PRACTICES AND FACTORS AFFECTING THE HUMANITARIAN LOGISTICS PERFORMANCE OF THE WORLD FOOD PROGRAM: ETHIOPIA

BY

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Declaration

I, the undersigned , declare that this thesis titled “practice and factors affecting the humanitarian logistics performance in the case of the UN WFP: Ethiopia” is my original work and has not been presented for any degree in any other university, and that all the sources of materials used for the thesis have been duly acknowledged.

Declared by: Name: Selam Fitsum

Date: June 2021

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Date of Submission: June 2021

Certificate

This is to certify that Selam Fitsum has carried out her thesis work entitled “Practices and factors affecting the humanitarian logistics performance of the world food program: Ethiopia” under my guidance and supervision. Accordingly, I hereby assure that the study is her own original work and suitable for submission of the award of MA in Logistics and Supply Chain Management.

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This is to certify that the thesis prepared by Ms. Selam Fitsum entitled "Practices and factors affecting the humanitarian logistics performance of the world food program: Ethiopia", which is submitted in partial fulfillment of the requirements for the Degree of Masters in Logistics and Supply Chain Management, complies with the regulation of the university and meets the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

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With God we can!

Abbreviations and Acronyms

ACAPS: Assessment Capacities Project

APICS: American Production and Inventory Society

CRS: Catholic Relief Service

EFQM: The European Foundation for Quality Management

EHDRP: Ethiopia humanitarian and disaster resilience plan

FH: Food for the Hungry

IASC: Inter-Agency Standing Committee

ICRC: International committee of the Red Cross

IRC: international rescue committee

IFRC: International federation of Red Cross crescent societies

IT: Information technology

JEOP: Joint Emergency Operation Program

NDRMC: National Disaster Risk Management Coordination

NDRMCC: National Disaster Risk Management Coordination Commission

NGO: Non-governmental organization

PP: Performance Prism

PSNP: Productive Safety Net Programmed

RBT: Resource Based Theory

SCOR: Supply Chain Operations Reference Model

SCPM: Supply Chain Performance Management

SCM: Supply Chain Management

SPSS: Statistical Package for Social Science

TCE: Transaction-cost Economics

UN: United Nation

UNCHR: United Nations High Commissioner for Refugees

UNOCHA: United Nation Office for the Coordination of Humanitarian Affairs

USAID: United States Agency for International Development

WFP: World Food Program

WVE: World Vision Ethiopia

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Abstract

The study aimed to assess practices and factors affecting the humanitarian logistics performance of the world food program: Ethiopia. The study has proposed to discover and empirically test the factors affecting the humanitarian logistics performance which are namely. Availability of collaboration/coordination, sufficient donor funding, availability of professional staff, sufficient local market supplies and accuracy of information technology; to measure the performance of humanitarian logistics in the Ethiopian world food program. Theoretical and empirical literature review on each dependent and independent variable were conducted to design a structured questionnaire. Hence, a total number of 100 questionnaire was distributed to employees of WFP Ethiopia head office and 80 useable questionnaires was returned with a response rate of 90.99 percent. Hence, the paper used descriptive statistics, including percent, mean and standard deviation were conducted to describe the major factors that are affecting the humanitarian logistics performance of WFP Ethiopia. Analysis model such as Kendal's. Wallis coefficient of concordance of the rank order has been conducted to rank the factors affecting the logistics performance of WFP Ethiopia. Davidson (2006) scorecard model has also been incorporated to evaluate the factors affecting the humanitarian logistics. The qualitative data results that was collected using interview methods were triangulated. The analysis results have showed that how the factors can impact and influence the performance of humanitarian logistics. The top three ranked factors were availability of sufficient funds, coordination and collaboration and availability of professional staffs. Finally the study has recommended that to be able to perform a smooth relief operation the organization should work closely with other stakeholders to improve their coordination and collaboration with other stakeholders, to work with the donors to get sufficient funds for smooth relief operation and work on their retaining of their employees to keep their professional stuff, also working closely with the local suppliers and accuracy of the IT would give the organization a plus point in executing a smooth operation. The research recommends to be able to increase the appeal coverage in the WFP Ethiopia the organization should work intensively on the appeal coverage as donors will only deliver what they have promised to deliver, secondly the donors should be consistent to deliver what they have promised to do so within the given period of time. Finally, a data assessment and verification to track and minimize the gap between what has been budget for the operation and how much was spent on the operation.

Key Words: Humanitarian, Relief, Operation, Performance, Practice, Logistics

CHAPTER ONE
INTRODUCTION

The introduction chapter presents the background of the study, background of the organization, statement of the problem, research questions, objective of the study, key terms definition, significance of the study, scope and limitation and as well as organizing of the research report were also presented.

1.2 Background of the study

The COVID 19 and its consequence on the planet earth and on the human has motivated me a great deal in taking this particular topic which is about the practices and factors affecting of the humanitarian logistics in the world food program as food has become an issue for the last one year in relation with the pandemic/current situation. Humanitarian relief logistics, as defined by Thomas and Kopczak, (2005) is the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and related information, from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people.

According to the report of the UNOCHA, (2017) adding to the new pandemic of corona virus the number of beneficiaries affected by other natural disaster or displaced by civil and international wars, persecution, violence or human rights violations has been steadily increasing, doubling in a decade and reaching 141.1 million in 2017.

Alexander Blecker (2009), has stated that the success of any humanitarian relief operation greatly depends on securing adequate funds; however, shortages of funds will hinder the performance of relief operation. Accordingly, problems related with the shortage of funding are also an issue in Ethiopia as occurrence of different disasters keeps happening.

Disasters can be calamities, destructive actions, or plagues and can cause destructions that could rang for small to sever (Bethlehem & Alev, 2016). (Van, Wassenhove, 2006) has reported that there are about 500 disasters killing around 75,000 people and affecting some 200 million people every year.

Among those natural disasters that has occurred in less than a decade, these are the 2004 Indian ocean tsunami, the 2005 earthquake in the southern Asia, Haitis earthquake in 2010 and the japan nuclear disaster of the 2011 can be mentioned as an example and can also be used as a statement that even the developed countries can't just avoid these natural disasters. Strikes that were raised in different part of Arab countries, in Yemen, Syria, Tunisia, Egypt, Libya and Bahrein are some memorable examples.

However, the vast majority of those affected by emergencies and natural disasters live in developing countries (Jane, 2013). For example, in 2016 Ethiopia has felt the effect of worst El Niño in 50 years, in which more than 10 million people were exposed to relief food assistance, household and community resilience was eroded and which is followed by drought in south and southern eastern Ethiopia in 2017 with additional 8.5 million Ethiopians needed relief food assistance (Ethiopian Humanitarian and Resilience Plan, 2018). Small developing states are among the most vulnerable countries in the world to natural disasters and climate change. According to IMF, the united nation (UN) World Risk Index, that measure a countries exposure to a natural risk and the capacity to cope up with the occurrence in 171 countries, places a small developing states at the top of its ranking. Moreover, these countries are more exposed to extreme weather condition and events more than other larger countries which results in higher economic cost.

Thomas, (2005) has defined humanitarian logistics as "the processes and systems involved in mobilizing people, resources, skills and knowledge to help vulnerable people affected by disaster". However, the logistics function in the humanitarian sector is underrecognized, under-utilized and under-resourced (Thomas & Kopczak 2005).

The 2018 Ethiopia Humanitarian and Disaster Resilience Plan (HDRP) identifies 7.88 million people in need of food assistance, and 8.49 million people in need of non-food assistance at a cost of $1.658 billion (OCHA). NDRMC reports also states that the conflict along the border lines between Oromiya and Somali regions since late August 2017 had displaced more than 850,000 peoples from both regions.

As per logistics analysis conducted by logistics cluster in 2016, NDRMC is facing challenges in managing its supply chain efficiently. Which these challenges incudes but not limited to heavy and rigid administration burden, resource limitations, inadequate information management and

reporting mechanisms, and overall lack of visibility of commodities moving through the supply chain. Furthermore, the geographic dispersion of affected populations and the magnitude of the needs make it very challenging for the humanitarian logistician to be able to deliver an integrated package of support. Such basic infrastructures in many developing regions of the world are weak to begin with and get quickly overwhelmed when disaster strikes (Altay, Prasad & Sounderpandian 2009).

1.1.1 Overview of Humanitarian Logistics Management in Ethiopia

In Ethiopia, the issues related with the humanitarian logistics and supply chain has emerged with the occurrence of the 1950's food crisis which sacrificed thousands of Ethiopian life and animals. Then after, the country has been challenged by recurring drought and famine due to factors that was related to, environmental, social and political factors which subject the large segment of the rural population to vulnerability and food insecurity to the country.

To address both chronic & acute food insecurity the country has been receiving donations of food commodities from different organizations/ nations located in different parts of the world. Currently, the logistics unit under disaster prevention and preparedness agency (DPPA) is responsible to coordinate the timely delivery of relief resources obtained from different multilateral, bi-lateral donor agencies & international & local NGOs to disaster affected localities in different part of the country. Concerning the source from which DPPA obtained the humanitarian resources required for relief operations official government sources implied that different Western Governments, Nongovernment International organizations, UN & USAID (United Sates Agency for International Development are major ones. USAID is one of leading contributor of Emergency & Non-emergency (development) food requirements of the country. Furthermore, Ethiopia has become the second largest refugee-hosting nation in Africa.

The main influencing factor for having the biggest number of refugees in Ethiopia is the ongoing conflict in South Sudan which came on top of an already heavy caseload of refugees coming in from Somalia, Eritrea and the Sudan. Currently, NDRMCC, UN-WFP, and CRS led Joint-NGOs have been implementing Emergency food assistance programs in Ethiopia. According to government's official report (2015) as cited by Desta, (2018) the 2015 Meher assessment has concluded that 10.2 million people will require food assistance in 2016. The humanitarian

response in 2016 will be led by the Government's National Disaster Risk Management Coordination Commission (NDRMCC), together with WFP, will assist a projected 7.6 million people in close to 200 woredas, while the CRS-led Joint Emergency Operation program (JEOP) will provide support to 2.6 million people in 76 priority woredas of all national regional states of Ethiopia, in Afar, Gamblella, Harari & Benishangul Gumuz NRS.

Joint Emergency Operation program (JEOP) is a consortium led by Catholic Relief Services (CRS) and includes CARE, Save the Children International, World Vision Ethiopia (WVE), Food for the Hungry (FH) and the Relief Society of Tigray.

1.1.2 Overview of World food program Ethiopia

Created in 1961 (at the behest of US President Dwight Eisenhower) as an experiment to provide food aid through the UN system, WFP is to be reassessed within three years. As crises multiply, the experiment proves its worth. A typhoon makes landfall in Thailand. Newly independent Algeria must repatriate and feed its war refugees. In every case, WFP rises to the task. Its mission is emergency aid, but also rehabilitation. A first development programme is launched in 1963 for Nubians in Sudan.

The World Food Programme (WFP) is the leading humanitarian organization saving lives and changing lives, delivering food assistance in emergencies and working with communities to improve nutrition and build resilience.

On any given day, WFP has 5,600 trucks, 30 ships and nearly 100 planes on the move, delivering food and other assistance to those in most need. Every year, we distribute more than 15 billion rations at an estimated average cost per ration of US$ 0.61. These numbers lie at the roots of WFP's unparalleled reputation as an emergency responder, one that gets the job done quickly at scale in the most difficult environments.

WFP's efforts focus on emergency assistance, relief and rehabilitation, development aid and special operations. Two-thirds of our work is in conflict-affected countries where people are three times more likely to be undernourished than those living in countries without conflict.

For its efforts to combat hunger, for its contribution to bettering conditions for peace in conflict-affected areas and for acting as a driving force in efforts to prevent the use of hunger as a weapon of war and conflict, WFP was awarded the Nobel Peace Prize in 2020.

1.2 Statement of the Problem

According to the ACAPS, (2017) report humanitarian situation in Ethiopia has changed dramatically since the beginning of the year. The report also states that the poor rainfall had led the country to drought, loss of pastoral livelihoods in the large pastoralist Somali region reduced household food access and unaddressed grievances regarding the marginalization, oppression, and political exclusion of ethnic groups has led to renewed tensions with the government.

As stated by Alexander Blecker (2009), for successful humanitarian relief operation having adequate funds is mandatory as the insufficient funds can be a hindrance on the performance of any humanitarian relief operation. Prior researches regarding factors affecting the performance of humanitarian logistics have been done in specific humanitarian organization; International Rescue Committee (Demeke, 2016), World Vision Ethiopia (Desta, 2018) and these studies left further recommendation on conducting similar studies on other international nongovernmental organizations so it can be used for generalization of other unstudied international organization like WFP and others.

Regardless of the different previous researches conducted on similar area, the researcher has believed that there are points which wasn't included on the mentioned previous studies. Such as how coordination/collaboration works between the UN organization and other stakeholders including governments, cooperation and other individuals as UN is believed to be self-sufficient that doesn't rely on the stakeholders. Furthermore, irrespective of other similar research studies, issues of funding of UN organizations haven't been discussed or examined due to assumption of the UN to be a self-sufficient organization and the extent that donors influence the UN agencies including WFP. Other scholars haven't also included challenges and difficulties about issues related with IT system even if UN is believed to have all in place. Moreover, previous scholars haven't emphasized on how it's not easy finding professional staff in their organization despite how big the organization is including UN/WFP. Accordingly, the researcher will try to discover

the uncovered actualities and factors of humanitarian logistics performance of the UN organization which will result in broadening the knowledge of academicians and the industry in general.

While doing this study, the researcher has made a preliminary interview with four purposely selected individuals/ employees of the WFP Ethiopia, who are directly working in the WFP's humanitarian logistics, in response to the preliminary interview made with the staffs of WFP with respect to common and main challenges faced were found to be of unavailability of qualified manpower to deal with disaster management and humanitarian logistics management. They have also mentioned other problems in their organization which included a) inadequate funding or rather dependent funding on different stakeholders including, Governments, corporates and individuals, according to the funding manager, unlike what most people thinks, WFP is believed to get around 70% of the required budget for a relief operation, b) information technology issues, c) security related issues are elaborated as follows. Inadequate funding as most international donors reduces their aid, putting great pressure on the government on filling the gap, resulting in the delay of the release of fund from the donor.

Challenges with information technology are related with the quality of the related data, mainly false data being collected from the regions resulting on overrated or underrated request, network problem which will result on restricting data flow from regional offices to head office, minimum usage of information technology on reporting, tracking, tracing and data management practices as well as not having scientific early warning indicators for rapid onset disaster.
Therefore, based on the findings of a preliminary interview in-depth research and empirical testing of the problems were needed. As a result, the study has identified what the real factors of humanitarian logistics performance of WFP that is hindering the organization from performing to full speed and capacity.

World food program (WFP) is one of the largest non-governmental organization which is implementing different relief and development endeavors in Ethiopia since 1905. Through all those implementing years, World food program's Ethiopia 's performance of response for emergency has been affected by different factors; such as shortage of funds, delays on procurement, local market supply, staff turnover, and issues related with information technology.

The researcher believed that the research area on WFP related with the main or major factors that really is affecting the logistics performance which could be a key point to the organization while performing a relief operation. This research will also be a bridge in gaping the missing literatures as there is clearly only a few research papers that was done in assessing the performance of humanitarian logistics in a particular relief organization. Hence, at the end of this study the audience will know the assessed version of WFP Ethiopia and will provide a recommendation that the office can use as a recommendation baseline.

