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THE EFFICACY OF E-PROCUREMENT SYSTEMS TOWARDS ENHANCING AGILITY OF RELIEF DEVELOPMENT AND PROTECTION PROGRAMS; A CASE STUDY OF BENJAMIN MKAPA FOUNDATION (BMF) DARES SALAAM -HQ OFFICE

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Abstract

The aim of this study was to examine the effects of E-procurement on Disaster Relief Influencing Supply Chain Performance in Relief Development and Protection Organization. Specific objectives of this study were to assess the effect of E-tendering, E-catalogues and E-sourcing on disaster relief SCP at BMF Dar es Salam. The study used quantitative research design. The study employed positivism research paradigm. Non parametric measurement was used to measure study variables. Questionnaires and documentary review were used as data collection methods. A sample of 44 staff was drawn from a targeted population of 50 staff. Data was collected using questionnaire instrument were subjected to Statistical Package for Social Science (SPSS v.22) for running the quantitative analysis technique. Data was analysed using descriptive and inferential statistics. Based on objective study found that information sharing has insignificant effect while e-procurement and staff competence have significant effect on SCP. Based on the findings, the findings revealed that electronic procurement has great effect on disaster relief supply chain performance at BMF. The results revealed that BMF has procurement system that enable emergency procurement and availability of victims needs during disaster, BMF use e-tendering to enhance bulk availability of victims needs during disaster, and BMF embraced the use of procurement system in all procurement functions. Also, BMF procurement system is well integrated with supply chain systems. Finally, use e-sourcing to enable on time availability of victims needs during disaster at BMF. Multiple regression. The study came up with following recommendations; BMF should build capacity, training and development in technology (e-procurement); and policymaker should use these findings as essential tool to promote disaster relief supply chain performance in Tanzania.

Key words: E-procurement, Humanitarian Organization, Disaster Relief, Supply Chain Performance (SCP) and Tanzania.

1. Introduction

In today's environment the number of natural and man-made disasters increased significantly and hit various regions in the world, killing thousands of people and causing millions of indirect victims (Beyene, 2018). In line to this, the International Red Cross and the Red Crescent Movement (IRCRCM) defines disaster as a danger of harming person's lives, serious disruption of the functioning of society, causing widespread

human, material or environmental losses which exceed the ability of those to cope with the situation using only by using their own resources (IFRC, 2008).

Recent examples, such as the earthquake in Haiti in 2010 or the earthquake/ tsunami and resulting nuclear disaster in Japan in 2011, show the vulnerability of developed countries, as well as emerging countries, to disasters. Most of the time, such disasters require external assistance (Kunz & Reiner, 2012). This assistance may come from the government (military, civil defence, etc.), but also from international relief organizations, which have the knowledge and resources to help the populations affected by these crises. Following the Asian tsunami in 2004, humanitarian logistics and supply chain was publicly recognized as playing a central role in the disaster relief effort (Kovacs & Spens, 2009).

A study by Tatham & Kovács (2010) underscored that supplying humanitarian aids, such as food, water, medicines, and so forth, is a life-saving action, especially when it comes to disaster, drought and famine is conceived to be the responsibility of humanitarian organizations. Government and private aid organizations have helped the victims by donating money, medicine, food, shelter in response to environmental disasters. Moreover, Jahre, Ergun, & Goentzel (2015) pinpointed that temporary shelter, health support, water and sanitation, food and cooking equipment as basic assistance required in the backwash of a disaster to fix disaster affected people.

Tanzanian floods were caused by severe rains in several locations of Tanzania in April 2018. The flood had an impact on several sections of Tanzania, including Dar es Salaam, Arusha, Morogoro, and many other locations. According to IFRC data, flooding in these regions directly affected more than 15,862 people, resulting in the deaths of 11 persons in Dar es Salaam and one (1) in Arusha, as well as 11 people being wounded in Dar es Salaam (IFRC, 2018). Following the floods, the Tanzania Benjamin Mkapa Foundation (BMF), in collaboration with the Prime Minister Office (PMO) in Tanzania, established the National Disaster Response Team (NDRT) to fill the gap in humanitarian needs by removing victims, administering first aid to victims, and performing early assessment of the situations.

