



*ANALYSIS OF FACTORS AFFECTING THE HUMANITARIAN LOGISTICS PERFORMANCE:  
INTERNATIONAL MEDICAL CORPS ETHIOPIA.*

*By*

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*A THESIS PROPOSAL SUBMITTED TO THE ADDIS ABABA UNIVERSITY SCHOOL OF  
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COMMERCE GRADUATE STUDIES

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## DECLARATION

I, the undersigned, hereby declare that the work which is being presented in this thesis entitled “analysis of factors affecting the humanitarian logistics performance: international medical corps Ethiopia” is original work of my own, has not been presented in any of other university and that all sources of material used for the thesis have been duly acknowledged.

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## CERTIFICATION

This is to certify that SEID SELMAN ABDELL has conducted this research work on the topic entitled “*ANALYSIS OF FACTORS AFFECTING THE HUMANITARIAN LOGISTICS PERFORMANCE: INTERNATIONAL MEDICAL CORPS ETHIOPIA*” under my supervision. This work is original in nature and it can be submitted for the partial fulfilment of the requirements for the award of the degree of Masters of Arts in Logistics and Supply Chain Management.

Shiferaw Mitiku (PhD.): \_\_\_\_\_

Date: \_\_\_\_\_

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The Researcher

## ABSTRACT

*Humanitarian Logistics is a very important cluster of activities during emergencies due to natural or man-made disasters in an effort to prevent loss of lives and property. However, the subject is not well researched compared to the business logistics in profit making organizations where profit is their main reason of existence. The main objective of this study was to assess the practices, identify factors affecting the humanitarian logistics performance and measure the performance of a selected non-profit making international organization, International medical corps Ethiopia and try to contribute to the research family in the field. The main research design applied for the research was a descriptive and explanatory type of research design. This study is to combine the practice, internal & external factors together and examine their effects using survey data analyzed through empirical study and identified seven statistically significant variables both from internal & external factors. Descending from highest to lowest per their significance level factors are listed as: lack of collaboration, adequate donor funding, infrastructural situational factor, unavailability professional staff, government situational factors, and Measuring the performance of humanitarian logistics and lack of recognition of logistics. Moreover, so far, these variables were not investigated in the international medical corps Ethiopia context and hence this study is the first and the original in the case of this organization. Finally, this study has filled to important research gaps: the empirical methodological gap that previous studies have failed but suggested to, and Assessment of the current situation in the effect of logistics performance and its associated factors at international medical corps Ethiopia.*

*Key words:*

*Humanitarian, logistics, factors, disaster, supply*

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## ACRONYMS AND ABBREVIATIONS

<b>DPPC</b>	Disaster prevention and preparedness commission
<b>ADF</b>	Adequate Donors Fund
<b>LAPS</b>	Lack of Adequate Professional Staff
<b>IAUIT</b>	In Adequate Use of IT
<b>ESF</b>	Environmental Situational factor
<b>GSF</b>	Government Situational Factor
<b>IL</b>	Lack of Institutional Learning
<b>IMC</b>	International medical corps
<b>ISF</b>	Infrastructural Situational factor
<b>PHL</b>	Performance of Humanitarian Logistics
<b>LRL</b>	Lack of Recognition of Logistics
<b>LS</b>	Lack of Collaboration
<b>SESF</b>	Socioeconomic Situational Factor
<b>SLA</b>	Service Level Agreement
<b>SCOR</b>	supply chain operations reference
<b>WHO</b>	World Health Organization

## CHAPTER ONE

### INTRODUCTION

*In this chapter background of the study, statement of the problem ,research questions, research objectives, significant of the study, scope of the study, limitation of the study, definition of key terms ,organization of the study , will be discussed.*

#### 1.1 BACKGROUND OF THE STUDY

According to *Thomas and Kopczak (2005) and Tomasini and Wassenhove (2009)* Humanitarian logistics has received growing interest both from logistics academics and practitioners due to its significant contribution to the efficiency and effectiveness of humanitarian operations. In recent times, the field of humanitarian logistics has got a wider range of research attention aimed at improving the ability of national and international communities to meet the challenges of preparing for, and responding to, natural and man-made disasters (*Tatham& Pettit 2010*).

Natural disasters such as floods, drought, famine and man-made disasters for instance wars and refugee crisis, has rapidly increased in number worldwide in the last decade. As per the study of *Guha-Sapir, Vos, Below & Ponserre (2011)*, the year 2010 reported 385 natural disasters that claimed more than 297,000 lives, affecting over 217 million others and causing USD 123.9 billion in economic damages. The number of natural disasters has been increasing since 1960 (EM-DAT 2015). Also, as per *Tatham and Hughes, (2011)* study result the increasing frequency is accompanied by an increased severity in terms of individuals injured or killed as well as the scale of the financial impact of these events.