1.4 Research Question

The study is sought to answer the following research questions:

- What is the effect of coordination/collaboration on humanitarian logistics performance?
- How dose donors funding affect humanitarian logistics performance?
- What is the effect of availability of logistics professionals/HR on humanitarian logistics performance?
- How do the local market suppliers affect the humanitarian logistics performance?
- How dose issues related with information technology affect the performance of humanitarian logistics?
- What is the humanitarian Logistics performance of the WFP Ethiopia in terms of appeal coverage, donation to delivery time, financial efficiency metrics and assessment accuracy?

1.5 Research Objectives

1.5.1 General objective

The main and general objective of this study is to assess factors that affect humanitarian logistics performance of World food program Ethiopia office.

1.5.2 Specific objectives

- To examine the effect of collaboration/coordination on humanitarian logistics performance.
- To assess the effect of donor funding on humanitarian logistics performance.
- To examine the effect of availability professional staffs on the performance of humanitarian.
- To examine the effect of local market suppliers on the performance of humanitarian logistics.

- To examine the effect of information technology on the performance of humanitarian logistics.
- To assess the performance humanitarian Logistics practice of the WFP Ethiopia in terms of appeal coverage, donation to delivery time, financial efficiency metrics and assessment accuracy

1.6. Significance of the Study

As this study has examined different perspective and a new organization the academician will take a handful of knowledge on the assessment of factors that are affecting the performance of the humanitarian logistics. The study even if it has done only for the academician but it also gave benefits to assist the policy makers in getting a real document so they can compare it with so they will make a considerate policy. The study will also benefit the institution a light into how to assess the factors in humanitarian logistics organizations in Ethiopia, and of course assist the actors how to really play fairly and what are the most important factors they should really emphasis on so the beneficiaries can be assisted and supported on a timely manner. As well as in giving insights on the real factors that are affecting the performance of humanitarian logistics. The study will also add different perspectives and dimensions to the existing literatures not to mention how it can be used as a baseline or a benchmark of other researches.

1.7. Scope of the Study

When conducting this study, the researcher believed that this research would bring to the readers and different stakeholders to emphasis on the different dimensions that are believed to be important in the process of assessment of humanitarian logistics. Hence, the research is scoped, by the below

Temporal scope: the research paper is will be done only within the European calendar year of November 2020 to May 2021 and only in the head office of UN-WFP. Addis Ababa, Ethiopia Office. Conceptually, the researcher has only used the five internal factors affecting the performance of humanitarian logistics, which are, funding, the HR (logistics professionals), IT issues, coordinating, collaboration and meetings and inventory management practice issues. Methodologically, the researcher will only employ quantitative and qualitative research approach,

as well as descriptive and explanatory research design. The researcher will also use descriptive and inferential as a statistical tool. Finally, the researcher will use scorecard model developed by Davidson (2006).

1.8 Limitation of the Study

The fact that the research will be only carried out at head office then the finding might not inclusive of all the UNWFP's office worldwide. The study is also limited conceptually as the research will only use the internal factors in assessing the humanitarian logistics which will avoid in including the external factors which might have a major difference in the result. The study is also limited temporarily as the time where this study will be conducted is only for a limited period.

1.8. Definition of Terms

Logistics: The process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption for the purpose of conforming to customer requirements." This definition is inclusive of inbound, outbound, internal, and external movements/logistics and the return of materials for environmental purposes (Council of Logistics Management, 1998)

Disaster: can be defined as sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins. (The International Federation of Red Cross and Red Crescent Societies (IFRC), 2018)

Humanitarian logistics is defined "as the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people." (Thomas and Kopczak 2005)

Performance measurement: is the process of quantifying the efficiency and effectiveness of an operation (Beamon & Balcik 2008).

1.9. Organization of the study

The researcher has organized the paper in to five major chapters. Those chapters are introduction, review of related literature, methodology, results and discussion and, summary, conclusions and recommendations respectively. Accordingly, the first chapter will be giving a general insight to the readers on the study as well as on the industry that is under the study. The introduction will also define statement of the problem, research questions, and objectives of the study, scope of the study, significance of the study, limitations of the study, organization of the research report and definitions of key terms. Chapter two will cover relevant literature studies that will strength the study and assist the readers in understanding the paper. Hence, this chapter will include detailed definition and theoretical fame works, empirical literatures and hypothesis as well as the conceptual frame work. Chapter three explains on the research design, approach and methodology as well as the type of design that will be used in this study. This chapter also includes the sampling technique, data collection methods as well as the method of data analysis which will be used in this study. Chapter four will define and elaborates on details of the findings of the study. The final chapter will include the summary findings, conclusions, limitations of the study and recommendation.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This section deals with reviewing relevant literature, which are theoretical and empirical literature which are related with the subject area of humanitarian logistics, supply chain management, factors affecting humanitarian logistics performance, humanitarian supply chain management , performance measurement frame work and models to see which factors are affecting the performance of the humanitarian logistics to be able to give a valid and appropriate instruments for data collection as well as to see what this paper will fill in the possible literature gaps.

2.1 Theoretical Literature Review

2.1.1 Humanitarian Logistics

Thomas and Kopzik (2005) based their definition on a survey of humanitarian logistics managers based on headquarters of humanitarian organizations and projects run by Fritz Institute. They have defined humanitarian logistics as a process of planning, implementing and controlling the efficient and effective flow and storage of goods and aid materials even important information from the point of origin to the destination/ where the beneficiaries are based to be able to alleviate the suffering of beneficiaries which includes all activities including, preparedness, planning, procurement/purchasing, transportation, storage and warehousing, tracking and tracing as well as customs clearance:

The ICRC have also defined logistician as a person who is responsible for all the activities mentioned in the definition of humanitarian logistics, which includes procuring, warehousing and maintaining and monitoring stock levels, works on customs clearing, budgeting with other responsible department or personnel, works on costing as well as training and supervising local employees of humanitarian logistics.(International Committee of the Red Cross, 2008). From several scholars who defined humanitarian logistics, Kovács and Spens (2007) defined humanitarian logistics as a mixed array of operation including disaster relief operation which adds supporting the beneficiaries while they face disaster. Furthermore, they all agree that all their objective is similar in a way since its all regarding helping and aiding valuables to make sure they will survive the catastrophe. The humanitarian logistician also includes work of designing

transporting the aid materials and personnel from origin points to the destination nodes so to the beneficiaries. Furthermore, Beamon (2004), has also defined humanitarian logistics as the process of planning, implementing and controlling efficient and cost-effective flow and storage of goods, aid materials, and equipment as well as relevant related information, from point of supply to point of consumption to be able to meet these beneficiaries requirement. Cozzolino (2012) has emphasized humanitarian logistics as a critical activity while facing catastrophe that will decide if a relief operation will be successful or not.

Trunick (2005), on another direction explained logistics to be the costliest activities of any relief operation which accounted for about 80% of the total relief operation cost. Hence, he recommended to appropriately implement logistics to executive efficient and effective relief operation. The supply chain in a humanitarian works effectiveness is a must as it will save time which is directly related with saving more lives, saving more cost which helps saving more lives of beneficiaries. From the officer's point of view, Gyöngyi, K. and Karen, S. (2009) have stated the existing dilemma that a humanitarian logistician face when deciding to what to give a priorities between front and back office from a media exposure to the front office, making sure to lead the requirement to be the first on the site which has a meaning on triggering donors in donating funds while the back office logisticians focus more on responding to the beneficiaries first.

2.1.2 Performance of Humanitarian Logistics

In relief operation measuring and optimizing the performance of the relief operation and the supply chain has clearly become critical in moving forward and executing smooth relief operation. (Beamon and Balcik 2008,). (Bölsche, 2013) has stated that to reach effective performance those have to undertake work in a manner that are consistent with the humanitarian principles, while mobilizing and deploying sufficient funds, aid material and personnel that are relevant to the operation, well managed, accountable, durable, impartial and ensure good quality. Measuring the performance of non-for-profit organization is important due to the increasing competition among different agencies for the sake of donors finding. (Kaplan, 2001). The main objective of performance measurement can be defined as a way of appraising decision making at strategical, tactical and operational while producing quality goods, services and process. (Gunasekaran and Kobu 2007).

2.1.3 Factors affecting the performance of Humanitarian Logistics

Humanitarian logistics actions are characterized by unpredictability of disasters, lack of institutional learning, poor manual logistics processes, highly employee salary costs, as well as poor fragmented technology (Thomas 2008; Thomas and Kopczak 2005). There are different factors affecting the performance of humanitarian logistics, which can be internal, as well as situational factors which can be classified as environmental situational factors, government, socio-economic and infrastructure situational factors. (Kunz and Reiner, 2011). The five "pain points" raised by heads of logistics at leading humanitarian relief organizations at Geneva 2003, are nature of the funding process, organizational culture and high employ turnover, lack of institutional learning and little coordination. (Thomas and Kopczak 2005). Accordingly, the researcher has covered the internal factors which are Coordination/collaboration, donor funding, Information technology, local market suppliers, and availability of professional staffs as these five factors were the ones which overlapped and was covered in different literatures.

2.1.3.1 Availability of Coordination

Balcik *et al*., (2010) has proposed a definition for the term "coordination" when it is associated with the relief community, as a relationship and collaboration among different actors while working on relief environment. Coordination includes resource and information sharing, centralized decision making, conducting joint projects, regional division of tasks, or a cluster based system in which each cluster represents a different sector area (e.g., food, water, sanitation, and information technology).

Coordination and specialization of responsibilities is required to manage the increasing number and complexity of disasters. The need for coordination and collaborations are not only desirable between armed forces, government and private businesses, but also between humanitarian organizations and among each other. (Van Wassenhove, 2006). To minimize duplicated efforts different actors including donors are interested in corporation with the humanitarian organization. A single organization cannot cover all needs; collaboration is, therefore, not an option, but a necessity" (IASC). (Simatupang *et al*. 2002) also confirmed that collaboration within independent organizations is essential to improve their processes in response to the rapidly changing conditions.

Moreover, (Kovács and Spens, 2009) has described the importance of coordination as "The myriad of humanitarian organizations must co-ordinate their efforts in every disaster if they are to provide real relief at the point of need". However, coordination of different sectors in disaster response has many challenges. (Fenton, 2003) has stated that "Problems of interagency coordination are often most evident in the initial frantic stages of response to a humanitarian emergency when aid agencies often fail to make the effort, or simply find it too difficult to collaborate".

Kampstra and Ashayeri (2006), have also shared the difficulties of the coordination where not all participants in every supply chain had embedded collaborative values and that it is difficult to collaborate with a party that lacks a genuine desire to collaborate. For example, a global survey of supply chain progress conducted in 2004 (Supply Chain Management Review and Computer Sciences Corporation) observed that collaboration was cited as the single most pressing issue. The survey showed that 44 percent of the sample organizations had initiatives associated with collaboration; however, only 35 percent of these initiatives turned out to be even moderately successful.

2.1.3.2 Adequate donor funding

Donors are the most vital players in and for humanitarian organizations. Hence, these humanitarian organizations should also maintain their work/operation according to the drive of donors. Desta, (2018) has defined donors funding as one of the influencing factors for the humanitarian actions that are funded by donors are priorities and trends in donor spending. She also mentioned that the operation of humanitarian organizations is greatly depends on a set of major donors. From the various problem the increasing, too much interest on funding emergencies, visible competition among the humanitarian organization for operation funds and problem on non-collaboration in working similar operation to reduce repeating of effort and cost.

Thomas and Kopczak (2005) has also stated that the humanitarian organizations have become more aware of to use their resources strategically, for an efficient and effective use of in aligning their operation around their core competencies. However, (Wassenhove, 2006; Kovacs and Spen, 2007), has stated that donors prefer to spend on direct materials rather than investing on information technology, capacity building and preparedness phase. As per the report gotten from

www.wfp.org searched on the 28th of November 2020 WFP requires US$ 209.6 million from December 2020 to May 2021 to maintain current food and cash assistance plans.

As a result of the type of funding of these supply chains gets, investing in research and infrastructures are very strict. It's also been noted that donors have to be also taken as a main stakeholder as much as the beneficiaries. (Blecker, 2009).

2.1.3.3 Availability of Professional Staffs

In the humanitarian organization finding professional logisticians are difficult and thus, employee reliability is hindered which will result in the use of untrained personnel who does not support the standardization of work processes in an industry where the operation process is unstandardized. Blecker (2009) has given a detail concern on how challenging it is to not acquire professional employees in the organization that can happen due to lack of training in logistics personnel as logisticians being in the midst of numerous requirements posed by local governments and officials, donors, the media, beneficiaries, and their own headquarters.

The above statement was proved also by the experience in the Tsunami relief operation as it was negatively affected due to lack of well trained and experienced professionals in the operation. (Fritz Institute 2005). Moreover, for many years, appropriate recognition and acknowledgement wernt given for the humanitarian logistics sector which has contributed a lot for the unmet logistics requirements. Wassenhove, (2006), has also witnessed that logisticians are not included in planning and budgetary processes which can be used as a witness on how the humanitarian logisticians are not recognized. Furthermore, logisticians are often not consulted in the decision-making process (Fritz Institute 2005). It has also been revealed how important it is to improve logistics practices by formulating humanitarian academic partnership (Kovacs & Spens 2011).

2.1.3.4 Availability of Local Market Suppliers

Gary P Ramsden, (2014), has described socio-economic challenges by including problems related with, uncertainty in demand and supply, problems related with shortage of competitive of market economy, unavailability of local suppliers for operation, availability of inflexible competition, insufficient donors, culture and language difference, high materials and logistics cost as well as

lack of trust among the stakeholders/ supply chain players. Hence, availability of local suppliers in the host country market indeed assist making the relief operation smoother where the beneficiaries can be assisted or supported on timely manner and before they are in another danger because of lack of supplies.

The beneficiaries need also might change significantly according to disaster types and the phases in the disaster timeline (Jahre, and Jensen, 2010). Demand forecasting in a disaster relief operation can be difficult due to the lack of historical data. Even though some databases from the past experiences prepared by both NGOs and governments exists in the organization, they are occasionally inadequate because of inconsistent and/or insufficient data collection and reporting problems. Inconsistencies within the process include problems initiated by poor organization, variability in lead time, and agency culture. Accordingly, Volatile supply problems include issues such as inconsistent quantity, quality, and lead time.

2.1.3.5 Information Technology Accuracy

The success of disaster relief response greatly depends on the accuracy of the information system. IT plays a major role when it comes to improve the logistics efficiency and reduce cost at the same time. However, donors want to directly donate the funds to the vulnerables affected by the disaster which results in a restricted/limited funds to invest on such necessary equipment and technology. (Oloruntoba and Gray, 2006). For the supply chain responsiveness to increase, a proper monitoring and communication is mandatory so efficiency in humanitarian relief responsiveness is secured (Christopher and Tatham, 2011). During a crisis, humanitarian agencies require information related to the catastrophe or disaster, beneficiaries, and availability of resources (Gary P. Ramsden, 2014). Furthermore, Thomas (2003), has also supported the existence of these challenge by stating the fact that in spite of knowing of having sophisticated SCM tools could result in effective cost and more efficient operations in the longer term, agencies have limited human and financial resources to invest in such advances.