Supply chain management (SCM) played a significant role in the way that humanitarian organizations view themselves and has witnessed values created through the integration and coordination of supply, demand and relationships in order to minimize effects associated with disaster in an effective manner both in the private and public sectors (Ngoto, 2016). Supply chain is applied by companies due to its demonstrated results such as temporary shelter, health support, water and sanitation, food and cooking equipment at a time of disaster situation.

Successful implementation of SCM practices in disaster relief is seen as closely dependent upon the need for breaking down barriers not only between internal departments and business processes, but also across companies within the whole supply chain (Vollman et al., 2005). There is need for humanitarian organization to adopt best supply chain practices that will meet the overall strategy which is to achieve value for money and to develop world class procurement systems and practices and ensure quality and timely supplies to beneficiaries (Ngoto, 2016).

Humanitarian organizations in Tanzania like many other companies are oftentimes faced with the challenge of managing their supply chains with dwindling financial resources, a lack of expertise, and insufficient personnel. Most of these organisations are surprised to learn that use of best practices in procurement and supply chain can actually help them operate more efficiently while reducing their operating costs by as

much as 60%. An efficient but flexible humanitarian relief supply chains performance is the key subject in disaster relief, discussed from academics as well as practitioners (Kovács & Spens, 2009).

Based on empirical studies above, supply chain play essential role to save the life of affected people either by natural or man-made disasters. Humanitarian organizations (HOs) responsible to supply humanitarian aids like water, food and medicines in life saving action. In this regard, public and private sectors also have assisted the affected people by donating medicines, shelter, foods and funds through logistics and supply chain operations (Beyene, 2018), but humanitarian organizations separate can't handle quick situation without involvement other stakeholders. Very little studies had been carried out to determine the determinants of disaster relief supply chain performance in humanitarian organisations in Tanzania, and this made the main research problem of this study. Therefore, this study intended to assess the determinants of disaster relief supply chain performance in humanitarian organisations in Tanzania.

Supply chain efficiency and effectiveness has profound implications on any organization's ability to meet its customer's demands, its reputation, and its overall financial success. Supply chain inefficiency presents the single biggest opportunity for operational inefficiencies in any organization (Ngoto, 2016). There has been a rise in complaints by the public, professionals and other stakeholder's about the supply chain management practices within the humanitarian organisations in Tanzania. The opinion of many is that supply chain within the institutions way below the stakeholder's expectations.

Awareness of natural and man-made disasters occurring more frequently, the humanitarian aid organizations strive to save the lives of disaster-affected people throughout the world (Beyene, 2018). In this regard, disaster relief supply chain practices play an important role in the distribution process among field officers, local institutions, and disaster victims. In Tanzania, the number of disasters has increased substantially in the past decade. These disasters have claimed the lives of many citizens, leaving some with permanent disabilities, and disrupting infrastructure and settlement (Koka et al., 2018).

Despite efforts made by humanitarian organizations and other stakeholders, the insufficient ability of humanitarian organizations to assist affected people by donating medicines, shelter, foods, and funds through logistics and supply chain operations during disaster still is a problem (Beyene, 2018). It would be that insufficient ability for humanitarian organizations to assist affected people by donating medicines, shelter, foods, and funds through logistics and supply chain operations during disaster resulted from inadequate sharing of information, inappropriate procurement system (e-procurement) and inadequate competency of the staff.

Beyene (2018) on his study focused on the internal predictive factors of humanitarian logistics performance, study found that availability of professional staff, and institutional learning as internal factors that significantly predict the performance of humanitarian logistics. A study conducted by Seifert, Kunz & Gold (2018) on humanitarian supply chain management responding to refugees found that technological innovations is necessary to increase data availability, forecast accuracy and the efficiency of (local) supply network operations during disasters.