It was also forecasted by *Thomas & Kopczak (2005)* that both man-made and natural disasters would increase by five-fold over the next fifty years. According to the disasters report by *Andrew Collins (2009)*, more than 7000 disasters occurred between the years 1999 and 2008 and caused 1.2 million deaths and also 2.7 trillion people affected in the globe. As per the *Aspinall et al. (2011)* study, also

in Ethiopia context, 50 million of its populations were currently exposed to unknown levels of risk from volcanic activity for they are living in a close proximity to 49 highest category hazard uncertainty volcano's. Kinde (2002) investigated that flood has been another threat in many regions of the country. For example, it was reported by Global Health Action (2009) that the four rivers around Gambella (Akobo, Baro, Gilo, and Alwero rivers) have been causing floods for several years to Gambella people and caused so many casualties in the region.

According to the Horn Affairs Report (2015) the recent phenomena which is caused by El Nino effect was worst of the past decades for the number of people in need of relief assistance in Ethiopia had been increased to 8.2 million. As it had been assured by the government that the country is characterized by a drought and famine that killed thousands and affected millions of people. In order to develop relief transport and logistics co-ordination in the country, Disaster prevention and preparedness commission has deployed its effort to developing a logistics master plan and infrastructural development but it was coupled by the poor infrastructure in the country, full reliance on the private sector for the transport of emergency relief is found risky as some of the disaster prone areas are not easily accessible. Basic infrastructures in many developing regions of the world are weak to begin with and get quickly overwhelmed when disaster strikes as it has been investigated by Altay, Prasad & Sounderpandian (2009). To address such challenges, good and more empirical researches were needed to be done in developing countries and by the researchers from these countries (Kovacs & Spens 2011).

## **1.2 BACK GROUND OF THE ORGANIZATION**

International Medical Corps is a global, humanitarian and non-profit organization which are dedicated to save lives and relieving suffering through health care training, relief and development programs as well. It was established in 1984 by volunteer nurses and doctors. It is a private, voluntary, non-political, non-sectarian organization and its head office was found in Addis Ababa, Ethiopia. Its mission was to improve the quality of life and related activities that build local capacity in underserved communities in the globe. By providing health care and training to local populations and medical assistance to people who found at highest risk, and with the flexibility to respond rapidly to emergency situations, International Medical Corps rehabilitates devastated health care systems and helps them to recovery.

In generally, International Medical Corps was involving on both relief humanitarian and development activities.

### 1.3 STATEMENT OF THE PROBLEM

Natural and man-made disasters are affecting millions of people in the world. In addition, the existence of these people depends on disaster relief assistance provided by governments and international relief organizations (*Kunz et al. 2013*). According to the survey of Fritz Institute (2005) pertaining the Indian Ocean tsunami of 2004, it was proven that logistics was central to humanitarian aid. Also, Trunick (2005) has agreed that logistics has been an important factor in humanitarian aid operations as its efforts account for 80 percent of the cost of disaster relief. As per the survey which was done by Thomas &Kopczak (2005) on the humanitarian logisticians participated towards the support of people afflicted by Indian ocean tsunami, the five major challenges facing humanitarian logistics were also identified as follows: Lack of professional staff ,Lack of recognition of logistics, In-adequate use of technology, Lack of institutional learning and Limited collaboration; however, their effect on performance of logistics not empirically studied

Lack of adequate funds for logistics training and procedures will lead to poorer logistics performance though the magnitude of its effect not indicated (Wassenhove , 2006).

Humanitarian Relief Organizations coordinate billions of dollars in relief annually to victims of natural disasters, war and civil conflict. Their chief task is the timely mobilization of financing and goods from international donors and administering relief to vulnerable beneficiaries at disaster sites in the world.

Logistics is the most important element in any disaster relief effort and it makes the difference between a successful and a failed operation. However, it is the most expensive part of any disaster relief: According to Wassenhove, (2006), it has been estimated that logistics accounts for about 80 % of the total costs in disaster relief .Thus, proper investment in logistics in disaster relief provides the main opportunity to develop and implement effective and efficient use of resources in humanitarian operations as it has been proven by Cozzolino, (2012). Moreover, a more strategic use of resources allows humanitarian organizations to raise donor trust and long-term commitment by increasingly skeptical benefactors (Scholten et al., 2010). Therefore, Humanitarian organizations are under greater

scrutiny to monitor the impact of aid and the arrangement of their entire operations and they have to prove to donors, who are pledging millions in aid and goods, that they are really reaching the ones in need (Wassenhove V., 2006). likewise, humanitarian organizations need ways to identify and adapt to emerging supply chain trends. To manage the overall performance of their humanitarian logistics, organizations need to know more than delivery dates, inventory positions, and fill rates. This requires end-to-end visibility into factors that drive supply chain performance for instance: overall supply chain cost, cash-to-cash cycle time, perfect order fulfillment (Oloruntoba and Gray, 2005)

Kunz & Reiner (2012) have identified four major situational factors affecting performance of humanitarian logistics. Those are; Governmental situational factors, Environmental situational factors, Socio-economic situational factors and Infrastructural situational factors. However, these authors strongly recommended case studies and survey methodologies be increasingly so as to gain an empirical knowledge.

Recent study by Leeuw&Klumpp (2014) presented that measuring performance would increase performance of humanitarian logistics but the extent not statistically studied.