Fritz institute (2005), has emphasized more on the fact that logistics operation and supply chain management of humanitarian sector is still being operated mainly manually due to a lack of the sufficient logistician to access of computerized tracking and tracing software's. Moreover, he has also emphasized on how gathering and analyzing and distributing critical information's to the

stakeholders the earliest the beneficiaries will be responded to and more lives can be solved. the latest the critical information is gathered, analyzed, and distributed by the stakeholders the related response to the beneficiaries will be effective hence more lives can be saved.

Similarly, Lee and Zbinden (2003), sited that many NGOs lacks a proper information technology infrastructure as well as to information data bases, which in return creates a problem or hindrance at several levels of the supply chain. Russel (2005) as cited in Assefa's thesis (2019), in his Master Thesis titled The Humanitarian Relief Supply Chain: Analysis of the 2004 South East stated that most humanitarian logistics organization rely solely on Excel for their tracking and tracing, resulting in blurred visibility into inbound shipments; this, in turn, impedes the undertaking of receiving, clearing customs, shipping to intermediate warehouses, and distribution along the supply chain.

2.1.4 Performance Measurement in Humanitarian Logistics Supply chain

Maestrini *et al.,* (2017) has defined Supply Chain Performance Measurement (SCPM) as a supporting measure in ensuring an implementation of the supply chain strategy to achieve the goals of supply chain management. Kusrini *et al*. (2014), has also defined good SCPM can be identified considering the context, content, and process. Moreover, Maestrini *et al*. (2017, p.301) have also defined SCPMS to be a set of metrics used in quantifying the efficiency and effectiveness of supply chain process and relationships, across multiple organizational functions in many firms for enabling supply chain.

However, regardless of the importance of performance measurement, it's neglected for the time being but there is also a sign of growing area in the literature. (Beamon & Balick, 2008). Performance measurement is an action used to measure the effectiveness and efficiency of an action. Neely *et al*. (1995). Effectiveness is defined as the extent to which customer needs are met, but efficiency is a measure of how resources are used economically to provide a certain level of effectiveness. Accordingly, measuring performance is acute to NGO accountability (Beamon, 2004). Today, donors, donor agencies, scholars, and aid and development professionals all call for the effectiveness and efficiency of relief work.

Moreover, Van Wassenhove (2006), has underlined on the importance of measuring the performance of high-lighting relief chains, especially with the increasing frequency and magnitude of disasters, scarcity of resources, competition in financing and responsibility, accountability & transparent requires; more efficient, effective remediation operations.

Regardless of how important the operational measurement and measurement system has not been widely developed and has not been systematically implemented in the aid chain. Several factors make performance measurement a challenging task for NGOs (O'Neill and Young, 1988).

(Beamon and Balcik, 2008), has stated that NGOs are having difficulties to let their program impact and quality of their humanitarian operations get illustrated. Furthermore, (Abidi *et al*., 2014) has explained that the unavailability of performance indicators has been creating inconveniences for the humanitarian supply chain management. They have also explained that setting even a generic performance measurement hasn't been easy because of the costly nature and different structure NGOs.

However, there are two performance measurement systems, that are the balanced scorecard (Kaplan and Norton, 1996) and the EFQM Business Excellence Model (EFQM, 1999). Each system provides a structured approach in identifying opportunities and threats of improvement and translating business strategies into achievable goals, objectives, and specific tasks. Unlike these systems, strategies which are competitive enough were introduced, such as The Performance Measurement Matrix (Keegan *et al*., 1989), SMART Performance Pyramid (Lynch, Cross, 1991), Performance Prism (Neely, Adams *et al*., 2001), can be picked up as an example.

Over 250 SCOR metrics organized in a hierarchical and codified structure from level 1 to level 3 were introduced by the American Production and Inventory control Society (APICS) (2018), these are organization, process, and diagnostic.

The metrics has been categorized into five major performance categories: which is reliability, responsiveness, agility, costs, and asset management efficiency.

Companies gets strategically challenged while trying to give definition, alignment and prioritizing the competitive requirements for each specialty, by knowing that it will be good to assign where it works best and where it can be conducted at an average level.

A major disadvantage of the SCOR model is that it is less useful in the humanitarian context. In order to be applicable to humanitarian supply chains, indicators need to be standardized and adapted to enable the inclusion of other important stakeholders such as donors, recipients, the military or the government.

Accordingly, School of commerce, (2015) has stated that the fact that indicators must be redefined for the specificities of each humanitarian context limits the major strength of SCOR.

Doing a performance measurement system to be able to meet the characteristics of effective performance measurement is better than a single metric. Rather than a single metric is required to meet the characteristics of effective performance measurement. Beamon (1998, 1999). Accordingly, the scholar developed a three-part framework

Therefore Beamon (1999), develops the three-part framework for performance measurement consisting of resource metrics, output metrics, and flexibility metrics. This framework has been used by several scholars for selecting performance system of measurement for supply chain modeling, such as Persson and Olhager (2002) and Angerhofer and Angelides (2006).

Bimon & Balik (2008) emphasized that the problems arising from the specific characteristics of the disaster relief environment are significant challenges for the process of selecting appropriate performance indicators and the design of measurement systems.

Performance Prism (PP) which is the most recent concept system and is considered a second-generation performance management system. The system was developed by a group of qualified researchers and consultants in performance management (Adams, and Kennerley, 2001). Furthermore, the metrics depend on upon comprehensiveness, internal compatibility, horizontal integration vertical integration and usefulness/beneficiaries.

According to Striteska & Spickova (2012), prism metrics are limited due to the limited information it provides on how the performance measures are going to be implemented, ineffective measures, lack of logic between measurements, insufficient link between the results and the drivers; and the existing PMS that companies may have is not taken into account.

Considering the three principles, a) aligning the metrics to the organization's core strategy (Lambert, 2001), b) understanding how performance is driven dynamically (Caplice & Sheffi, 1994) and c) reviewing the metrics regularly as performance improves (Meyer, 2005), (Davidson, 2006) has developed a framework that helps to measure the performance of logistics in a real humanitarian operation develops a framework for measuring the performance of logistics in real humanitarian operations attended by the International Federation of Red Cross and Red Crescent Societies. The framework he proposed was based on four major performance metrics. Which are, appeal coverage, a donation to delivery time, financial efficiency, and assessment accuracy (Larrea, O., 2013).

1. **Appeal coverage**: This indicator uses two specific metrics: appeal coverage percentage: that is defined as the percentage of the number of items that donors have pledged over the total number of items requested to operate at a given time. This is stated as the ratio of the numbers of items promised to the total number of items requested. This metrics is used to show how well and how quickly they find collateral for the requested material. It is expressed as the ratio of the number of items promised to the total number of items requested. The purpose of this metric is to tell organizations how quickly and quickly they find collateral for the requested material (Larrea, O., 2013).

Percent of items delivered: is the percentage of goods that were delivered for convenience, from the total number of goods requested for operation at a given time. The metric is explained in a fraction form as the ratio of the number of delivered items and total requested items. Accordingly, the metrics points out how well an organization is at a) Finding donors and b) delivering goods to the destination disaster place at a specific point in time (Larrea, O., 2013).

2. **Donations-to-Delivery)** Time: this certain indicator measures on the time it takes for an aid to be delivered from the origin or the donor to the beneficiaries. It can also be defined as the time between the time of a promised delivery and the actual delivery time. (Larrea, O., 2013).

3. **Financial Efficiency)** the third measurement indicator uses three specific metrics: which are: a) the ratio of the difference between the cost of the donor and cost of budgets. (Davidson, 2006) has stated that `This metric indicates the amount under or over budget as a percentage of the budget cost. b) The second metric of the third indicator or the financial efficiency is the difference between actual dollars spent and budgeted dollars (Davidson, 2006). c) The third metric of financial performance includes the transportation costs for the delivery of goods to recipients. It is expressed at a point in time as the ratio of the total transportation costs to the total cost of the product.
4. **Assessment Accuracy**) this metrics is important in measuring how much the final activity budget has changed over time compared to the original activity budget. (Larrea, O., 2013) has articulated the metric as a ratio of the revised operation budget and the original operation budget.

2.2 Theoretical frame work of the study

2.2.1 Grounded Theory

The researcher has tried to see some theory while conducting this study. The below two theories has been chosen to be reviewed as previous researcher, Selamawit Assefa has used different ground theories on her thesis study which she has done in a similar research area and title. Hence, the researcher has used the two ground theories that the former researcher has used to ground the theory.

a. ***Coordination Theory***

The concept of an international organization to coordinate in a disaster relief operation was put on the table after the First World War (Hutchinson, 2000). Following the creation of the idea of coordination the UN has opened a delegated office for a delegation under the name of Office for the Coordination of Humanitarian Affairs (OCHA) (Arlikatti, Bezboruah & Long, 2012). According to (Grogg, Richelle S., 2016), this office aims to help coordinate the efforts of various agencies around the world. The ultimate goal is to increase cohesion and effectiveness. Internationally, cooperation and collaboration can be clearly seen as a need to improve response to natural disasters.

At the heart of the coordination is the relationship between firms, and theories of intercorporate relations, particularly resource dependence and transaction-cost economics (TCE), have provided the infrastructure to study coordination (Alicia C. Bangor, 2010).

Human services agencies are stimulated to "coordinate" services amongst themselves on the premise that collaborative activities can facilitate access to services, minimize or avoid unnecessary duplication of work & energy, cost/money, and be able to create more effective and efficient systems of social services. (Alicia C. Bunger, 2010).

b. ***Resource Based Theory Resource- based theory (RBT)***

(Jay B. Barney, Valentina Della Corte, Mauro Sciarelli and Asli Arikan, 2012), have explained how an organizations strategic resources are the main roots to gain sustainable competitive advantage. It has also been defined that an organization can be considered as a set of physical, human and organizational resources. (Barney, 1991; Amit and Shoemaker, 1993). According to (Barney, 1991), the main source of sustainable competitive advantage for sustainable high performance is the resources of organizations that are valuable, scarce, incompletely imitated, and imperfectly substitutable.

Accordingly, the researcher believes that the above two theories have contributed a lot and they will contribute lot for the research paper.

2.3 Empirical Literature Review

2.3.0 Introduction

This part of this chapter includes empirical evidence of prior researches which explains about the factors that the researcher has also is trying to explain and assess. It also comprises prior researches that were done within this research area in the past. It also discusses the foundation of the research's which shares related concepts. There are several related researches that has been done by different scholars and researchers which tried to assess the factors that influence the humanitarian logistics Hence, the researcher has stated the below research where empirical studies supported or not this research paper.

2.3.1 Collaboration and Coordination

Owusu-Kwateng, Abdul Hamid and Debrah (2017) have found that there are indicators of a low-level collaboration between relief agencies and other partners and low coordination with the beneficiaries also was identified by (Thomas and Kopczak, 2005). Kovács and Spens (2009) in their study found out that one of the utmost and main challenges of humanitarian logisticians is to find partners to collaborate with. Bardhan and Dang (2016), have emphasized on how critical coordination and collaboration is while working in a relief operation. However, defining coordination can be difficult, yet its absence can be grave. Furthermore, the other enablers would also be highly impacted if it has been missed. Other research that was done by Rahel Tarekegne (2016), has stated that coordination and collaboration might be an issue international NGOs while they are working in Ethiopia. However, replication of responses on similar disaster site and delivery of non-important aid materials exists on a small scale in the humanitarian organization field. Accordingly, to test the above statement and definition then the below hypothesis was formulated.

H1: Adequate collaboration/coordination positively affects the performance of humanitarian logistics

2.3.2 Sufficient Donors Funding.

As per the finding of the research paper that was done by Isife, Theresa and R.O, (2012), has noted that there is insufficient funding that is happening because of lack of funds from the government for the operation due to an assumption of international humanitarian organization to act or fund whenever there is a relief operation. How problematic that a shortage of funding was for humanitarian logistics has been also discussed by (Özpolat, 2012/2013). The research also showed that inefficiencies of funds due to highly dependability on public resources which are subject to constraints in their procurement and logistics policies. Similarly, Lombo desta (2018), in her master's thesis has found funding to be highly associated with humanitarian logistics performance. Keeping other factors constant, a unit change in donor funding leads to an increase in performance of humanitarian logistics by around 52%. With these different findings, the researcher has formulated the below hypothesis to be tasted at the end of the study

H2: Adequacy of donor funding positively affects the performance of humanitarian logistics

2.3.3 Availability of Professional staff/ Human Resource

Kovács and Spens (2009) found out that the brain drains, and the lack of qualified in-country staff has a major impact on the success of a relief operation. On the opposing side, Rahel Tarekegne (2016), found out that the lack of professional and trained personnel in logistics and related activities is not a challenge to the performance of the humanitarian logistics in Ethiopia. However, as the researcher has referred other studies and literatures that points out on the importance of a professional logisticians on the smooth relief operation, with the above statement the below hypothesis was formulated.

H3: Availability of professional staff positively affects the performance of humanitarian logistics

2.3.4 Local market suppliers:

In sudden onset of disaster, the moment a demand occurs, and the point supplies are needed is usually closer to zero (Beamon and Balcik 2008,). The customers in a disaster supply chain include the population at the affected area, as well as intermediate customers at local or global storage facilities. Their needs change significantly according to disaster types and the phases in the disaster timeline (Jahre, and Jensen, 2010). Unlike logisticians in the private sector, humanitarian workers are always faced with unknown: where, what, how much, when, where, where from and how many times; in short, some basic parameters are needed to have an efficient supply chain setup due to its uncertainty nature. (Wassenhove, 2006). There are subcategories for unpredictable supply and demand, and inconsistent processes. Unpredictable supply problems include issues such as inconsistent quantity, quality, and lead time.

Hence, with the above definition and statement, the below fifth hypothesis has been formulated.

H4: Availability of local market suppliers positively affects the performance of humanitarian logistics

2.3.5 Information Technology accuracy:

Rahel Tarekegne (2016), has found that how the major problem is related with insufficient usage of information technology systems. As stated by the researcher most of the humanitarian organization doesn't use a database system rather than Excel which usually results in difficulties while tracking and tracing. Similarly, Tigist Yigezu (2016), has also found out on her study that

not using an improved, standardized and a limited number of software information technology while operating in a relief operation it can certainly minimize on how quickly can react for any disaster. In addition, Thomas and Kopczak (2005), and Goli, Bakhshi, and Tirkolaee (2017), found that humanitarian organizations can have some challenges for managing information technology and to collaborate among other organization emergency organizations. On the other hand, Hellingrath and Widera (2011), have found out that not employing such sophisticated information technologies and communication technologies is not a challenge for a relief operation.

Henceforth, to test the positive relationship the below hypothesis was formulated.

H5: Availability of Information Technology positively affects the performance of humanitarian logistics

2.4 Performance Measurement

Rahel Tarekegne (2016), has stated that; not being equipped with valid and enough information about how the operation is being conducted, what is the related cost, what was the major challenges as well as what solution was provided for those challenges creates difficulties in measuring the performance of humanitarian logistics She has also stated that the fact that there are so many stakeholders with different interest and say in the humanitarian relief operation has made the setting of performance measurement difficult to take place.