However, the above empirical studies assessed the factors influencing humanitarian logistics and supply chain performance but these studies didn't determine the effect of information sharing, e-procurement, and staff competency on disaster relief supply chain performance. Besides that, these previous empirical

studies show that there are few number of studies Tanzania focused on determinants of disaster relief supply chain performance in humanitarian in Tanzania. These gaps made the basis of this study as it is aimed to fill the existing gaps by conducting a study on determinants of disaster relief supply chain performance in humanitarian organisations in Tanzania

1.1 Benjamin Mkapa Foundation profile

The Benjamin William Mkapa Foundation (BMF) is a Trust, a non-profit organization committed to building resilient and sustainable healthcare provision systems, particularly in underserved communities. The core mission of BMF is to supplement and complement the development efforts of the Government of the United Republic of Tanzania. BMF was founded by the Former President of the United Republic of Tanzania, the Late Benjamin William Mkapa, to contribute to a healthier, more prosperous, inclusive, and resilient society

BMF contribute to reduction of shortage of skilled health workers through evidence-based allocation of HRH. Also work with key stakeholders to develop, pilot and scale up HRH financing options and facilitating through local solutions coverage of community health insurance to accelerate equity and access to health services in Tanzania. BMF are prominent on enhancing health services delivery and systems strengthening with the niche on Human Resources for Health, Health infrastructure development, quality improvement, enhancing responsive community systems, policy and advocacy related activities as well as Institutional development. (<http://www.mkapafoundation.or.tz>)

In 16 years, BMF milestones are registered from the complementarity and collaborative efforts made by the Government at the Central, Regional and Local Government authorities, Development Partners and Civil Society Organizations as follows;

1.2 Recruiting Health Workers

10,041 Health Workers recruited including a total of 4,159 facilities based health care workers of different cadres placed at the facility level and 5,882 community health workers placed in villages and ward level

1.3 Rapid Covid-19 Response

To supplement the efforts of the Government of Tanzania in responding to the COVID-19 outbreak BMF deployed 755 Health Care Workers in the Country in 2020 (195 placed at 26 port of entries and 560 placed at facilities in 24 regions) 3,992 Community Health Workers placed in 3,992 villages and wards. Functions of deployed health worker is to provide Health Education on COVID-19 through Community Health Volunteers, to provide COVID 19 vaccine messages and education through traditional and social media, to Increase screen capacity and alert detection by folds (from 5 to 75 alerts per week) at the Port of Entries and supported with PPEs focusing on Health facilities, Port entries and CHW

1.4 Health Infrastructure Improvement

Staff houses constructed since 2006 up to day 482 in 268 health facilities in 17 regions constructed Health facilities rehabilitation, for examples up to 2022, 7 COVID - 19 Isolation Centre's rehabilitated in 5 regions, 5 Maternity wards constructed in 3 regions , 4 Theatres in 3 regions constructed & equipped, 13 in 13 regions Tuberculosis MRD Sites rehabilitation and 13 in 5 regions Diagnostic Sites rehabilitated

1.5 Enhancing Nutrition Status in Mtwara

Through facility-led outreaches, 18,558 under-five children were assessed on their nutritional status. Day to Day home visits made by CHWs enabled screening of 32,016 under-five years' children using the Mid-Upper-Arm-Circumference Measuring tapes for nutritional status. Health education was conducted on Nutrition importance to 34,170 people through Facility led outreach. Total 138 Severe Acute Malnutrition (SAM) were detected through Outreach and Home visits. This is an integrative initiative thus 21,558 and 40,781 under-five children were immunized with various childhood vaccines and received Vitamin A.

1.6 Supporting Continuous Learning

BMF has developed E-learning platform under Ministry of Health to support with the provision of continuous learning education. 34,357 Health Care Workers have been trained through the system and 11,507 Health Care Workers are currently under various training using the E-Learning platform.

2. Theoretical Literature Review

There are several theories and models that explain and describe disaster relief supply chain performance. This study dwells on two (2) theories namely; Technological Theory and Resource Based View.

Resource Based View

Coase pioneered the resource-based view in 1937, demonstrating the importance of resources and their impact on organizational performance (Mahoney, 2001). In terms of supply chain, the theory explains that supply chain stakeholders need a set of resources so as to respond quickly to the affected people by donating medicines, shelter, foods, and funds through logistics and supply chain operations during disaster.

In light of this research, the theory emphasizes the importance of resources such as financial and human resources in serving disaster victims or any emergency situation. These resources must be well planned, organized, implemented and controlled so as humanitarian organizations and supply chain actors can provide assistance to victims. Disaster relief supply chain performance depends on the ability of relief aid organizations to have competent staff who will always make decisions that impact on the success of relief operations (Haddad, 2017).