Demeke Wolde (2016) investigated the factors which affect the performances of humanitarian logistics and he came up with the following conclusion that out of his eleven independent variables namely recognition of logistics, availability of professional staff, adequate use of information technology ,institutional learning ,adequate collaboration, governmental situational factors, infrastructural situational factors, Scio-economic situational factor environmental situational factor and donors fending. Seven were found statistically significant on the t-statistics test. Basically, he mentioned the factors per their significance level from highest to lowest as follows: donors' funds, environmental situational factors, professional staff, infrastructure situational factors, socioeconomic situational factors, Institutional learning and government situational factors. In addition, his study has failed to support some of its hypothesis. Furthermore, he recommended validating the findings of his research in a wider context. According to IMC 2018 annual performance evaluation report, it has been recognized that the overall logistics performance was affected by internal and external factors and it was not able to achieve the target. In addition, the major problems of the organization have been identified. Those are; delay in customs clearing process, poor road infrastructure, and limited funds for establishment of long term logistics capability, lack of standard trainings, staff turnover and limited collaborations.

Even if Kovacs & Spens (2011) stated that there are no conducted adequate empirical studies carried on humanitarian logistics and suggested conducting empirical researches in developing countries. Then, Demekes 2016 had conducted empirical study on Humanitarian logistics organization with 11 hypothesis but his study result has not supported all the hypothesis.

Following the aforementioned problems are exist and no other empirical studs have been conducted in this area, the researcher believe that conducting an empirical study on IMC will worth to the company so as to solve the problems .

## **1.4 OBJECTIVE OF THE STUDY**

### **1.4.1 General Objectives**

- ❖ To identify factors affecting the humanitarian logistics performance at International Medical Corps.

### **1.4.2 Specific Objectives**

- To assess the humanitarian logistics practice of the International Medical Corps.
- To examine the effect of internal factors on the humanitarian logistics performance of international medical corps
- To examine the effect of external factors on the humanitarian logistics performance of International Medical Corps.
- To measure the International Medical Corps humanitarian logistics performance

## **1.5 RESEARCH QUESTIONS**

- How humanitarian logistics is being practiced in International Medical Corps?
- How do internal factors affect the Humanitarian logistics performance of International Medical Corps?
- How do external factors affect humanitarian logistics performance of International Medical Corps?
- What is the International Medical Corps humanitarian logistics performance?

## **1.6 SIGNIFICANCE OF THE STUDY**

This study will provide helpful information to IMC and other various stakeholders and mainly the humanitarian organizations to understand what are the factors of humanitarian logistics and how to overcome. In addition, It will help Stakeholders like; federal, regional and local governments, international and local NGOs, donors and other international agencies.

Furthermore, it will help for farther researcher and last but not the least to the relief beneficiaries who are sufferings associated with natural and man- made disasters get reduced.

## **1.7 LIMITATION OF THE STUDY**

Since the study is conducted to identify factors affecting the humanitarian logistics performance at International Medical Corps (IMC), Ethiopia and the result and findings could not be generalized and taken for all Humanitarian organizations and other organizations in the world.

## 1.8 SCOPE OF THE STUDY

The scope of the study was limited the factor affecting humanitarian logistics performance solely in the case of IMC , Ethiopia on both at its head office located at Addis Ababa, Ethiopia and the rest of all sub offices situated in different regions of Ethiopia. Regarding the factors only the identified eleven hypotheses which are developed from both internal and external factors covered in this study.

## 1.9 DEFINITION OF OPERATIONAL TERMS

- **Humanitarian logistics:** the process of implementing, planning and controlling the cost-effective flow , efficient, 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. The function encompasses activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, and customs clearance as well (*Thomas and Kopczak, 2005*).
- **Disaster:** It is an instance which results in danger to human lives, health and properties. It often results in a serious disruption of the functioning of a society, material, causing widespread human or environmental losses which exceed the ability of affected society to cope using only its own resources (*WHO, 2002*).
- **Internal organizational factors:** factors very endemic to the organization itself and can be affected or improved (*Kunz & Reiner, 2012*).
- **External situational factors:** factors may not be changed or affected but a given organization can cop up with it (*Kunz & Reiner, 2012*).
- **Performance of humanitarian Logistics:** the ability of a humanitarian logistics in order to deliver humanitarian needs thereby alleviate the suffering of beneficiaries. (*Beamon&Balcik ,2008*).
- **Performance measurement:** it is the process to quantify the efficiency and effectiveness of an operation (*Beamon&Balcik, 2008*).

- **Flexibility/reliability metrics:** measure the ability of an organization to respond to different magnitudes of disasters in terms of volume, delivery and mix flexibility (*Beamon&Balcik, 2008*).
- **Relief chain:** It is the provision of humanitarian assistance in the forms of medicine, shelter, food, water, and supplies to areas affected by great emergencies (Kovacz and Spens, 2012).

### 1.10 ORGANIZATION OF THE STUDY

The paper was organized into five chapters. Chapter one: In this chapter, background of the study, statement of the problem, research questions, research objectives, significance of the study, scope of the study, limitations of the study and definition of key terms were included. Chapter Two: literature review: it deals with the review of related literature consisting of conceptual, theoretical, empirical and identified literature gaps and conceptual framework. Chapter Three: research methodology- the methodology part, the research approach, research design and sampling techniques employed were discussed. Chapter Four is about data presentation, analysis and interpretation. Finally, chapter five presents summary of findings, conclusion and recommendations with proposed strategy.