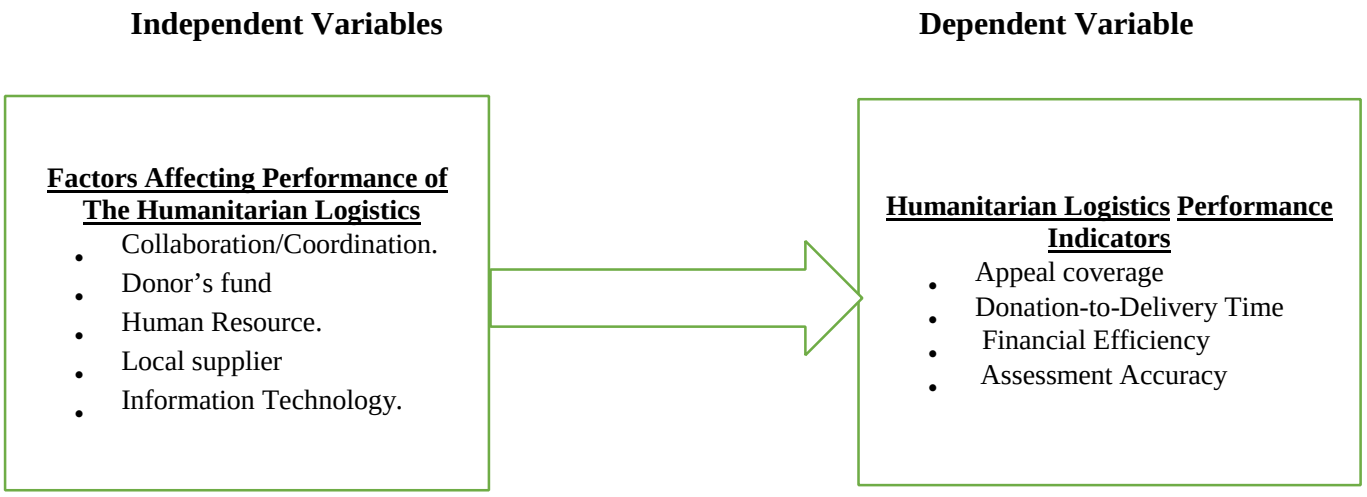
On the other hand, Larrea, O. (2013) has specified that the key performance indicators and scorecards that was established by (Davidson, 2006) could be manipulated to match with the characteristics of a certain disaster in a certain location. With more relief operation, more values in indicators performance could be produce according to the type of each disaster. It was also included that forced migration operations are more demanding and more difficult to perform a disaster relief operation.

Bölsche.D (2012) claims that preventing the occurrence of a disaster cannot be used as a tool for measuring a performance, instead it is to enhance the objectives of these humanitarian logistics in every step and level on a top level and subsequently; helps in lessen the anguish of those affected or the beneficiaries.

Bölsche.D (2012) has also Demonstrated similarities between the Supply Chain Operations Reference Model (SCOR) and the Scorecard model which includes reliability and accuracy, sensitivity from donation to delivery, cost and financial performance and financial performance verification.

2.5 Conceptual framework of the study

Conceptual Framework explains the relationship between the main concepts of the study. It is arranged in a logical structure to aid provide a picture or visual display of how ideas in a study relate to one another (Grant & Osanloo, 2014). The Framework displays the independent variables: coordination/collaboration, donor's fund, HR/professional logistics, local suppliers and IT issues, and the dependent variable: humanitarian logistics performance.



2.6 Summary of hypothesis

- *H1: Adequate collaboration positively affects the performance of humanitarian logistics*
- *H2: Adequacy of donor funding positively affects the performance of humanitarian logistics*
- *H3: Availability of professional staff positively affects the performance of humanitarian logistics*
- *H4: Availability of local market suppliers positively affects the performance of humanitarian logistics*
- *H5: Availability of Information Technology positively affects the performance of humanitarian logistics*

2.7. Identified Literature gap

Most researches that was done prior on humanitarian logistics are focused on identifying the challenges or focused on measurements taken on humanitarian logistics performance. As far as the researcher knowledge is concerned this research paper is the first in trying to identify factors affecting the performance of humanitarian logistics in the UN office. The paper will also try to bridge the gap in the literature in assessing or measuring the factors affecting humanitarian logistics. The researcher has also identified that most of previous researches were theoretical rather than practical which made a gap on testing the validity, applicability of these theories in humanitarian logistic. Accordingly, this study had tried to bridge the identified literature gap and will also try to contribute to an additional knowledge in the study area.

CHAPTER THREE
METHODOS OF THE STUDY

This chapter will try to present about research approach, research method, research design, population and sampling, procedure of data collection and method of data analysis to be used by the study. In addition, survey related reliability, validity and ethical considerations will also be discussed.

3.1 Description of the study area

The Government of Ethiopia estimates that around 10.2 million people require emergency food assistance to mitigate the impact of the drought due to El-Nino effect in 2016. One of the main current humanitarian concerns in Ethiopia relates to high malnutrition rates (food insecure pocket areas) and high risk of epidemics caused by recurrent drought and flash floods among others. Further Ethiopia has become the second largest refugee-hosting nation in Africa (more than 750000 registered refugees from Eritrea, Somalia, South Sudan and Sudan Nov 27, UNHCR report).

The main influencing factor for having the biggest number of refugees in Ethiopia is the ongoing conflict in South Sudan which came on top of an already heavy caseload of refugees coming in from Somalia, Eritrea and the Sudan. (UNHCR report, 2016) building activities, targeted at vulnerable populations experiencing acute and chronic food needs (including refugees and IDPs) and those at risk of malnutrition. The WFP report also shows that to address the needs of millions of people impacted by chronic food insecurity, WFP supports the Government's Productive Safety Net Programmed (PSNP) which provides predictable, multi-year assistance to millions of chronically food-insecure rural households, to help them transition away from depending on chronic emergency food assistance. The WFP is also working in partnership with the government of Ethiopia that is implemented by Joint Emergency Operation Program (JEOP) funded by USAID in relief food assistance since the year 2000.

3.2 Research design

Research design defines the plan that the researcher has to follow in the study which explains the plans and the procedures of the research till the methods of the data collection, analysis and interpretation of result and discussion. This plan also consists of different decisions which are to

be taken in order to make a coherent structure and a nice presentation. As Burns and Grove (2003, p.195), has defined a research design as "a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings. According to Farhadi (2009) research design can be classified as exploratory, descriptive, and explanatory.

Hence to addresses the research questions, this study have used both descriptive and explanatory research approach. Moreover, this research has followed a causal and cross-sectional research design. Moreover, the researcher has also used inferential statistics to analyses the data.

3.3 Research approach

Research approach includes a detailed outline of how the research data will be collected, what instruments will be used, how those instruments will be used as well as how those collected data will be analyzed. Accordingly, the researcher has chosen the specific design with regards to the nature of the research problem or topic under study.

And as far as research approach is concerned there are three types of approaches that a researcher can use. Namely, qualitative, quantitative, and mixed methods. These designs are tending to represent different ends on a continuum (Newman & Benz, 1998). Subsequently, a study can be more qualitative or quantitative or else stay in the middle by employing both designs.

Thus, after considering the three methods of the research approach given the concepts of the above descriptions and by considering the aim of this research; which is to assess the practices and factors affecting the humanitarian logistics performance of humanitarian logistics in the case of WFP Ethiopia. The researcher have used quantitative, qualitative and mixed, as the researcher has used data's that are numeric in nature as well as interviews with some key employees of the organization from major department to balance out the data that were collected with the quantitative. In addition to this, the researcher have used a systematic collection and measurement of data as well as application of statistical tools to analyze and obtain the findings so as to address the raised research questions, objectives and to test the formulated hypotheses.

3.4 Population and Sample Design

According to the HR department of the WFP the Ethiopian office of WFP has said they have a total number of 150 staffs and 80 of the employees directly working in humanitarian logistics or a relief operation. Hence, Census survey method has been used to determine sample population using the below criteria, a) Respondents who have been with the organization for at least one year and above, b) Respondent who are directly involved in the humanitarian relief organization. C) Respondent who are based in the head office of the organization. Moreover, the inclusion criteria has helped in getting quality data, avoiding confusion among the respondent while filling the questionnaires and to make sure the research is conducted under the scope outlined in chapter one of the study.

3.5 Data source and type

Data were collected from primary sources that helped to directly answer and fulfill the objective of the study. A structured and self-administered questionnaire, which was modified from literature sources (Demeke, 2016, Beamon & Balcik 2008), have been used in the study to collect crucial information from the staff of the head office of WFP Ethiopia. WFP Ethiopia has delivered two million tons of food to the beneficiary on the 1984 of Ethiopia's famine.

Relevant primary and secondary data were collected for the study. Primary sources were collected from employed of the organization by employing questionnaire while secondary data were gathered from both published and unpublished materials and files collected from journals, books, articles, books, research study and situation. For assessing the performance of the WFP Ethiopia of, a scorecard model that was developed by Davidson (2006), have been used.

3.6 Data collection Procedure

Data collection has been done through sending questionnaires via email to respondents, and follow up email will be sent and with a possible phone call to get their acknowledgment on the receipt of the questions was done with a phone call to ensure receipt of the questionnaire by the respondents. However, before the questionnaire was distributed to the respondents, the researcher has assessed the result after the pilot study was done and any issue resulting from it has been collected.

The questionnaire had constituted a closed ended question which has been self-administered, where the respondents has completed the questionnaire by themselves and have submitted the filled questionnaire via email as it was sent via email due to the conveniences of getting the population simultaneously and the related cost implication it has on the researcher, and the researcher has advised a polite deadline for the submission. Furthermore, the researcher has assured the respondents on the confidentiality and sensitiveness of their feedback even before starting collecting the actual data.

The questionnaire constituted a five level likert type questions grouped under six thematic areas: coordination, donor funding, and availability of logistics professionals, information technology, local market and lastly dependent performance of humanitarian logistics. it had also had two parts where the first part constituted questions that dealt with the respondent profile and their organization while the second part had questions on the research objective/questions. The Interviews with a standardized open-ended question has been conducted with the five department managers. Which was from, Procurement, Capacity Strengthening, funds management (operations) and transport operation. Hence, a standardized open-ended interview has been used.

3.7 Method of data analysis and presentation

The collected data has been checked for a correctness and comprehensiveness after the data were collected from the response giver. Subsequently, the data were organized & coded, then entered the data to the Statistical Package for Social Sciences (SPSS) and descriptive statistics. Hence, descriptive analysis such as mean, percentage as well as standard deviation has been used for analysis of the data. Marshall and Rossman (1999) has defined data analysis as the process of bringing order, structure and meaning to the mass of collected data. Data analysis also supports in describing and summarizing the data, identifying any relationships between the given variables, compare those variables, recognizing the difference between the variables and forecast the outcomes.

Multiple regression was conducted to test the proposed hypothesis of the study and examine the casual relationship of the variables. P-value of < 0.05 were used as a cutoff point for statistical significance. To identify differences in the responses among different respondent groups, Cross

tabulation were used. Moreover, the association among variables used in this study was examined using correlation analysis.

Schostak and Schostak (2008) has stated that there are two methods used to analyze data, which are namely qualitative and quantitative. Since the researcher has chosen to use mixed research approach of data the researcher has used descriptive and inferential statistics as the nature of the data compiled, partly determines the appropriate method to analyzing them with the purpose of finding the research problem answer (Walliman, 2001).

Moreover, after the researcher collects the data, SPSS software was used to analyze the quantitative data to do a pilot survey in order to check the validity and reliability of the data as well as to confirm the consistency of data.

3.7.1. Descriptive statistics

Descriptive statistics are often used to describe variables. Descriptive statistics are performed by analyzing one variable at a time (univariate analysis). The researcher has used the tools of descriptive statistics such as frequencies, percentages, mean, standard deviations, and cross tabular presentation to summarize the first part of the questionnaire which are the demographic character of respondents.

3.7.2. Inferential Statistics

The researcher has been employed both correlation and regression analysis to analyze the hypothesis. Hence, correlation and regression analysis was done. Accordingly, normality, multicollinearity, linearity, homosedsitity, independence of variables, multiple linier regression and regression coefficient were tested.

3.8. Validity and Reliability test

3.8.1. Validity Test

According to (Kothari, 2004) Validity can be defined as the extent to which differences found with a measuring instrument to reflect true differences among those being tested. Validity be the core of any form of assessment that is trustworthy and accurate (Bond, 2003, p. 179). In other words, Validity is the most critical criteria when measuring the quality of research design, content, and construct validity of the instrument. Kothari (2004), has defined Content validity as the extent to

which a measuring instrument provides adequate coverage of the topic under study. Accordingly, to make sure the content is valid the instrument must contain a representative of the population. Hence, the researcher will check the validity of the content of the instrument with the advisor and with pilot study with some samples from the population.

Content validity is said to be valid and good if the research instrument containers a representative sample of the universe. Moreover, content validity can be the extent to which a measuring instrument provides adequate coverage of the topic under study. It can also be determined by using a panel of persons who shall judge how well the measuring instrument meets the standards, but there is no numerical way to express it (Kothari, 2004).

As it is stated in the methodology part, the student researcher had reviewed other relevant literature and other thesis work which used similar instrument and adopted those questionnaire items from those theses to make sure the interment was valid. Hence, clarity of wording, definition were checked and inspected with/by the advisor. Furthermore, the student researcher also performed a pilot rest of the questionnaire among the target population which are managers, owners, employees and ad personifies to confirm the validity of the research instrument.

3.8.2. Reliability Test

According to Messick (1989) reliability refers to the degree to which empirical evidences and theoretical rationales support the adequacy and appropriateness of interpretations and actions based on test scores. Furthermore, (Fraenkel & Wallen, 2003; McMillan & Schumacher, 2001, 2006; Moss, 1994; Neuman, 2003) have also defined reliability as the degree to which a test is free from measurement errors, since the more measurement errors occur the less reliable the test. Reliability analysis be evaluative judgments that are made on the inferences of assessment results or test scores, that is whether correct interpretations are made, and actions are taken based on the inferences. In accordance with the above definition the researcher has used Cronbach's alpha to assess internal consistency of variables in the research instrument. As defined by Ntoumanis (2001), Cronbach's alpha is a coefficient of reliability used for measuring the internal consistency or homogeneity of the items that comprise each scale represented as a number between 0 and 1. Additionally, Zikmund, Babin and Griffin (2010) has also mentioned that a scale with coefficient alpha between 0.6 and 0.7 indicate fair reliability. However, only a coefficient of 0.7 or higher are acceptable. Hence, the researcher had employed a Cronbach's alpha coefficient of 0.7 or higher to

determine reliability. Furthermore, reliability is found to be a very important factor in assessment and were presented as an aspect contributing to validity and not opposed to validity.

Reliability is the extent to which a measurement gives results that are consistent and fundamentally concerned with issues of consistency of measures (Bryman and Bell, 2003). Reliability analysis can be seen as evaluative judgments that are made on the inferences of assessment results or test scores, that is whether correct interpretations are made and actions are taken based on the inferences.

Cronbach's alpha is a coefficient of reliability used to measure the internal consistency or homogeneity of the items that comprise each scale represented as a number between 0 and 1. Additionally, Zikmund, Babin and Griffin (2010) has also mentioned that a scale with coefficient alpha between 0.6 and 0.7 indicate fair reliability. Though, only a coefficient of 0.7 or higher are acceptable.

Hence, the student researcher has used a Cronbach's alpha coefficient of 0.7 or higher to determine reliability in which case the coefficient of this research has resulted, reliability is found to be a very important factor in assessment, and is presented as an aspect contributing to validity and not opposed to validity.