Supply chain staff skills and capabilities like transportation, forecasting, planning and operation management skills are very crucial for the effectiveness of disaster relief supply chain (Aryatwijuka, 2020). Therefore, this theory supports study independent variable (staff competency) and its effect on disaster relief supply chain performance.

Technological Theory

This theory originated from Thorstein Veblen (1857–1929), an American sociologist and economist. Technological theory attempts to explain the factors that shape technological innovation as well as the impact of technology on society and culture. In the age of paper-based transaction and communication, the information flow in supply chain networks was time consuming and error prone. Due to globalisation, organisations have started changing the way of communication, implementation of technology, growing

diversity of business transactions and process improvement for sharpening the business performance through IT applications in their supply chain networks (Johnson et al., 2008).

Based on this study, first hours after disaster, some information are not simply available and high level of uncertainty about disaster timing and location, victim's needs, donor's supply, infrastructure, and even relief group membership is governing the conditions. Due to, when information about the specific location of needs began surfacing, the compromised infrastructure significantly increased the difficulty of getting the right supplies to where they were needed (Wankmüller & Reiner, 2019).

The adoption of e-procurement in disaster relief supply chain management enhance coordination, collaboration and communication among the organizations taking part in the natural disasters responses because of various goals and objectives including; obtaining right quantity, quality and at a right time. E-procurement enhance availability of first aid materials, food, and equipment on time of disaster, but also it adds value to the efficacy of disaster supply chain operation processes as well as limpidity of supply chain functions (Puschmann & Alt, 2005). Therefore, this theory supports study independent variables (information sharing and e-procurement) and its effect on disaster relief supply chain performance.

3. Methodology

The study used quantitative research design. The study employed positivism research paradigm. Non parametric measurement was used to measure study variables. Questionnaires and documentary review were used as data collection methods. A sample of 44 staff was drawn from a targeted population of 50 staff. Data was collected using questionnaire instrument were subjected to Statistical Package for Social Science (SPSS v.22) for running the quantitative analysis technique. Data was analysed using descriptive and inferential statistics (factor analysis and multiple regression analysis). The analyzed data was then presented in tables and figures for interpretation.

4 Findings and Discussion

Effectiveness of E-Procurement on Disaster Relief SCP

The main objective of this study was to assess the effect of e-procurement on supply chain performance at BMF. To achieve this objective, researcher asked respondents five (5) questions on the effect e-procurement on disaster relief supply chain performance using three measure such as e-tendering, e-catalogues and e-sourcing. The following questions were asked;-

Procurement system that enable availability of victim's needs – EP_1

When respondents asked on whether organization has procurement system that enables emergency procurement and availability of victims needs during disaster. Responses were ranked using a 5- Point Likert Scale from 1-Strongly Disagree to 5-Strongly Agree. The results in Table 4.1 show that majority of the respondents 22 (55.0%) agreed that organization has procurement system that enable emergency procurement and availability of victims needs during disaster. The use of electronic methods in humanitarian operations in every stage of the purchasing process is important as it enhance timely availability of victims needs during disaster. These findings are compliant with the findings of George (2016) established that humanitarian agencies Shave taken up to E-tendering to reduce the total ownership costs.

Table 4. 1 Procurement system

EP_1	Frequency	Percent
Disagree	7	17.5
Neutral	11	27.5
Agree	12	30.0
Strongly Agree	10	25.0
Total	40	100.0

Source: Field data, (2023)

Organization use e-tendering to enhance availability of victims – EP_2

When respondents asked on whether organization use e-tendering to enhance bulk availability of victims needs during disaster. Responses were ranked using a 5- Point Likert Scale from 1-Strongly Disagree to 5- Strongly Agree. The results in Table 4.2 show that majority of the respondents 22 (55.0%) agreed that organization use e-tendering to enhance bulk availability of victims needs during disaster. This is essential as effective and efficient e-tendering system helps the organization to shortlist and easily select suppliers who are cheaper than the others since the tender quotations are done online prior to delivery. These findings are compliant with the findings of George (2016) established that e-Tendering has reduced the overall disaster relief supply chain cost.