## CHAPTER TWO

### RELATED LITERATURE REVIEW

*The previous chapter examined the background to the study, then the statement of the problem, objectives of the study, research questions, and significance of the study, scope, limitation of the study and the definition of key terms. This chapter covers the literature review of the existing research literature on the factors that affecting the performance of humanitarian logistics. In specific, the chapter will discuss the theoretical literature review, empirical literature review, identify the research gaps and develop the conceptual framework.*

#### 2.1 THEORETICAL LITRATURE REVIEW

##### 2.1.1 Definition, aims and goals of humanitarian logistics

Humanitarian logistics is the process of planning, cost-effective flow implementing and controlling the efficient 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. The function encompasses a range of activities, including preparedness, transport, warehousing, planning, procurement, tracking and tracing, and customs clearance. Besides, the aims and goals are part of the definition: efficient, cost-effective and for the purpose of alleviating the suffering of vulnerable people. Both the private sector and the humanitarian sector focus on the logistical aims service and costs. Beamon and Balcik (2008)

Humanitarian organizations a high logistic service has a higher priority as compared with logistics costs. With a good or even optimal logistic service the supply is swift, save and reliable. If the right goods are received by the right people at the right place at the right time and with the right quality than humanitarian logistics can contribute to alleviate the suffering of exposed people. If humanitarian organizations lower the logistic costs they can use the budget for the core tasks of humanitarian aid. Performance Measurement for humanitarian logisticians must open up possibilities to measure the target achievement and therefore it provides the necessary information for improvement. Beamon and Balcik (2008)

### **2.1.2 Performance of Humanitarian Logistic**

Humanitarian performance is the effective collective performance of a complex system of national, locally and an international based organization, which works to save lives, alleviate suffering and maintain human dignity both during and in the aftermath of manmade crises and natural disasters, as well working to prevent and strengthen preparedness for the occurrence of such situations. Furthermore, effective performance means undertaking work in ways that are consistent with humanitarian principles, mobilizing and deploying sufficient resources in ways that are relevant, impartial, durable, well- managed, accountable, and ensure good quality (Ramalingam and Mitchell, 2009).

### **2.1.3 Factors of Humanitarian Logistics Performance**

According to *Russell,( 2005)* study, the performances of a humanitarian organization after a disaster and perceptions of organizational performance are key factors in humanitarian logistics. The ability to deliver the proper goods to meet the right people at the right place at the right time and in the right quantities is a core organizational function. Logistics and Supply Chain underpin responses to humanitarian crisis. Humanitarian organizations have to get the right assistance to the right place at the right time and at the right cost.

One of the key challenges of humanitarian logistics operations is that of rapid response. As per the Kovacs and Spens, (2007), the speed of humanitarian aid after a disaster depends on the ability of logisticians to procure, transport, and receive supplies at the site of humanitarian relief effort.

The area of performance measurement in humanitarian logistics has not been given much attention, only few studies were found in the literature. Such as ;Davidson (2006) develops a framework for measuring the performance of logistics in real humanitarian operations served by the International Federation of Red Cross and Red Crescent Societies. The proposed modelrelies upon four performance metrics, namely appeal coverage, donation-to delivery time, financial efficiency, and assessment accuracy. Beamon and Balcik (2008) investigated that the existing performance measurement

framework developed for commercial supply chains by Beamon (1999) consisting of resource output metrics, metrics, and flexibility metrics to performance measurement in humanitarian logistics. Beamon and Kotleba (2006) also used this performance measurement system in conjunction with simulation modelling and statistical analysis so as to identify system factors that were critical to overall inventory system performance.

The key performance indicators presented by the Fritz Institute for humanitarian logistics (*Davidson 2006*) were stated here below:

.

- **Responsiveness** : it describes in SCOR level two the speed at which tasks are performed corresponds with donation-to-delivery time
- **Agility**: describes in SCOR level two the ability to respond to external influences and the ability to change. It isn't part of the KPIs developed by the Fritz Institute but is of high relevance for humanitarian logistics.
- **Costs**: describes in SCOR level two the costs of operating the process and assets attribute describes in SCOR level two the ability to efficiently utilize assets are consolidated in Fritz Institute KPIs to financial efficiency.
- **Reliability**: describes in SCOR level two the ability to perform tasks as expected corresponds with assessment accuracy (Fritz Institute, 2005).

#### 2.1.4 Measuring Performance of Humanitarian Logistics Operations

The major goal of humanitarian logistics is to provide support to disaster victims in the form of clothing, medicines, food, shelter, water, etc. Like their commercial counterparts, humanitarian logistics also need to have a performance measurement scheme so as to judge if the operations are failures or successes. According to (Gunasekarana, 2004), performance measurement and metrics are crucial for organizations in setting up objectives and future directions. Performance measures are objective and quantitative indicators of various aspects of the performance.