Reliability Statistics

Cronbach's Alpha	N of Items
.943	33

Source; own survey 2021

Table 3.7 reliability statistics 1

3.8 Ethical Considerations

Ethical Considerations are the most critical point in conducting a research to validate the paper. The researcher is well aware on the ethical consequences that might arise if all ethical consideration is not well thought or well planned. Accordingly, the researcher have provided information on the purpose of the study conducted to the respondents beforehand and make sure that the respondents have responded to the questionnaire with full consent and willingness.

Moreover, the research has confirmed that all the collected data will only be used for academic purpose and will stay confidential.

CHAPTER FOUR

RESULTS, DISCUSSION AND INTERPRETATION

4.1 Introduction

This chapter covers the data analysis and finding part of the study. The data analyses were made with the help of Statistical Package for Social Science (SPSS v.23). It encompasses both descriptive and inferential statistical analysis of the collected data. The demographic profile of the study respondents, employees of WFP Ethiopia in the head office have been analyzed and presented in this part using descriptive statistics such as frequency, percentage, mean, etc. The results of different inferential statistics like Pearson correlation coefficient and multiple regression that were gathered thorough questionnaire were analyzed, presented and interpreted in this chapter.

4.1. Response Rate

In order to address the research objectives, data were collected from the employees of the head office of the WFP Ethiopia.

The data were collected using self-administered questionnaire, and the questions were coded in order to be able to transfer it to SPSS. Moreover, the collected questionnaire was checked for errors and incomplete responses. Hence, the student researcher was conscious enough to check for incomplete questionnaire before receiving it from the respondents.

Accordingly, from the total 100 distributed questionnaires, the 89 were collected and the remaining 11 (5.5%) were remained with the respondents due to unavailability and other reasons. The nominal response rate for the collected questionnaires was counted for (94.78%); however, only the 80 or (90.99%) were used for analysis due to incompleteness and missing values of the discarded ones, which counted to be 16(3.8%). According to Rubin & Babbie (2010), a response rate of 70% of questionnaire is said to be “very good” for further assessment. Hence, the student researcher has got a response rate of 90.99% which makes it significant for further use.

Total number of questionnaires	Collected questionnaire	Non-Responded questionnaire	Discarded questionnaire	Useable questionnaire	Response rate
100	89	11	9	80	90.99%

Source: Own Survey Result, 2021

Table 4.1 Response rate 1

4.2. Descriptive Analysis

4.2.1 Demographic profile of the respondent

The study primary pursued to make sure respondents who are the employees of WFP Ethiopia general information were analyzed with regards to their age, gender, level of education, position in the organization and working experience in the organization. The general information results detects at the respondents aptness in responding for the questionnaire on assessing the factors affecting the humanitarian logistics performance of WFP Ethiopia.

Gender of respondents

		Frequency	Percent
Gender of respondents	Male	53	66.3
	Female	27	33.8
	Total	80	100.0
Age of respondent	18-35	21	26.3
	36-50	55	68.8
	>50	4	5.0
	Total	80	100.0
Education Level of respondents	Diploma/ certificate	4	5.0
	Bachelor's degree	50	62.5
	Master's degree	22	27.5
	PHD	4	5.0
	Total	80	100.0
Years of experience	1-5 years	28	35
	6-10 years	32	40
	– 15 years	16	20
	>15 years	4	5
	Total	80	100

Source: Own Survey Result, 2021

Table 4.2 Demographic response 1

4.2.1.1. Gender

Table 4.2 shows the gender distribution of the WFP logistics professionals which covers 66.3% of males and 33.8%of females respectively. The finding defines that WFP has a male employee dominated humanitarian logistics organization.

4.2.1.2 Respondent's Age Range

The result has showed that major part of the employees or the 68.8% of the employees are in the age range of 36-50, while the 26.3% of them are on the age range of 18-35 and the remaining 4.9% of the sample population are 50 and more than 50 years of age.

4.2.1.3 Respondent's Level of Education

The level of education that an individual has acquired determines their competence in executing their mandate in dealing with their day to day tasks. The results of respondents associated with their educational background were grade 12 completed 1.6 %, college diploma 11.1%, first degree 57.1% and second degree and above 30.2%. Accordingly, the result indicates that most employees of the organization are above bachelor degree, which furtherly identified, 61.7% are bachelor degrees, 27.2% has their master's degree, 4.9% of the sample has their PhD, while only the 4.9% of the employees have only their diploma or certificate with a similar filed.

4.2.1.4 Respondent's Work Experience in the Organization

The respondents were also asked to answer on their experience in the organization they are working currently. Hence, the result indicated that the 40% of the employees have worked between 6-10 years, the 35% of the employees has said they have been working in the organization between 1-5 years, the 20% of the respondents has been working between 11-15 years and the remaining 5% of the respondents has responded to have worked in the organization more than 15years. According to the result, most of the employee stays for a considerate long time for a number of reasons.

4.3 Comparison of factors affecting humanitarian logistics performance

The factors which said to be affecting the humanitarian logistics has been compared to be able to display which variable or factor of humanitarian logistics is playing the major and vital role to be able to execute a successful humanitarian or relief operation.

Accordingly, the mean and standard deviation of the factors affecting the humanitarian operation is presented on the below table. Hence, the table will present the details of the mean and standard deviation with the mean scores and standard deviation result of the independent variables that are affecting the performance of humanitarian logistics performance.

As described in table 4.3, the factors affecting the humanitarian logistics with the highest mean score is professionals with a mean value of 4.06; followed by coordination/collaboration with 3.87, information technology had 3.74, finally funds with 3.71 and finally local supply 3.47. The score indicates that the respondents show somehow an agreement to the questions raised during the survey and had positive perception of the factors that affects the performance of the humanitarian logistics. On the other hand, high standard deviation is scored for local supply followed by information technology between the five factors affecting the humanitarian logistics performance, implying that the data is a bit far from the mean

Which explains that, the respondents had relatively diverse perception, whereas lower standard deviation

is observed from coordination/collaboration and funds explaining that that the respondents' perception has matched in their responses.

Descriptive Statistics		
	Mean	Std. Deviation
coordination	3.8781	0.57368
Professional	4.0656	0.68175
Funds	3.7156	0.62483
Information	3.7475	0.83454
Local	3.4719	0.94801
Performance	3.9019	0.7713

Source: Own Survey Result, 2021

Table 4.3 Descriptive statistics 1

4.5 Correlation Analysis

The researcher has used correlation analysis to analyze the strength and direction of association since correlation coefficient is a measure of linear association between two variables. With the objective of finding out the relationships that might exist between the variables. Accordingly, correlation analysis was employed to see the direction and significance of the independent variable such as appeal coverage, donation-to-delivery time, financial efficiency, and assessment accuracy and factors affecting performance of the humanitarian logistics (dependent variable).

To be able to meet the objective of the research the student researcher had used correlation analysis to examine the strength and direction (either positive or negative) of the relationship

amongst the factors affecting the humanitarian logistics and humanitarian logistics performance indicators.

Hence Pearson correlation analysis were used to provide convergent validity evidence. The Pearson coefficients constitutes of a magnitude and direction of relationships which can be within (-1-+1). Furthermore Marczyk, Dematteo and Festinger (2005) have defined correlation as the most basic and most useful measures of association between two or more variables, moreover they have also described the general guidelines of correlations which goes as 0.1 to 0.3 are considered to be small, 0.3 to 0.7 are considered to be moderate, 0.7-0.9 are considered to be large and correlation of 0.9 to 1.00 are considered to be very large.

Correlations

		Cordination	Proffesionals	Funds	Information	Local	Performance
Cordination	Pearson Correlation	1	.725**	.816**	.786**	.709**	.811**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	80	80	80	80	80	80
Proffesionals	Pearson Correlation	.725**	1	.787**	.863**	.743**	.859**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	80	80	80	80	80	80
Funds	Pearson Correlation	.816**	.787**	1	.788**	.763**	.831**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	80	80	80	80	80	80
Information	Pearson Correlation	.786**	.863**	.788**	1	.781**	.891**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	80	80	80	80	80	80
Local	Pearson Correlation	.709**	.743**	.763**	.781**	1	.755**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	80	80	80	80	80	80
Performance	Pearson Correlation	.811**	.859**	.831**	.891**	.755**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	80	80	80	80	80	80

**. Correlation is significant at the 0.01 level (2-tailed).

Source own survey result, 2021

Table 4.4: Pearson Correlation Matrix 1

In accordance with the guidelines that was provided by (Marczyk, Dematteo and Festinger, 2005) all basic constructs were included into the correlation analysis and a bivariate two-tailed of

statistical significance at the level of 99% significance, $p<0.01$ correlation analysis correlation analysis was also done. And the below table will illustrate the correlation between the factors of humanitarian logistics performance and logistics performance.

Bivariate Correlation: - tests whether the relationship between the independent and dependent variable is linear, meaning if there is a direct relationship between two variables.

Hence, according to Table 4.4 the coefficients shows that the five factors affecting performance of humanitarian logistics with on the humanitarian performance indicators, within a range of 0.755 to 0.891 and all independent variables are significant at $p<0.0001$.

Hence, from the five independent variables, local supply has showed a moderate positive relationship with (0.755) from the five independent variables. Meanwhile, information technology has scored a stronger and positive relationship from the variables with a score of 0.891 followed by professionals with a score of 0.859, funds with a score of 0.831 and coordination/collaboration with a strong positive relationship with a score of 0.811.

Sig (2-Tailed) value: - The value of this confirms that whether there is a statistically significant correlation between the dependent and independent variables or not, hence, if the Sig (2-Tailed) value is greater than .05, it confirms that there is no significant correlation between the dependent and independent variables. Which states that any change on one variable won't impact the other variable results. Moreover, Pedhazur, (1982) states that, increases or decreases in one variable do not significantly relate to increases or decreases in the second variable.

Hence, as indicated on the above correlation table, the numbers next to Sig. (2-tailed) shows that all are (.000). Therefore, according to the convention, it confirms that the correlations are significant at 99% confidence interval (which indicate that the relationship between the variables are not by a mere chance).

4.6 Regression Analysis

Regression analysis is a technique used to predict the value of a dependent variable using one or more independent variables (Albaum, 1997). Moreover, it's also been defined as a tool that is used for investigating the relationship between variables. Usually, the investigator seeks to ascertain the causal effect of one variable upon another. Hence, to conduct the analysis, the researcher will collect the data on the underlying variables of interest and employs regression analysis to evaluate

the quantitative effect of casual independent variables on dependent variable. The researcher has also assessed the statical significance of the predicted relationships, which can also be called the degree of confidence that the true relationship is close to the estimated relationship (Malhotra, 2007). As defined by Stevens, (2009); Tabachnick & Fidell, (2006) when conducting the multiple regression, its mandatory to do a screening for normality test to make sure the residuals have been normally defined. Moreover Darlington, (1968); Osborne & Waters, (2002) have defined that multiple regression assumes that variables have normal distributions. This describes that errors are normally distributed which will result in a plot of values of the residuals that will create an estimated normal curve. (Keith, 2006) by basing on the shape of the normal distribution which gives the researcher knowledge about what values to expect. Moreover keith (2006) has also defined that once the sampling distribution of the mean is known, it is possible to make predictions for a new sample (Keith, 2006). Hence for non-normal distribution that are positively or negatively skewed, contain large kurtosis, or will have extreme outliers can distort the obtained significance levels of the analysis, resulting in the standard errors becoming biased (Osborne & Waters, 2002) moreover, they have also mentioned that regardless of the regression analysis generally considered to be quite robust to violations of normality a small sample size can actually increase the seriousness of non-normality of a distribution.

Outliers may have stronger influence on normal distribution when the sample size is small, whereas standard errors for both skewness and kurtosis decrease with larger samples, as there will most likely be only minor deviations from normality (Tabachnick & Fidell, 2006).
When scores on variables are skewed, correlations with other measures will be attenuated, and when the range of scores in the sample is restricted relative to the population correlations with scores on other variables will be attenuated (Hoyt *et al*., 2006). Non-normally distributed variables can distort relationships and significance tests (Osborne & Waters, 2002).

Outliers can influence both Type I and Type II errors and the overall accuracy of results (Osborne & Waters, 2002). The researcher can test this assumption through several pieces of information: visual inspection of data plots, skew, kurtosis, and P-Plots (Osborne & Waters, 2002). Data cleaning can also be important in checking this assumption through the identification of outliers. Statistical software has tools designed for testing this assumption. Skewness and kurtosis can be checked in the statistic tables, and values that are close to zero indicate normal distribution.

Normality can further be checked through histograms of the standardized residuals (Stevens, 2009). Histograms are bar graphs of the residuals with a superimposed normal curve that show distribution. The normal curve is fitted to the data using the observed mean and standard deviation as estimates, and computing the corresponding chi square (Sevier, 1957). Q-plots, and P plots are a more exacting methods to spot deviations from normality and are relatively easy to interpret as departures from a straight line (Keith, 2006).

4.6.1. Assumption for Testing Regression Analysis

Hair *et al*, (1998) has described that testing all the regression assumption is important to be able to confirm that the gathered data can represent the sample and the researcher has obtained sufficient results.

4.6.1.1 Normality of the Error Term Distribution

Darlington, (1968); Osborne & Waters, (2002) have defined that multiple regression assumes that variables have normal distributions. Which means that errors are normally distributed, and that a plot of the values of the residuals will approximate a normal curve (Keith, 2006) by basing on the shape of the normal distribution which gives the researcher knowledge about what values to expect. Moreover keith (2006) has also defined that once the sampling distribution of the mean is known, it is possible to make predictions for a new sample (Keith, 2006). Hence for non-normal distribution that are positively or negatively skewed, contain large kurtosis, or will have extreme outliers can distort the obtained significance levels of the analysis, resulting in the standard errors becoming biased (Osborne & Waters, 2002) moreover, they have also mentioned that regardless of the regression analysis generally considered to be quite robust to violations of normality a small sample size can actually increase the seriousness of non-normality of a distribution.

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Before running the regression analysis, normality of a data should be tested, hence to make sure that the independent variables of the studies are indeed normally distributed. Moreover Brooks (2008) has stated that if the residuals are normally distributed, the histogram should be bell-shaped henceforth, this research has implemented the same method to illustrate the statement of the researcher accordingly the paper incorporated graphical methods to test the normality data.

From the histogram (see appendices 2.3), that was conducted in regards with proving the normality of the data's in regards with the bell-shapedness of the histogram, it can be obtained that the data were normally distributed and fulfil the first assumption of regression.

Moreover, Shukla (2009) stated that normality distribution of the data can be checked through skewness and Kurtosis test, by checking the lowest difference between mean and median. Shukla (2009) also explained that positive skewness values suggests that clustering of data points on the low value (left hand side of the bell curve) while the negative skewness values suggest clustering of data points on the high values (right hand side of the bell curve).