Table 4. 2 E-tendering

EP_2	Frequency	Percent
Disagree	5	12.5
Neutral	13	32.5
Agree	12	30.0
Strongly Agree	10	25.0
Total	40	100.0

Source: Field data, (2023)

Organization embraced the use of procurement system – PE_3

When respondents asked on whether organization embraced the use of procurement system in all procurement functions. Responses were ranked using a 5- Point Likert Scale from 1-Strongly Disagree to 5- Strongly Agree. The results in Table 4.3 show that majority of the respondents 31 (77.5%) agreed that organization embraced the use of procurement system in all procurement functions. Organization that embraced the use ICT in procurement has been a great spur for great changes in the operation and status of the organizational humanitarian supply chain. These findings are compliant with the findings of Magadi & Noor (2018) observed that procurement system in humanitarian supply chain operations helps on time delivery of products to the victims.

Table 4. 3 Embrace the use of procurement system

PE_3	Frequency	Percent
Disagree	2	5.0
Neutral	7	17.5
Agree	11	27.5
Strongly Agree	20	50.0
Total	40	100.0

Source: Field data, (2023)

Procurement system is integrated with supply chain systems – EP_4

When respondents asked on whether organization procurement system is well integrated with supply chain systems. Responses were ranked using a 5- Point Likert Scale from 1-Strongly Disagree to 5-Strongly Agree. The results in Table 4.4 show that majority of the respondents 26 (65.0%) agreed that organization procurement system is well integrated with supply chain systems. The integration of procurement and supply chain systems enhance efficient of humanitarian activities as it ensure smooth flow of information and material for humanitarian operations. These findings are compliant with the findings of Magadi & Noor (2018) observed that integration of procurement and supply chain systems enhance efficient of humanitarian activities as it ensure smooth flow of information and material.

Table 4. 4 Integrated procurement systems

EP_4	Frequency	Percent
Disagree	7	17.5
Neutral	7	17.5
Agree	15	37.5
Strongly Agree	11	27.5
Total	40	100.0

Source: Field data, (2023)

Use of e-sourcing to enable on time availability of needs – EP_5

When respondents asked on whether organization use e-sourcing to enable on time availability of victims needs during disaster. Responses were ranked using a 5- Point Likert Scale from 1-Strongly Disagree to 5-Strongly Agree. The results in Table 4.5 show that majority of the respondents 26 (65.0%) agreed that organization use e-sourcing to enable on time availability of victims needs during disaster. Effective use of e-sourcing acknowledges new sources of supply adding the economic forces during the humanitarian operations. These findings are compliant with the findings of Paulo (2014) established that organization use e-sourcing to enable on time availability of victims needs during disaster.

Table 4.5 Use of e-sourcing

EP_5	Frequency	Percent
Disagree	7	17.5
Neutral	7	17.5
Agree	16	40.0
Strongly Agree	10	25.0
Total	40	100.0

Source: Field data, (2023)

The results also indicate that e-procurement ($\beta=0.641$, $p=0.000$) has significant effect on disaster relief supply chain performance at BMF. These results implies that a unit increase in use of e-procurement lead to 64.1% improve in disaster relief supply chain performance at BMF. The findings compliant with the findings of Mchopa (2013) admit that increasing in adoption of the Internet ICT usage and E-Procurement application enhance rapid access of humanitarian and disaster needs.

5. Conclusion

Constructed on the findings, the study clinched that e-procurement has significant effect on disaster relief supply chain performance at BMF. Therefore, development of procurement system, use of e-tendering and e-sourcing improved disaster relief supply chain performance at BMF. In other hand, lack of procurement system, e-tendering and e-sourcing would hinder disaster relief supply chain performance at BMF

6. Recommendations

From the study findings, it is recommended that relief aid organizations should recruit staff with professional, social and personal competencies to execute supply chain activities in humanitarian operations in Tanzania. Additionally, BMF should widen their recruitment base to outside the humanitarian industry so as to attract staff with different levels of experience, attitude and qualifications so as to facilitate innovation in supply chain activities. It is also recommended that training programs aimed at performance improvement are instituted so as to improve disaster relief supply chain performance. BMF management should build capacity, training and development in technology (e-procurement) that will facilitate the use of procurement system in the disaster supply chain accomplishments that trigger to the sustainable development and results into effective and quality services.

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