According to Neely, Gregory and Platts (1995) study performance measurement is defined as the process of quantifying the effectiveness and efficiency of an action. efficiency measures how

economically these needs have been covered while Effectiveness is related to what extent the level of customers' needs are covered (Schulz &Heigh, 2009). Effective performance measurement systems would assist relief chain practitioners in their decisions, demonstrate the performance of the relief chain and help improve the efficiency and effectiveness of relief operations, thereby increasing the transparency and accountability of disaster response. To measure performances of an organization different models can be applied one of the popularly accepted performance measurement model is Supply Chain Operations Reference (SCOR). According to the SCOR model, five performance attributes should be considered in assessing the performance of a logistics function in place. These performance attributes are delivery responsiveness, flexibility, reliability, cost and asset management efficiency. The three (delivery reliability, flexibility and responsiveness) attributes are those facing towards customers while the remaining two (cost and asset management efficiency) are those facing towards the organization. Delivery reliability is all about performance of the logistics function in providing the right product to the right beneficiary at the right time and right quantity. Responsiveness on the one hand emphasizes on the speed at which the logistics function provides products to the receivers. Flexibility is about ability in responding to changing demands in terms of both volume and variety. Cost stands for the costs associated with running the logistics function and finally asset management efficiency is about efficiency in managing assets to satisfy beneficiaries' demand (Thilakarathna, Dharmawardana and Rupasinghe, 2015)

## **2.2 EMPIRICAL LITRATURE REVIEW**

According to *Christopher&Sandwell(2011) study*, Operational issues encountered in humanitarian logistics are indicative of wider issues affecting humanitarian organizations.

### **A. Lack of recognition**

*Wassenhove(2006)* shown that, humanitarian logistics lacks recognition resulting in unmet logistics requirements. For example, logisticians are not included in planning and budgetary processes. Also *Fritz Institute (2005)* explained that logisticians are often not consulted in the decision making process and some of the logistics bottlenecks are not anticipated and planned for, causing unnecessary delays

in delivering relief. Contrarily, Kovacs and Spens (2009) underlined that lack of recognition of logistics is no longer significant challenge in humanitarian logistics in Africa.

*H1. Lack of Recognition of logistics negatively affects the performance of humanitarian logistics.*

### **B. Lack of professional staff**

Lack of available humanitarian logisticians is another significant challenge facing humanitarian logistics. For example, Tsunami relief supports were negatively impacted by the lack of available trained and skilled field logisticians (Fritz Institute, 2005). It has been assured by Telford & Cosgrove (2007) that many NGOs have limited capacity of allocating appropriately experienced logisticians who can operate in an emergency at an international level. As a result, Kovacs and Spens (2011) echoed a need for establishment of humanitarian academic partnerships to improve education, training and research to improve on logistics practices. Accordingly, Kovacs, Tatham and Larson (2012) recommended competencies that are deemed relevant for the future logistics managers such as: Finance, IT, General, Operations, Supply chain management, Logistics specific, strategy, Focus on processes/flows, Legal, security and international trade, Multimodal logistics, Logistics in emerging markets, skills, Leadership, Change management, Analytical, Interpersonal, and Project management.

*H2. Un availability of Professional Staff negatively affects the performance of humanitarian logistics.*

### **C. Inadequate use of technology**

Inadequate use of technology is also an important bottleneck for performance of humanitarian logistics. Even if the effectiveness of the information system is a key determinant of success of a humanitarian logistic and supply chain (Long & Wood 1995), information systems put in place to help and meet emergency program requirements may be incomplete, inefficient or ineffective (Maxwell & Watkins 2003).

As per Fritz institute (2005) study, the logistics and supply chain management of humanitarian organizations is still mostly manual as the majority of logisticians had no access to any tracing and tracking software. However, logistics data can provide a valuable end-to-end view on the efficiency and effectiveness of an operation thereby enable post-event learning (Thomas & Kopczak 2005).

***H3. In Adequate Use of Information Technology has negatively effects on the performance of humanitarian logistics.***

**D. Lack of institutional learning**

The assignment of field logisticians to other relief operations and the tacit nature of the humanitarian logistics skills give birth to lack of institutional learning. As a result, the lesson learned in one relief operation could not be passed on to other logisticians of a given organization (Fritz Institute 2005). As peer according to Chandes and Pache (2010) study, the stressful nature of the work of humanitarian logistics and lack of real career path for field logisticians are to be blamed for such a huge staff turnover.

According to Fritz Institute( 2005)study, Logistics staff turnover accounts 80% annually. Also *Telford and Cosgrove,( 2007)* shown that this in turn hampered the ability of international agencies to build and maintain institutional memory and contextual knowledge. Then ,*Tatham and Spens (2011)*argued that organizing, analyzing and sharing the lessons learnt within a particular NGO as well as across the NGO community would have a considerable benefit.

***H4. Lack of Institutional learning negatively affects the performance of humanitarian logistics.***

**E. Lack of collaboration**

As per *Chin, Tat, Yusoff and Rasli,(2010)* study, A well-managed and long-term relationship with customers and suppliers will lead to high performance of supply chain.