Accordingly, the result from the data suggests that clustering of the data points on the high values (right hand side of the bell curve) since the skewness result is negative. Furthermore, according to Yi (1988), as cited by Tesfaye (2017) suggested that, the standardized skewness distribution result and Kurtosis result must be between the ranges of + 2.58 and -2.58. Hence, the below table

confirms that the data were normally distributed since the results has fallen between Yi's (1988) range

Coefficients			
Model		Collinearity Statistics	
		Tolerance	VIF
1	coordination	.309	3.234
	Professional	.213	4.694
	Funds	.218	4.589
	Information	.162	6.187
	Local	.368	2.720

a. Dependent Variable: Performance

Source: own survey; 2021

Table: 4.5 Normality test 1

4.6.1.2 No Multi-collinearity Assumption

According to Darlington, (1968); keith, (2006) multi-collinearity (also called collinearity) refers to the assumption that the independent variables are uncorrelated (Darlington, 1968; Keith, 2006). Furthermore, according to Keith, 2006; Poole & O'Farrell, 1971, researcher can interpret regression coefficients as the effect of the independent variables on the dependent variable when collinearity is low to be able to make inferences about the causes and effects of variables reliably. Keith (2006) has alleged that multicollinearity occurs when several independent variables correlate at high levels within themselves instead of the dependent and independent, or when the predicting variable is a near linear combination of other independent variables. Which means if there are more variables correlation or overlap the researcher ability to separate the effects of the variable will be low.

Cohen (1968) had also mentioned that regression is created for the purpose of allowing some overlapping between variables and to provide the proportion of those overlapped variance. Naturally, independent variables are more correlated with the dependent variables than the other way around. Furthermore Poole & O'Farrell, (1971) also has supported this argument by saying if the above assumption is not satisfied then autocorrelation will be presented. Moreover (Jaccard *et al*., 2006; Keith, 2006) has identified that multi-collinearity can result in misleading and unusual results, inflated standard errors, reduced power of the regression coefficients that create a need for larger sample sizes as well as the interpretations and conclusions based on the size of the

regression coefficients, their standard errors, or associated t-tests may be misleading because of the confounding effects of collinearity (Mason & Perreault Jr., 1991). Hence, the researcher might underestimate the relevance of the predictor the hypothesis testing of interaction effects might also get hampered, and the power for detecting the moderation relationship also can be reduced because of the inter correlation of the predictor variables (Jaccard *et al*., 2006; Shieh, 2010).

Multicollinearity is checked against 4 key criteria:

1) **Correlation matrix** – when computing the matrix of Pearson's Bivariate Correlation among all independent variables the correlation coefficients need to be smaller than .08.

2) **Tolerance** – the tolerance measures the influence of one independent variable on all other independent variables; the tolerance is calculated with an initial linear regression analysis. Tolerance is defined as $T = 1 – R^2$ for these first step regression analysis. With T

3) **Variance Inflation Factor (VIF)** – the variance inflation factor of the linear regression is defined as VIF = 1/T. Similarly, with VIF > 10 there is an indication for multicollinearity to be present.

4) **Condition Index** – the condition index is calculated using a factor analysis on the independent variables. Values of 10-30 indicate a mediocre multicollinearity in the regression variables, values > 30 indicate strong multicollinearity.

According to Dillon (1993) multi-collinearity refers to the situation in which the independent variables are highly correlated than they should be. Hence, when the independent variables are multi-collinear, there will be a possibility of overlapping or sharing of predictive power. Therefore, this results in difficulty of assessing the unique contribution of each independent variables and becomes multi-collinear.

Moreover, when there is high multi-collinearity, the independent variables measure the same thing or else will commence similar information and ideas. Furthermore, measuring the unique contribution of each independent variable to the research becomes hard some. Therefore, the

student researcher had tested for Multi-collinearity by using tolerance value and variance inflator factor (VIF) value.

According to Pallant (2005), there is no indication of collinearity if the tolerance values are greater than 0.1(>0.1) as well as if the VIF values are less than 10(<10).

Hence, it can be concluded and confirmed that multi-collinearity didn't exist on this research data's as all the values of the tolerance values are greater than 0.1 even greater than 0.3 and all values of VIF are way lesser than 10, even lesser than 3.

4.6.1.3 Linearity

Some researchers argue that this assumption is the most important, as it directly relates to the bias of the results of the whole analysis (Keith, 2006). According to (Darlington, 1968), linearity defines the dependent variable as a linear function of the predictor or the independent variable. Osborne & Waters, (2002) have also added that multiple regression can accurately estimate the relationship between dependent and independent variables when the relationship is linear in nature. Adding to the above definition they have explained that since the chance of the non-linear relationship is high in a social science, hence it becomes essential to examine analysis for linearity. Keith, (2006) has also mentioned that if linearity is violated all the estimates of the regression including regression coefficients, standard errors, and tests of statistical significance may be biased. Thus, if the relationship between the dependent and independent variables is not linear, the results of the regression analysis will under- or over- estimate the true relationship and increase the risk of Type I and Type II errors (Osborne & Waters, 2002). According to Keith (2006) when bias occurs it is likely that it does not reproduce the true population values hence, violation of this assumption threatens the meaning of the parameters estimated in the analysis.

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including regression coefficients, standard errors, and tests of statistical significance may be biased. Thus, if the relationship between the dependent and independent variables is not linear, the results of the regression analysis will under- or over- estimate the true relationship and increase the risk of Type I and Type II errors (Osborne & Waters, 2002). According to Keith (2006) when bias occurs it is likely that it does not reproduce the true population values hence, violation of this assumption threatens the meaning of the parameters estimated in the analysis.

The linearity of the relationship between the dependent and independent variable represented the degree to which the change in the dependent variable is associated with the independent variable (Hair *et al*., 1998). Furthermore, Hair *et al* (1998) have also defined liner models as a predictor of values falling in a straight line by having a constant unit change (slope) of the dependent variable for a constant unit change of the independent variables. Darlington, (1968) has also stated that linearity defines the dependent variable as a linear functions of the predictor (independent) variables. Analysis such as R2, beta, when a non-linear relationship existed or is presented will underestimate the importance of the variables. Hence, multiple regression can accurately estimate the relationship between dependent and independent variable when the relationship is linear in nature (Osborne& Waters, 2002). And substantial violation of linearity states that the regression results might not usable as it is supposed to be. Residual plots showed that there were a random scatter points existed around the horizontal line. The scatter plot of standardized residuals versus the fitted values for the regression models was visually inspected (Malhotra *et al*., 2007). Accordingly, by using visual inspection of the plot (see appendices), the research has confirmed that there was linear relationships of dependent variable with each of the predictors. And the variable has met the linearity assumption.

4.6.1.4 Homoscedasticity of the Error Terms

The final assumptions of the regression analysis, states that that the residuals at each level of the predictor(s) should have the same variance (homoscedasticity); when the variances are very unequal there is said to be heteroscedasticity (Field, 2005). In this case, as each level of the predictor variable(s), the variable of the residual terms should be constant. This assumption is referred to as the description of data in which the variance of the error terms (e) appears constant over the range of values of an independent variable. The assumption of equal variance of the population ε (where ε is estimated from the sample value, e) is critical to the proper application of

linear regression (Hair *et al*., 1998). This assumption was also supported by Osborne & Waters, (2002) as he defined it as an equal variance of errors across all levels of the independent variables. Hence, in order to evaluate this assumption in this research, the residuals can be plotted against the predicted values and against the independent variables. When standardized predicted values are plotted against observed values, the data would form a straight line from the lower-left corner to the upper-right corner, if the model fit the data exactly (Ge, p.49). Accordingly the student researcher has used P-P plot (see appendices 2.5) to test homoscedacity assumption for the model, hence the result showed that the dots were drawn very closer to the diagonal line, confirming the assumption was indeed met.

4.6.1.5 Testing the Independence Assumption

For any two observation the residual terms should be uncorrelated or independent. This occurrence can also be described as a lack of autocorrelation. Hence, this assumption can be tested using the Durbin-Watson test.

Durbin-Watson: this statistics states that whether the independent errors is acceptable or not. As the traditional rule suggested that, values less than 1 or greater than 3 should raise alarm bells (Field, 2005). Hence from table (4.6) it can be well confirmed that the assumption has been met, with a result of 1.77 which is closer to 2.

To summarize, the independent and dependent variables met the assumptions indicated that the model that the student researcher got for a sample could accurately applied to the population of interest. That means the coefficients and parameters of regression said to be unbiased as stated in (Field, 2005).

Model Summary

Model	Durbin-Watson
1	1.880[a]

a. Predictors: (Constant), Local, coordination, Professional, Funds, information

b. Dependent Variable: Performance

Table: 4.6 Independence Assumption 1

Source; Own survey 2021

4.7 Multiple linier regression analysis

According to Andy (2005) definition, Regression analysis supports in predicting the model in order to be able to foresee the value of the dependent variable from one or more independent variable. Accordingly, in order to predict what affect the humanitarian logistics performance with regards to performance indicators, multiple regression analysis was deployed. Multiple Regressions estimates the coefficient of the linear equations which involves one or more independent variables that can fit a predictive model to data and use the model to foresee the value of the dependent variable from one or more independent variables (Andy, 2005). Hence, to see the contribution of the factors that impact humanitarian logistics performance and humanitarian logistics performance indicators, multiple linear regression analysis was used. Accordingly, humanitarian logistics performance was used as a dependent variable while the five factors affecting performance had served as an independent variable.

Thus, the regression analysis has been used to measure the variables that explain the variance in the overall humanitarian logistics performance indicators and the results has been shown in the subsequent tables.

4.7.1 Explained variation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change	Durbin Watson
1	.944[a]	.891	.884	.26324	.000	1.880

a. Predictors: (Constant), Local, coordination, Professional, Funds, Information
b. Dependent Variable: Performance

Table: 4.7 Multiple linier regression 1

Source, own survey result, 2021

The regression model summary table represents the correlation of factors affecting performance of humanitarian logistics indicators which is the dependent variable with the dimensions of humanitarian logistics performance or the independent variables of this study that shows a value of 0.884.

R: According to Pedhazur, (1982), R designates the value of the multiple correlation coefficient between the predictors and the outcome, with a range from 0 to 1, a larger value indicating a larger

correlation and 1 representing an equation that perfectly predict the observed value. Hence, from the model summary table (R=.944[a]) that is around one confirms that the five dimensions of the factors affecting the humanitarian logistics strongly predicts the dependent variable.

R Square (R2): Pedhazur, (1982 also explained that R square indicates the proportion of variance that can be explained in the dependent variable by the linear combination of the independent variables. else, R square measures that how much of the variability in the outcome is accounted for by the predictors. Pedhazur (1982) has again confirmed that the value ranges from 0 to 1. Thus, the linear combination of the independent/ predictor variables which is factors affecting performance explains 89.1% of the variance in the humanitarian performance indicators, and the remaining 10.9% is explained by extraneous variable or by other variables which were not included in this regression model.

Adjusted R Square (R2): The adjusted R2 adjusts the value of R2 to more precise and accurate representation of the population understudy (Pedhazur, 1982). In other words, the adjusted R2 gives the audience an idea on how well the model generalizes and how close the value is to R2. In this case the difference between R2 and adjusted R2 is very minimal which accounted for 0.001 which is about 0.1%. Hence, this explains that if the model were derived from the population instead of the sample it would account for approximately 0.1% less variance in outcome, which is very minimum difference.

Accordingly the adjusted R square statistic states that, the proportion of variance in the dependent variable that is accounted for by the independent variables, which explains that the performance of humanitarian logistics performance of the WFP Ethiopia. Adjusted R2 values also indicate the overall effect size of all the independent variables on the dependent variable. Accordingly, from the collected data, the performance of the humanitarian logistics is affected by the 5 variable. Or 88.4% of the performance of the humanitarian logistics and can be explained by the five variables. However the performance of the humanitarian logistics cannot be explained by the five independent variables or due to variables that wasn't considered in this research.

4.7.2 Evaluating of the model

The ANOVA table describes the general significance and acceptability of the model from a statistical perspective. (Pedhazur, 1982). The below table showed that the p value is less than 0.05 or ($P<0.05$) which states that the variation explained by the model is not due to a mere

coincidence. Hence, the above ANOVA table confirms that the table is indeed significant and acceptable. As observed from the previous table (Table 4.7) the student researcher had suggested that R, R2 and Adjusted R2 can indeed measure the factors affecting the performance of humanitarian logistics based on the linear combination of the five dimensions/variables of customer humanitarian logistics performance is statistically significant.

Consequently, in accordance with the designation of the model, the regressions can be said that the model is adequate at beta=0.001 significance value.

ANOVA[a]

Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	41.869	5	8.374	120.839	.000[b]
	Residual	5.128	74	.069		
	Total	46.997	79			

a. Dependent Variable: Performance

b. Predictors: (Constant), Local, coordination, Professional, Funds, Information

Table: 4.8 ANOVA 1

Source; own survey result, 2021

4.7.3 Evaluating Regression Coefficient

Likewise, the regression table shows the overall significance/ acceptability of the model from a statistical perspective. Furthermore, the significance value shows that the values of 0.000 that is less than $p<0.01$. Hence the model confirms that the variation explained by the model is not happened only as a mere coincidence.

The model also explained that at least one of the independent variables positively and significantly influence the dependent variable, moreover, the beta coefficient value has shown that each independent variable, individually influence the dependent variable. Moreover, the regression model also has shown the most predictor of change from all the variables, keeping other factors constant.

Furthermore, the regression coefficient also explains the average amount of change in the dependent variable that is caused by a unit change in the independent variable. The higher the beta coefficient of the independent value, the more it explains the dependent determinants more.

Accordingly funds, coordination, professionals, local supplies and information technologies. , ordination and collaboration, information and local supplies respectively were found to be determinant of humanitarian logistics performance in their descending order, denoting funding the main important dimensions of all in impacting the performance of humanitarian logistics with regards to humanitarian logistics performance indicators.

Table 4.8 shows the standardized coefficients for the five independent variables in a descending format, which are funds, coordination, professionals, local supplies and information technologies; that were 0.337, 0.325, 0.194, 0.186 and 0.024 as well as their significance levels which are .000, .000, .000, .000 and .000 respectively and confirms all levels are .000 or states the significant levels are significant at <0.01. The significant level indicates that an existing and significant relationship between the dependent and independent variable. The coefficient of the independent variables is significant at less than one percent which also confirms that all the alternative hypotheses related to the factors affecting humanitarian logistics performance supported.

Thus, the regression model Table 4.8 result shows that, keeping other variables constant, a beta unit of increment in any of the independent variables will result in a unit increment in the humanitarian logistics performance indicators.

Consequently, to be able to get a good result on the humanitarian logistics performance indicators then it's mandatory and important to work on the mentioned/independent factors that affects the humanitarian logistics performance even in small number, which states that even a very small number does count in defining or impacting the humanitarian logistics performance indicators.

Table: 4.9 regression coefficient

Model		Standardized Coefficients	t	Sig.	Influence level
		Beta			
1	(Constant)		-2.249	.003	
	coordination	.325	4.703	.000	2ND
	Professional	.194	2.335	.002	3RD
	Funds	. 337	.292	.000	1ST
	Information	.024	3.532	.001	5TH
	Local	.186	2.929	.003	4TH

Source; own survey 2021

4.9 Test of Hypothesis.

After running all tests and parameters to test the objectives and research questions the below result was drawn from the paper for the proposed hypothesis.

Proposed hypothesis	Remark
H1a: adequate collaboration positively affects the performance of humanitarian logistics	Accepted
H1b: an adequacy of donor funding positively affects the performance of humanitarian logistics	Accepted
H1c: availability of professional staff positively affects the performance of humanitarian logistics	Accepted
H1d: Availability of local market suppliers positively affects the performance of humanitarian logistics	Accepted
H1e: Availability of Information technology positively affects the performance of humanitarian logistics	Accepted

CHAPTER FIVE

SUMMARY, CONCULUSION AND RECOMMENDATION

The student researcher has tried to examine the factors affecting the humanitarian logistics performance of the world food program: in Ethiopia in Addis Ababa. This chapter presents a summary, conclusion and based on the results of the analysis and interpretation. Therefore, the first section of this chapter described major findings of the study, conclusion based on the previous as well as recommendation and gave insight for further researches. This section has also discussed the possible limitation and suggestion for future research and researchers.

