP on the basis of the correlation analysis.

**Regression Analysis**

In this study multivariate regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. The value obtained for \( R \), which is the model correlation coefficient = 0.564 which was higher than any zero-order value in Table 7. This indicates that the model improved when more variables were incorporated when trying to determine the relationship between Total Quality Management and logistics performance at WFP in Kenya. This also indicates that the model could explain up to 31.8% of the variations in logistics performance in humanitarian organizations in Kenya.

**Table 7: Multiple Linear Regression Analysis Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted Square</th>
<th>R</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.564&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.318</td>
<td>0.311</td>
<td>1.945</td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), continuous improvement, team involvement, customer focus, fact based decision

b. Dependent Variable: logistics performance in humanitarian organizations

**Table 8: Analysis of Variance**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Degree of Freedom</th>
<th>Mean Sum of Squares</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>41.847</td>
<td>3</td>
<td>13.949</td>
<td>9.59</td>
<td>0.00325</td>
</tr>
</tbody>
</table>
Hypothesis:

\[ H_0: \text{The means of all the independent variable are equal.} \]

\[ H_1: \text{At least one or more of the means of all the independent variable are not equal.} \]

Table 8 on the analysis of variance (ANOVA) show an f-value of 9.59, at an alpha level of 0.05, yet the f- critical value at 2 and 97 degrees of freedom and \( \alpha = 0.05 \) is equal to 3.25. The f-calculated value is greater than the f-tabulated critical value \( f_{0.05;2,97;calculated} > f_{0.05;2,97;tabulated} \), 9.59 > 3.25, hence we fail to accept the null hypothesis on equal mean in the independent variables implying that there is a statistically significant difference in the means of the four independent variable: team involvement, fact based decision, continuous improvement and customer focus. The p-value is 0.00325 an indicator that the test statistics is significant. This shows that regression equation is significant.

**Table 9: Multiple linear regression results**

<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></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>25.453</td>
<td>3.327</td>
<td>7.650</td>
</tr>
<tr>
<td></td>
<td>continuous improvement</td>
<td>.153</td>
<td>.047</td>
<td>.183</td>
</tr>
<tr>
<td></td>
<td>team involvement</td>
<td>.306</td>
<td>.058</td>
<td>.371</td>
</tr>
<tr>
<td></td>
<td>customer focus</td>
<td>.170</td>
<td>.061</td>
<td>.184</td>
</tr>
<tr>
<td></td>
<td>fact based decision</td>
<td>.487</td>
<td>.081</td>
<td>.478</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Logistics Performance

\[
Y = 25.453 + 0.487x_1 + 0.170x_2 + 0.153x_3 + 0.306x_4
\]
Logistic Performance at WFP in Kenya

\[ = 25.453 + 0.487 \text{Fact based decision} + 0.306 \text{team involvement} \\
+ 0.170 \text{Customer focus} + 0.153 \text{Continuous improvement} \]

The logistics performance at WFP in Kenya when all other factors are held constant will be at 25.453, while a unit change in fact based decision holding the other variables at a constant rate result into a 0.487 increase in logistics performance. If all the variables are fixed, there will be a positive change in logistic performance by 0.170 an equivalent of 17% change if the customers focus changes by one unit yet a unit change in the process of continuously improving performance at WFP results into a 15% increase in the level of logistics performance. A unit change in team involvement; staff orientation, motivation and empowerment positively affect logistic performance at WFP in Kenya causing an increase of 30.6% in the level of logistic performance.

All the p-values are less than \( \alpha \) at 0.05 implying that all the variables used are statistically significant in the model:

Logistic Performance at WFP in Kenya

\[ = 25.453 + 0.487 \text{Fact based decision} + 0.306 \text{team involvement} \\
+ 0.170 \text{Customer focus} + 0.153 \text{Continuous improvement} \]

The p-values are 0.000, 0.001, 0.024, 0.040 for team involvement, fact based decision, continuous improvement and customer focus respectively an indicator that a unit change in a specific independent variable while holding the others at a constant level are likely to be of a meaningful addition to the model by changing the level of performance in logistics at WFP in Kenya.
The beta value was used to determine which factor was more significant in determining logistics performance at WFP in Kenya. It can be deduced from the findings in Table 12 that the most significant factor was fact based decision ($\beta = 0.478$) followed by team involvement, customer focus and continuous improvement in that order. The beta values for these strategies are 0.478, 0.371, 0.184 and 0.183 respectively indicating that the dependent variable would change by a corresponding number of standard deviations when the respective independent variables change by one standard deviation.

**Summary of the Study**

The first objective of the study was to examine the effect of continuous improvement on logistics performance at WFP in Kenya. Correlation and regression results revealed that this was the least significant variable that could perhaps be explained by the observation from the findings that continuous improvement was not a significant factor in influencing logistics performance.

It was also evident that team involvement was in use at WFP as orientation and training enabled them to have well co-ordinate workers. Through this, staff motivation is singled out for the betterment of logistics performance. WFP was also careful so as not only to engage staff through team involvement but also through staff empowerment. Team involvement was the second most significant factor that had a positive effect on logistics performance at WFP.

It was evident that WFP was also focused on customer satisfaction by putting in place an effective complaints process. This was due to the service quality as this could result in
credibility leaving due to incompetence of staff or negligence. There was effective customer process response as response was done within 24 hour.

There was on-time delivery as decisions were made quickly and easily since data was readily available and accessible. Correlation analysis revealed that this was the most significant variable from the observations in influencing logistics performance at WFP.

Logistics performance was measured using the elements of speed, cost, dependability and flexibility. Capacity Flexibility which is the ability to accommodate variation in traffic demand improved between 2012 and 2015. The number of failed deliveries also reduced as well as the costs incurred in making deliveries. Routing flexibility which is the ability to accommodate different routes also improved between the years 2012 and 2015. The improvement in these elements is attributable to the four variables most significant being fact-based decision making followed by team involvement, customer focus and continuous improvement.

Conclusions of the study
The study concludes that, first concerning continuous improvement, the one in use by WFP is important as it has mechanisms that enabled them to create dependability and speed in logistics through participative change. Second, through innovation, WFP has identified new processes and financial capacity improvement for the ease of data access which deserves special attention and also deals with team involvement more effectively by using resources more effectively and is instrumental to logistics. With regard to the third objective, it can be concluded that though customer focus, WFP gave identity to its services and made the company’s services distinguishable from the other products, it was an expensive undertaking and needed to be approached with more caution. It is evident that all the independent variables
identified in this study were all important in that TQM that affects the logistics performance of WFP.
REFERENCES


Lysons, K., & Farrington, B.(2012), *Purchasing and Supply Chain Management*. Pearson publishers. USA.