Due to the fact that efficient and effective operation of a supply chain depends on successful management of external and internal relationships (Christopher 2005), also Fritz institute (2005) pointed out that there was lack of collaboration among logisticians of various humanitarian aid organizations. Moreover, Grant (2007) presented that there have been abundant forms being used by different NGOs during needs assessment process where so little agreement reached over the data to be captured. Furthermore, Telford & Cosgrove (2007) explained that in the 2004 Asian tsunami multiple NGOs conducted assessments but rarely shared resources and information among each other. Beamon and Kotleba (2006) recommended that many organizations developed their own procedures independently of other organizations as logistics practices were not fully accepted as universal and

cross-organizational. Actually, there has been an increase demand for multi-agency cooperation since 1999s but NGOs are in direct competition for donor funding and other resources such as vehicle fleet and warehousing (*Beamon&Kotleba 2006; Fritz institute 2005*). Besides, Chandes&Pache (2010) underlined that lack of coordination affects performance of humanitarian logistics operations and actors from this sector need to engage in collective action for achieving positive impact on their logistics performance. Contrarily, Kovacs and Spens (2009) depicted that lack of collaboration has been addressed and no longer be a significant challenge to humanitarian logistics in Africa.

#### ***H5. Lack Collaboration negatively affects the performance of humanitarian logistics.***

##### **F. Performance measurement**

Measuring and managing performance is crucial for an effective and efficient humanitarian supply chain (*Leeuw&Klumpp 2014*). In addition, it has been examined by the study of *Beamon and Balcik (2008)* that Performance of the relief chains would be improved through effective performance measurement systems. Besides, an organization that measures its performance can build and retain knowledge, and rapidly demonstrate systematic and measurable improvements (*Whiting &Ostrom 2009*).

Beamon and Balcik (2008) recommended that relief aid performance measurement system from three dimensions those are resource metrics, output metrics and flexibility metrics. It has been emphasized that organizations may have different performance measurement system but it is a must to incorporate at least one or two elements of metrics from each of the three dimensions.

#### ***H6. Performance of humanitarian logistics is positively affected by measuring its performance.***

##### **G. Situational factors**

Infrastructural, socio-economic, political and environmental factors are the four situational factors affecting performance of humanitarian logistics (*Kunz& Reiner ,2012*),

These authors defined situational factors as exogenous contextual variables which are present in the affected area and impact the humanitarian logistics performance.

##### **H. Government situational factors**

Ineffective and illegitimate regime imposes restrictions on relief supply chains as it has been confirmed by the study of Kunz & Reiner (2012). The Zambian president Levy Mwanawasa considered genetically modified food as poison and banned donations while the food was confirmed safe for human consumption by FAO, WHO and WFP (Tomasini & Wassenhove 2004). Kunz & Reiner (2012) shown that the national regulations toward relief organizations, the efficiency of the state, type of regime, the level of corruption and customs clearance are among many other government factors affecting performance of humanitarian logistics. Moreover, Choi *et al.* (2010) investigated that political instability in East Africa has slow down the relief effort in the region. The security context in a country is also dependent from the government and strongly affects the performance of the logistics response (Long & Wood, 1995).

***H7. Suitability of government situational factors positively affects humanitarian logistics performance.***

#### **I. Infrastructural Situational Factor**

Humanitarian logistics operates in the areas where difficult to reach under normal circumstances because infrastructures are often inadequate. Humanitarians need robust equipment that can be set up and dismantled quickly enabling them to be tremendously adaptable and prepared for the unexpected circumstances. Wassenhove (2006) shown that logisticians often have to work with fragmented technology and poorly defined manual processes. It has been common in the region of East Africa which suffers from fragile physical logistics systems like: poor road surfaces, unstable rail track bedding and weak bridges (Choi, *et al.* 2010).

***H8. Suitability of infrastructural situational factors positively affects humanitarian logistics performance.***

#### **J. Socio-economic Situational Factor**

Altay *et al.* 2009; Dowty and Wallace 2010; Kandiyoti 2007; Leon *et al.* 2009; Maon *et al.* (2009) underlined that literacy level of the society, type of market economy, the local culture and religion,

availability of local suppliers, are among other Socio-economic situational factors which affect the humanitarian logistics performance. In a well-developed economy, some important items can be purchased from local suppliers, and personnel can be employed locally for logistical activities. While in a less developed economy, volatile operating conditions such as fluctuating freight rates and unpredictable transit schedules are prevalent. Further, all supplies have to be imported and most tasks must be managed by expatriate staff as it has been assured by the study of (Kunz & Reiner 2012; Choi et al. 2010).

***H9. Suitability of socioeconomic situational factors positively affects humanitarian logistics performance.***

#### **K. Environmental situational factors**

According to Kunz & Reiner (2012) study, geography, vegetation, presence of water, Weather, topography, effects of climate change are among other environmental situational factors impacting humanitarian logistics performance. As per Altay et al. (2009), some disasters such as wild fires and hurricanes can be predictable to a certain degree yet a common and difficult task at this stage is evacuation for an incorrect evacuation decision would be devastating and highly regrettable. Aspinall et al. (2011) indicated that 50 million of the 12 Ethiopian populations are presently exposed to unknown levels of risk from volcanic activity for they are living in a close proximity to 49 highest category hazard uncertainty volcanos. Disasters are unpredictable and often occur in developing countries (Nollet et al. 1994). Flood has been threat in many regions of Ethiopia. For instance, the four rivers around Gambella (*Gilo, Baro, Akobo, and Alwero rivers*) have been causing floods for several years to Gambella people and caused so many casualties in the region (Global health action 2009).