5.1 Summary of Findings

The researcher has used descriptive approach, inferential statistics namely and qualitative analysis to triangulate data to examine the factors affecting the humanitarian logistics performance of the world food program Ethiopia.

The student researcher has reviewed *different related literatures for humanitarian logistics operation in the case of WFP were computed using the factors affecting the humanitarian logistics which are, , lack of coordination and collaboration, inadequate funding, shortage of human resource unstable security , inadequate information technology, poor inventory* management, , social barrier, poor infrastructure.

Selamawit, 2019 in her thesis has also mentioned that Kendals Wallis coefficient of concordance of the rank order analysis model, she has found out about five top challenges were ranked as, poor inventory management, difficulties of raising funds,, lack of coordination and collaboration in relief the various level of relief operation.

Furthermore, the study has also tried to investigate the relationship between and within the independent variables.

- The researcher has found out that, all the variables which are cooperation/coordination among players, problems associated with the raising funds for a relief operation, unavailability of professionals, shortage of supply from the local market, and the issues in relation with the use of information technology has been noticed as a problem or a hiccup to the WFP Ethiopia.
- However, the study has showed that from the five main variables, the major challenge ranked at the top during a relief operation is problems related with local market supply.

- Lack of coordination and corporation between key players has been noted as the second major problem of the WFP Ethiopia that is making the relief operation a bit difficult than it should have been not to mention the additional cost they have to incur due to the issues among the key players of the humanitarian logistics.
- The study has also showed that even if it's not the major problem of the organization rising funds for the beneficiaries has been found to be a problem that is hindering the organization from working full scale and serve all the beneficiaries in a relief operation/disaster area.
- The study has also showed that the organization could work on the IT infrastructure more to incorporate all the issues that are related withS the relief operation. So the following up and update of the operation could be easier to find and referenced.
- The quantitative statistics has showed that a mean of 3.90 which confirms that the performance or the humanitarians from the perspective of the performance indicators has showed that the overall humanitarian performance of the WFP is above average or in a good condition.

5.2. Conclusion

The purpose of this study was to identify the impact of the factors of performance of humanitarian logistics on humanitarian logistics performance indicators in the case of WFP. According to the objectives of the study the following conclusion was drawn. Hence, the empirical evidences drawn from the data has proved that the factors said to be influencing the performance of humanitarian logistics, indeed impact the performance indicators in the case of WFP. Accordingly, from the independent variables adequate funds for a relief operation to be able to attain on time relief operation and help the beneficiaries has the main factors while the issues related with local supply has a minimal effect in affecting the logistics performance of WFP. In conclusion, from the result contracted from interviewing the management staff of the WFP Ethiopia head office and from the self-administered questionnaire the major factor that influence the performance of humanitarian logistics indicators is related with funds in a relief operation , coordination or collaboration, professionals, local suppliers and information technologies while working in relief operation.

5.3 Recommendations

Based on the findings of the study the following recommendations were proposed;

1. The study recommends that to be able to attain the goal or improving the performance of humanitarian logistics performance indicators while performing relief operation, hence, it should include. Sufficient funding, appropriate coordination between different NGO's and amongst department within an organization, hiring qualified adequate manpower, and using up to-date information technology towards the successful achievement of the relief operation.
2. Accordingly the study recommended that WFP and others NGO should work in maintaining a good coordination and collaboration with other entities and have a smooth corporation within the departments helps in smoothen and expedite the work in a relief operation, not to mention the highest advantage in saving huge amount of costs.
3. This study recommends that WFP has to work more in having the right professional or humanitarian logisticians in an organization plays a vital role in increasing a performance of the humanitarian logistics performance indicators and have a successful relief operation in terms of appeal coverage, donation to delivery time, financial efficiency and assessment accuracy.
4. This study also recommends that to attain an appropriate appeal coverage, to follow the time line between donation to delivery time, follow the financial efficiency and reach an assessment accuracy, its mandatory to work on the five variables and this should have to be done by WFP and others stakeholders

5.4 Limitation and Suggestions for Future Studies

From the many limitation that the researcher think believes the research has, the main and the major limitation which future researchers and studies can work is the fact that the research didn't included other aspects and variables in a detailed possible way, but only emphasized on the factors affecting the humanitarian logistics performance. Future studies may consider more dimensions, another model and perspective on humanitarian supply chain as a whole, on factors affecting the performance of the relief operation and what is the relationship with the government and how can it be affected or supported by the government considering WFP is a UN entity which wasn't considered for this research.

REFERENCES

Altay, N, Prasad, S. & Sounderpandian, J. 2009. 'Strategic planning for disaster relief logistics: Lessons from supply chain management', Int. J. Services Sciences, Vol. 2, No. 2, pp.142–161.

Assessment Capacities Project (ACAPS). 2017. Humanitarian Overview: An analysis of key crises into 2018. pp 19.

Balcik, B., Beamon, B. M., Krejci, C., Muramatsu, K. M. & Ramirez, M. 2010. Coordination in humanitarian relief chains: Practices, challenges and opportunities. International Journal of Production Economics, 126(1), 22–34

Bardhan and Dang.2016. Drivers and Indicators of Performance in Relief Chain: An Empirical Study. Global Business Review. 17(1) 88–104.

Beamon. B.M. 2004. Humanitarian Relief Chain: Issues and Challenges. In 34th International Conference on Computers and Industrial Engineering, San Francisco, USA.

Beamon, B. M & Balcik, B. 2008. Performance measurement in humanitarian relief chains, International Journal of Public Sector Management, Vol. 21 No. 1, 2008 pp. 425.

Bölsche, D. 2013. Performance Measurement in Humanitarian Logistics, Discussion papers in Business and Economics, Fulda University of Applied Science, Fulda Germany.

Bethlehem, T. & Alev, T. 2016. Humanitarian Supply chain performance Evaluation: A literature review, International Journal of Marketing Studies, Vol 8, No.2, 2016.

Blecker. 2009. A Reference Task Model for Supply Chain Processes of Humanitarian organizations. Dissertation for a Doctoral of Economics. University of Paderborn.

Burns, S. N. & Grove, S. K. 2003. Understanding Nursing Research: 3rd ed, Philadelphia: Saunders.

Christopher, M. and Tatham, P. 2011. Humanitarian Logistics, Meeting the Challenge of Preparing for and Responding to Disasters, 1st ed., Kogan Page Limited, London.

Creswell, J.W. 1994. Research Design: Qualitative & Quantitative Approaches, London: SAGE Publications,

Cohen, L. and Manion, L. 1980. Research Methods in Education, London: Groom Helm Ltd.,

Council on Supply Chain Management Professionals. 2008. Supply Chain Management and

Logistics Management Definitions.Available] http://cscmp.org/aboutcscmp/definitions/definitions.asp [Accessed on 5 Dec 2018].

Cozzolino, A., Rossi, S., & Conforti, A. 2012. Agile and Lean Principles in the Humanitarian Supply Chain. Journal of Humanitarian Logistics and Supply Chain Management. 2(1). pp 16–33.

Cozzolino,A., Rossi, S., 2012. Humanitarian Logistics Cross-Sector Co operations in Disaster Relief Management

Demeke. W. 2016. Factors Affecting the Performance of Humanitarian Organizations: The case of IR unpublished thesis on logistics and supply chain management, Addis Ababa University

Farhadi, M. 2009. Improving Profitability Model in Insurance Industry, Considering Inflation: *The Case Study of Automobile Insurance in Iran*. Unpublished Master Thesis, Lulea University of Technology. Iran

Fenton, G., 2003. Coordination in the Great Lakes. Forced Migration Review September, 23– 24.

Fraenkel, J. K., & Wallen, N. E. (Eds.). 2003. *How to design and evaluate research in education.* The McGraw-Hill Company, Inc. New York.

Fritz institute 2005. 'Lesson from the Tsunami'. Available from http//www.fritz institute. [15th February 2018].

Gary P Ramsden. 2014. "Managing the Humanitarian Supply Chain- a collaborative approach?" University of LINCOLN

Grant, C. &Osanloo,A. 2014. Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for 'House'.

Administrative Issues Journal: Connecting Education, Practice and Research, Pp. 12-22 DOI: 10.5929/2014.4.2.9

Gunasekaran, A. and Kobu, B. 2007. Performance measures and metrics in logistics and supply chain management: a review of recent literature (1995–2004) for research and applications, International Journal of Production Research, vol. 45, no. 12, pp. 2819-2840

Goli, Bakhshi and Tirkolaee. 2017. A Review on Main Challenges of Disaster Relief Supply Chain to Reduce Causalities in Case of Natural Disasters. Department of Industrial Engineering. University of Yazd, Yazd, Iran.

Gyöngyi, K. and Karen, S. 2009. Identifying Challenges in Humanitarian Logistics. International Journal of Physical Distribution & Logistics Management. Vol. 39 No. 6. pp. 506-528.

Hellingrath and Widera. 2011. Bernd Hellingrath and Adam Widera. Survey on Major Challenges in Humanitarian Logistics. Proceedings of the 8th International ISCRAM Conference – Lisbon. Portugal.

IMF Annual Report, Finding Solution Together, 2016. Jane.K, 2013 "Supply Chain Performance in Humanitarian Organization in Kenya" unpublished

Isife, Theresa and R.O. 2012. Emergency Management and Disaster Risk Reduction as Tools for Sustainable Development in Nigeria. Journal of Environmental Management and Safety. Institute for Development Studies, Enugu Campus. University of Nigeria. Nsukka.

Jahre, M. and Jensen, L.M. 2010. Coordination in Humanitarian Logistics through Clusters; International Journal of Physical Distribution and Logistics Management.

Jane.K, 2013. Supply Chain Performance in Humanitarian Organization in Kenya unpublished thesis for masters for Business Administration, university of Nairobi.

Lombo Desta, 2018. Assessment of the performance of humanitarian logistics the case of world vision Ethiopia. Thesis for Partial Fulfillment of the Requirements for the Degree of Logistics and Supply Chain Management. Addis Ababa University School of Commerce.

Kothari, C. R., 2004. Research Methodology: Methods and Techniques. 3rd Ed. New Delhi: New Age International Limited.

Koray Özpolat. 2012/2013. Redesigning the Upstream Emergency Relief Supply Chain. An Empirical Assessment. William A. Orme Working Paper Series. Ballentine Hall Quadrangle University of Rhode Island, College of Business Administration.

Kovács, G and Spens, K M. 2007. Humanitarian Logistics in Disaster Relief Operations. International Journal of Physical Distribution and Logistics Management, 37 (2), 99-114.

Kovacs, G & Spens, K 2009. Identifying challenges in humanitarian logistics, International Journal of Physical Distribution & Logistics Management, Vol. 39 No. 6, 2009 pp. 506-528.

Kovacs, G & Spens, K 2011. The Journal of Humanitarian Logistics and Supply Chain Management: First Reflections. Journal of Humanitarian Logistics and Supply Chain Management, vol 1, no. 2, pp. 108 -113.

Lee, H. and Zbinden, M. 2003. Marrying Logistics and Technology for Effective Relief. Forced Migration Review. No. 18. pp. 34-35.

MacMillan, J.H. and Schumacher, S. 2001. Research in Education. A Conceptual Introduction. 5th Edition, Longman, Boston.

Marshall, C., & Rossman, G. B. 1999. Designing Qualitative Research (3rd Ed.). London: Sage Publications.

Mason, C. H. and Perrault Jr., W. D. 1991. Collinearity, power and interpretation of multiple regression analysis, *Journal of Marketing Research*, 28(3) 268±80

McMillan, J. H., & Schumacher, S. 2006. Research in education: Evidence-based inquiry (6th Ed.). Boston, MA: Allyn and Bacon.

Messick, S. 1989. Validity. In R. L. Linn (Ed.), Educational Measurement (3rd ed., pp. 13104). New York: Macmillan

Myers, R. 2003. Using marketing research effectively. Business NH Magazine, 20(9), 25.

Oloruntoba and Gray. 2006. Humanitarian Aid: and Agile Supply Chain? In: Supply Chain Management. An International Journal 11 (2). pp. 115–120.

Newman, I. and Benz, C., 1998. *Qualitative-Quantitative Research Methodology: Exploring The Interactive Continuum*. 1st ed. Carbondale, Ill. [u.a.]: Southern Illinois Univ. Press.

Osborne & Waters 2002. Four assumptions of multiple regression

Owusu-Kwateng, Abdul Hamid and Debrah. 2017. Disaster Relief Logistics Operation: An Insight from Ghana. International Journal of Emergency Services. Vol. 6 Issue: 1. pp.4-13,

Rahel Tarekegne. 2016. Challenges of Humanitarian Logistics Performance in International Non-Governmental Organizations in Ethiopia. A Thesis for Partial Fulfillment of the Requirements for the Degree of Logistics and Supply Chain Management. Addis Ababa University School of Commerce.

Robert S. Kaplan, 2001. Strategic Performance Measurement and Management in Nonprofit Organizations. No profit management and leadership

R.P. Kampstra, J. Ashayeri, J.L. Gattorna, 2006. Realities of supply chain collaboration, The International Journal of Logistics Management, Vol. 17 Issue: 3, pp.312-330,

Russel, T. 2005. The Humanitarian Relief Supply Chain: Analysis of the 2004 South East Asia Earthquake and Tsunami. Master Thesis of Engineering in Logistics. MIT Center for Transportation and Logistics. Cambridge. MA.

Simatupang *et al*., 2002. Simatupang, T.M., Wright, A.C., and Sridharan, R. 2002.The knowledge of coordination for supply chain integration. Business Process Management Journal, 8(3), 289-308.

Shostak & schostak, 2008. Radical Research: Designing, Developing and Writing Research to Make a Difference

Tabachnick, B.G. and Fidell, L.S. 2006. Using multivariate statistics. 5th Edition, Allyn and Bacon, Boston.

Thomas, A. 2003. Humanitarian Logistics: Enabling disaster response. White paper. Fritz Institute.SanFrancisco.CA.
http://www.fritzinstitute.org/pdfs/whitepaper/enablingdisasterresponse.pdf [Accessed on 12 Dec 2018].

Thomas A. and Kopczak, L. 2005. From Logistics to Supply Chain Management – The path forward to the humanitarian sector, Fritz Institute

Thomas, A. and MizushimaM 2005. Lo gistics training: necessity or luxury? Forced Migration Review 22: 60–61.

Tigist Yigezu. 2016. Challenges of Humanitarian Supply Chain Management; In the Case of National Disaster and Risk Management Commission of Ethiopia. Thesis for Partial Fulfillment of the Requirements for the Degree of Logistics and Supply Chain Management. Addis Ababa University School of Commerce.

Trunick, P.A. 2005. Delivering Relief to Tsunami Victims. Logistics Today. Vol. 46. No. 2. Pp.1–9.

Van Wassenhove, Luk N. 2006. Blackett Memorial Lecture Humanitarian Aid Logistics: Supply Chain Management in High Gear. In: Journal of the Operational Research Society 57. pp. 475–489.

Walliman, N. 2001. You're Research Project: A Step-by-Step Guide for the First Time Researcher. Sage, Thousand Oaks.