***H10. Suitability of environmental situational factors positively affects humanitarian logistics performance.***

#### **L. Adequate donors funding**

As per Thomas and Kopczak (2005) study, huge portion of funds are allocated for direct relief but so insufficient for logistic strategic preparedness and investment on infrastructures and systems development. It has been also ascertained by Wassenhove (2006) that many humanitarian organizations have no adequate funds to finance the training and procedures that will lead to better preparedness and effective logistical operations. In addition, Maon, Lindgreen and Vanhamme (2009) also supported that organizations which receive funds for short term relief aids, don't have flexible funds to invest on long term development and implementation of more sophisticated supply chain management tools. Therefore, they are engaged in specific field projects and often suffer from adopting a strategic posture. Due to the fact that lack of funding, unsolicited donations are one of the main causes of bottlenecks in disasters. Another authors Stapleton, Wassenhove and Tomasini (2010) emphasized that in kind donations cause delays and waste of valuable resources including warehousing space.

*H11. Availability of donors funding positively affects humanitarian logistics performance.*

### **2.3 CONCEPTUAL FRAMEWORK OF THE STUDY**

This paper, through a structured and systematic review of literature, provides insights on the internal and external factors of humanitarian logistics performance.

The independent variables for this study are the internal and external factors. Regarding external factor; Government situational factors, Infrastructural situational factors, Socioeconomic situational factors, Environmental situational factors and Donors funding are covered. About the internal factors; lack of Recognition of logistics, un Availability of professional staff, in adequate use of Information Technology, Institutional learning and lack of collaboration are covered. The dependent variable is humanitarian logistics performance.

#### **Conceptual Framework**

**Independent Variables**

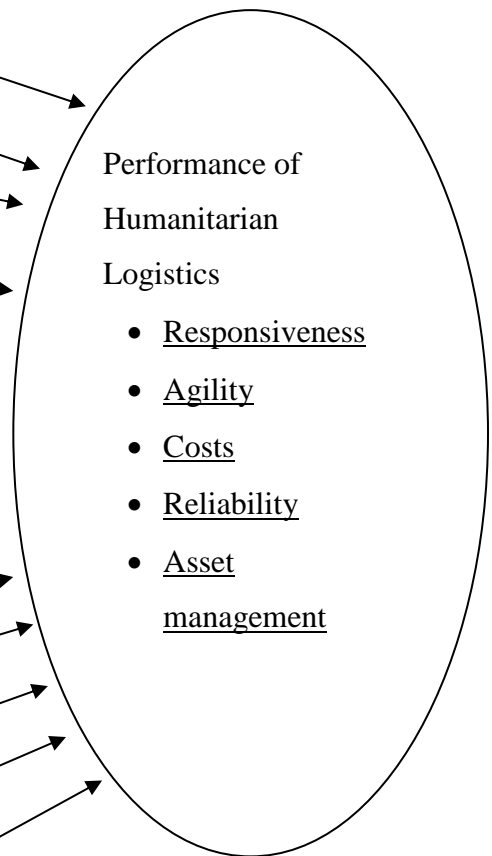
**Dependent variable**

**Organizational (Internal) factors**

- Lack of Recognition of logistics (H1-<sub>-</sub>)
- Un Availability of professional staff (H2-<sub>-</sub>)
- In Adequate use of Information Technology (H 3-<sub>-</sub>)
- Lack of Institutional learning (H 4-<sub>-</sub>)
- Lack of adequate collaboration (H 5-<sub>-</sub>)
- Measuring humanitarian logistics performance (H 6+)

**Situational ( External) Factors**

- Government situational factors (H 7+)
- Infrastructural situational factors (H 8+)
- Socioeconomic situational factors (H 9+)
- Environmental situational factors (H 10+)
- Donor funding situational factors (H 11+)



**Source:** Conceptual framework has been adapted from (Kunz & Reiner 2012; Thomas & Kopczak 2005; Beamon & Balcik 2008; Wassenhove, 2006).

## **Hypothesis Summary**

- H1. Lack of Recognition of logistics negatively affects the performance of humanitarian logistics.*
- H2. Un Availability of Professional Staff negatively affects the performance of humanitarian logistics.*
- H3. In Adequate Use of Information Technology has negatively effects on the performance of humanitarian logistics.*
- H4. Lack of Institutional learning negatively affects the performance of humanitarian logistics.*
- H5. Adequate Collaboration positively affects the performance of humanitarian logistics.*
- H6. Measuring Performance of humanitarian logistics is positively affected by measuring its performance.*
- H7. Suitability of government situational factors positively affects performance of humanitarian logistics.*
- H8. Suitability of infrastructural situational factors positively affects performance of humanitarian logistics.*
- H9. Suitability of socioeconomic situational factors positively affects performance of humanitarian logistics.*
- H10. Suitability of environmental situational factors positively affects performance of humanitarian logistics.*
- H11. Sufficiency of donors funding positively affect performance of humanitarian logistics.*

## **2.4 LITERATURE GAPS**

Previous research works such as content analysis of varied literatures, this research deployed empirical study and sought to fill the empirical gap that no former researches have been done so far and the

studies failed to support the aforementioned hypothesis and to Assessment of the current situation in the effect of logistics performance and its associated factors at IMC Ethiopia.