Zikmund, W. 2003. Business Research Methods. 7the ed. Kentucky: Quebecor World Versailles.

APPENDIX

Questionnaire

Addis Ababa University School of commerce

Department of Logistics and Supply Chain Management

QUESTIONNAIRE TO BE FILLED BY_____

General Direction*:* The purpose of this questionnaire is to collect data on: *Assessment of the performance of Humanitarian Logistics: the case of WFP*. Information you provide would be very crucial for the success of the study. Therefore, you are kindly requested to be honest toward all the items provided in the questionnaire.

The information obtained from this questionnaire will be kept confidential and will not be used for any other purposes. No need of writing your name and you are kindly requested to answer to the questions freely and openly. Thank you for your cooperation!

Dear Respondent, thank you for agreeing to participate in this assessment. Please provide your answer by putting "**X" mark** on the space provided. Please answer all questions. After completion, please re-send the filled questionnaire by email to Selam Fitsum using the following email address: Selam Fitsum

Cell Phone: 0941124256

E-mail: selamfitsum23@gmail.com

Addis Ababa, Ethiopia

I. Personal Profile of Respondent

1. What is your gender?

a. Male _____ b. Female ____

2. What is your current job position within the organization?

a. Assistant
b. Officer
c. Manger
d. Coordinator/ Specialists
e. Senior Manager
f. If other, specify

3. What is your age range?

a) 24 & below _____
b) 25 – 34 _____
c) 35 – 44 _____
d) 45 – 54 _____
e) 55 – 65 _____

4. What is the highest level of education you have completed?

a. Diploma /Certificate _____ c. Master's Degree _____

b. Bachelor Degree _____ d. PhD _____

5. How many years have you worked in humanitarian organization/s?

a. 1-5(years) B. 5-10 (years) C. 11-15 (years) D. >16 (years)

II. Please read and rate the six categories of questions that are designed to measure performance of humanitarian logistics.

1 = to no extent
2 = to a little extent
3 = to a moderate extent
4 = to a great Extent
5 = to a very great extent

Factors Affecting Performance of the HL	HL performance Indicators	Scale				
		1	2	3	4	5
Coordination/collaboration	Working together with other NGOs or partners for joint logistics set up & implementation in terms of appeal coverage					
	Team work / Planning together or sharing plans /with other departments within the organization e.g., between procurement and finance offices with regards to donation to delivery time					
	Sharing resources such as field sites warehouses and vehicles with other NGOs or partners for the planning of financial efficiency for the assessment of accuracy					
	The effect of coordination/collaboration on humanitarian logistics performance.					
	Availability of logistics professionals					
Availability of logistics professionals	Involvement of humanitarian logistics staffs in organizational /project/ decision making process in relation with appeal coverage					
	Involvement of logistics staffs in strategic planning for humanitarian need assessment					
	During startup of emergency & project management to work on the donation to delivery time.					

	Stability of logistics staff compared to the outgoing ones for the purpose of financial efficiency.					
	Stability of logistics staff compared to the outgoing ones in terms of assessment accuracy.					
	Adequate donor funding					
Adequate donor funding	Sufficiency of donors funding for logistics infrastructure in relation with appeal coverage					
	capabilities/Sufficiency of donors funding for long term disaster preparedness and response in terms of donation to delivery time					
	Level of satisfaction of donors to assess the financial efficiency					
	Availability of funding control to be able to assess accuracy					
	Information Technology					
Information Technology	Ability to disseminate / get accurate and timely information of what is in the pipeline inventory with regards to appeal coverage					
	Availability of communication plans enhances the humanitarian logistics performance in terms of improving donation to delivery time					
	Use of automated systems or mechanisms to increase financial efficiency					
	Availability of adequate communications utilities to assess accuracy					
	access to necessary logistics information from data base of other organizations or government body.					
	Experience of Formal records of failure or success stories of past logistics experiences for post event learning					

	Local Market					
Local Market	Ability of local suppliers to understand humanitarian context and their willingness to be flexible during business transactions					
	Stability of prices for humanitarian goods and services					
	Capacity of local market to replenish humanitarian goods and services with desired quantity and quality					
	Availability of transportation service /trucks/ as required and reasonable cost					
	Performance of Humanitarian Logistics					
Performance Humanitarian Logistics	Utilization of inventory within grant lifetime or before the expiry dates					
	Spending of money as per the budget					
	Purchasing of goods & services as per beneficiary's demand					
	Dispensing of aids to all targeted beneficiaries.					
	Consistent response to unplanned requests for goods & services within planned lead-time or less					
	Consistent delivery of any given quantity or volume of commodity and other interventions					
	Consistent delivery of all list of assorted items for emergency and dignity kits					
	Speed of delivery /response/ for required commodities and other interventions					

Interview Guide Questions (FOR KEY MANAGERS)

1. **Coordination**

1. How do you describe coordination/collaboration with other organizations /Stakeholders' holders/funders?
2. Do you think that it is effective?
3. What are challenges you face in respect to Coordination?
4. How you do you describe the importance of coordination for effective HL

2. **LP (Logistics professional/**

5. Do you have enough number of logistics professionals?
6. How do you associate performance of HL with availability of LP?

3. **DF /Donor funding**

7. How do you describe sufficiency of fund? Do you think that there is adequate funding?

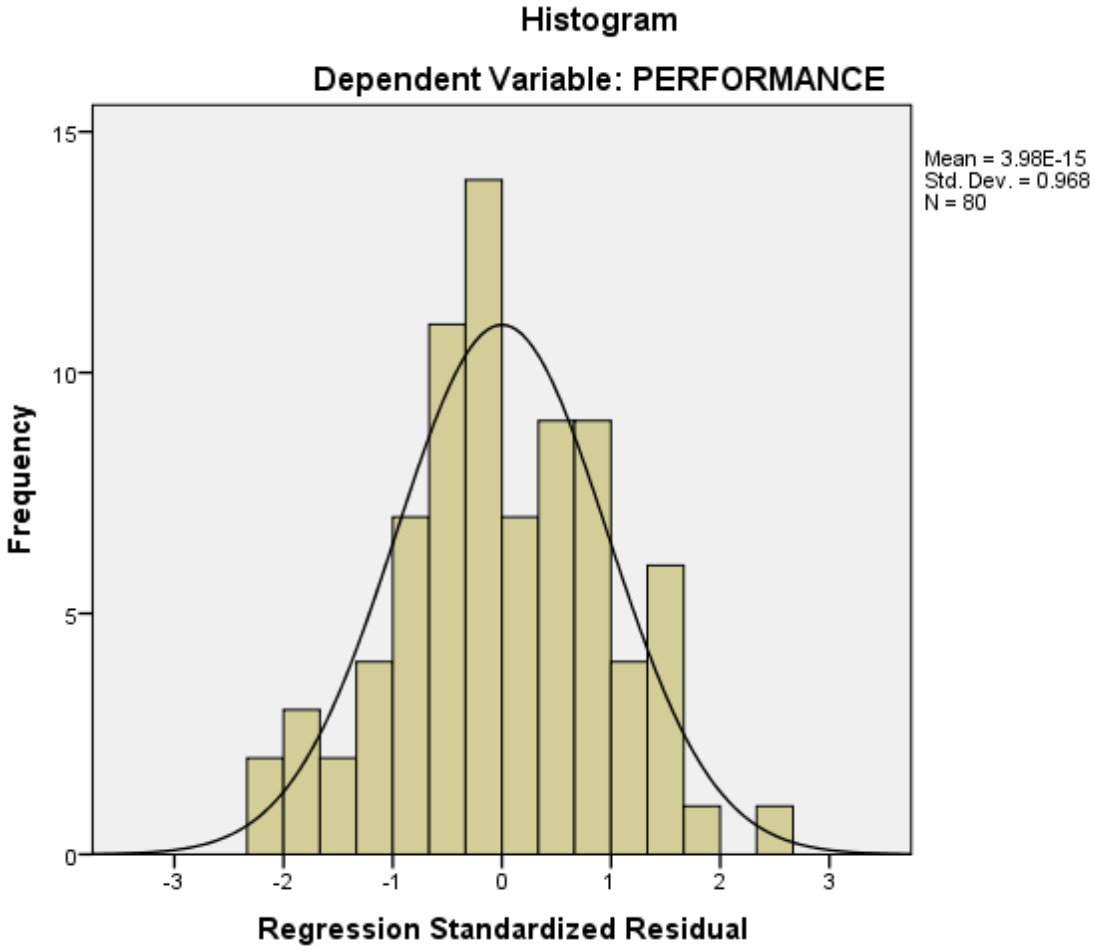
4. **Information Technology**

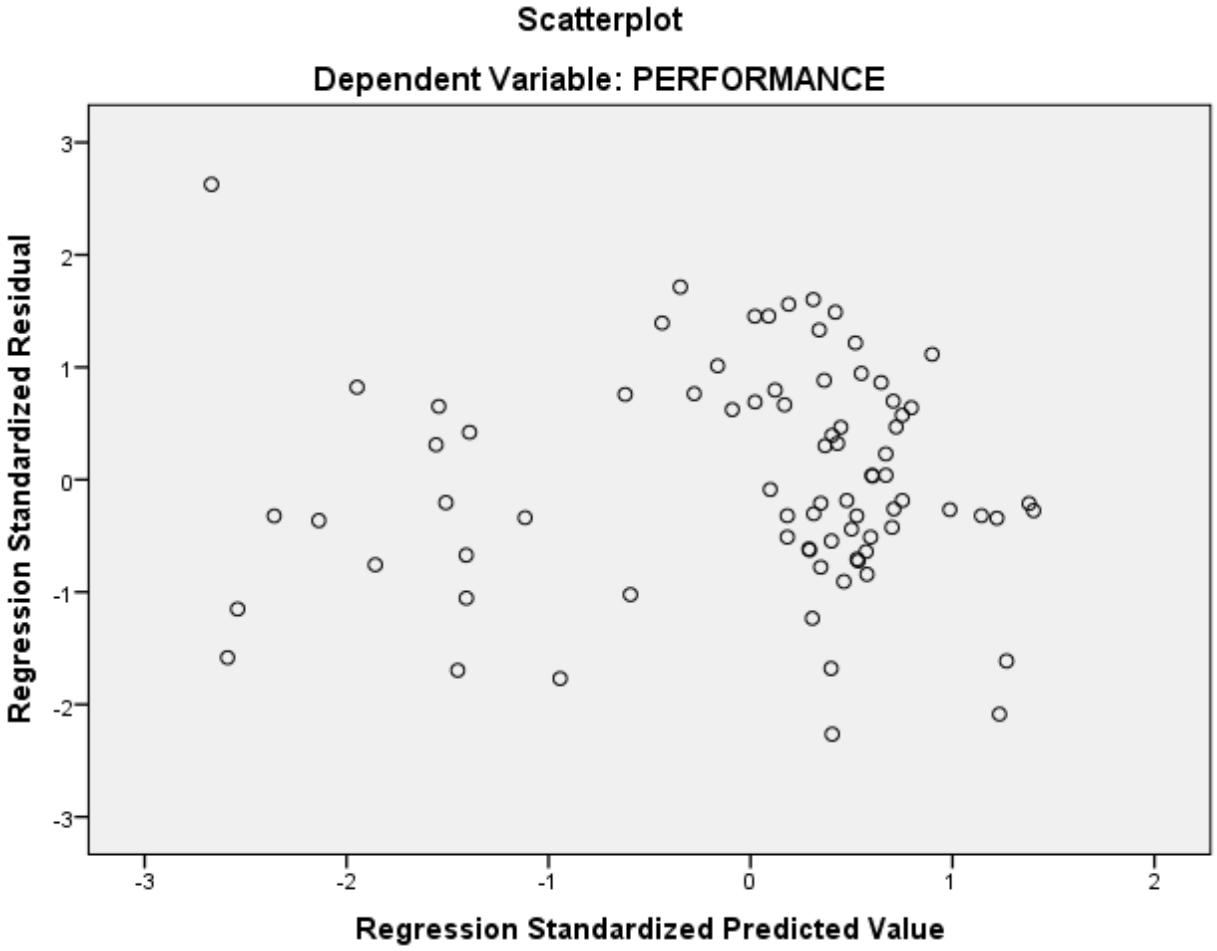
8. How do you assess the value of IT in PHL?
9. Do you have adequate IT infrastructure that support your operation?

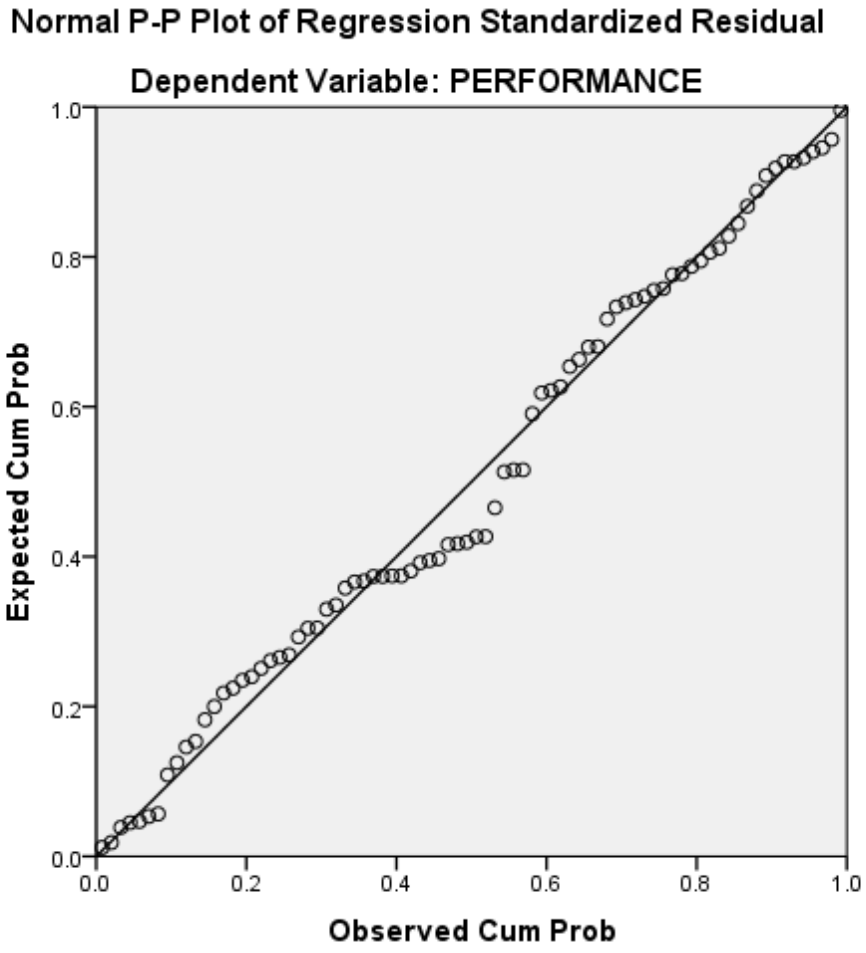
5. **Local market /LM/**

10. How do you describe the capacity of local market in responding for the Humanitarian action?

6. **How do you asses the overall performance of HL in WFP?**


Histogram
Dependent Variable: PERFORMANCE
Mean = 3.98E-15
Std. Dev. = 0.968
N = 80
Frequency
15
10
5
0
-3
-2
-1
0
1
2
3
Regression Standardized Residual


Scatterplot
Dependent Variable: PERFORMANCE
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PERFORMANCE
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0