## **CHAPTER THREE**

### **METHODS OF THE STUDY**

#### **3.0 INTRODUCTION**

*This chapter presents the research design and methodology that has been used when carrying out the study. The specific items to be covered include research design, population and sample, data collection methods and analysis as well as data presentation methods.*

#### **3.1 RESEARCH DESIGN**

This study used both descriptive and explanatory research design. The study assessed the practice and investigated the factors which affect the performances of humanitarian logistics in IMC. Research design is the plan and structure of investigation conceived to obtain answers to research questions that includes an outline of the research work from hypothesis, methods and procedures for collecting and analyzing data and presenting the results in a form that can be understood by all (Mugenda, O.M. and Mugenda, A.G. 2003). When the focus is on cause-effect relationships, the study can be explanatory explaining which causes produce which effects (Yin, 1994).

#### **3.2 RESEARCH APPROACH**

In this study, mixed (Qualitative and Quantitative) approach has been used. Qualitative research is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. Quantitative research is an approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures. Mixed methods research is an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks.

#### **3.3 POPULATION AND SAMPLING DESIGN**

##### **3.3.1 Population**

A population is defined as a complete set of individual cases or objects with some common observable characteristics (Mugenda, 2012). A particular population has some characteristics that differentiate it from other populations. This study focused on a total of 97 employees in IMC logistics department found in Addis Ababa, Ethiopia.

### **3.3.2 Sampling Size and Technique**

Sampling size is the method applied in selecting the subject from the sampling frame. It involves selecting a number of individuals or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group (Orodho&Kombo, 2002). In this study census method has been used and all 97 non-management staffs and other seven (7) management members has been approached .

## **3.4 DATA COLLECTION METHOD**

The procedure which was used to collect data were influenced by the research instruments used (Kombo& Tromp, 2006). The task of data collection begins after research problem and research design have been defined (Kothari, 2004). In this study, primary data has been used.

The questionnaires survey was administered personally to the respondents after explaining the purpose of the research to them and how their sincerity would be important to the study.

**Primary data:** has been collected through Questionnaire Surveys and semi-structured interview. Questionnaires were distributed to the purposive respondents at their working offices. The drop-and-pick- later method was adopted for the study. This method was appropriate as it enabled the respondent to dedicate enough time to fill the questionnaire even if it took three weeks to get the filled survey due to the Covid-19 and employs were on and off days. In addition, interview has been conducted face to face with two respondents and over the phone with the other one.

## **3.5 DATA ANALYSIS METHODS**

The purpose of data analysis was to prepare raw data for presentation and statistical inference (Kombo& Tromp, 2006).

According to Kothari (2004), if data are not properly organized, the researcher may face difficulty while analyzing their meaning later on. For this purpose, the data must be coded. Hence, first of all, attention has been paid toward data organization and coding prior to the input stage of data analysis; categorical data were given a number to represent them. Secondly, Data has been analyzed and the eleven hypotheses have been tested by conducting Multiple Linear Regression by using the software called STATA 14.

Also in this study descriptive statistics (percentage, frequency and mean) and inferential statistics (regression and diagnostic tests) has been used.

### **3.6 RELIABILITY AND VALIDITY TEST**

#### **3.6.1 Validity Test**

Validity means an instruments ability to measure what is meant to be measured (Wiedersheim-Paul and Eriksson, 1991). According to Malhotra (2010), there are three types of validity in a study: content validity, predictive validity, and construct validity. This study was addressed the content validity through the review of literature and adapted instruments used in previous studies used.

#### **3.6.2 Reliability Test**

Reliability refers to whether an assessment instrument gives the same results each time it is used in the same setting with the same type of subjects. Reliability essentially means consistent or dependable results (Grad, 2011). In this study, the questioner has been adopted from previous studies and also it has been tested by using pilot test prior to distributing the survey to the actual survey participants to ensure its reliability.

In addition, reliability has been tasted by using Cronbatch's Alpha value and the result presented here in table 3.1 A commonly accepted rule of thumb for describing internal consistency using Cronbach's alpha values which are greater than 0.7 are acceptable.

**Table 3. 1: Cronbach Alpha test**

<b>Variable</b>	<b>Cronbach Alpha</b>	<b>Number of items</b>
Lack of recognition of logistics	0.9319	5
Un availability of Adequate professional staff	0.9262	5
In adequate use of IT	0.9461	5
Lack of Institutional learning	0.9556	5
Lack of Collaboration	0.9831	5
Measuring performance of logistic	0.9119	5
Government situational factor	0.9276	5
Infrastructural situational factor	0.8591	5
Socioeconomic situational factor	0.8061	5
Environmental situational factor	0.9111	5
Adequate donors funding	0.7981	5

Table 3.1. Shows that Cronbach alpha figures of all the above variables are greater than the recommended threshold of 0.7. This indicated that the questioner is reliable.

### **3.7 ETHICAL CONSIDERATION**

The investigator was secured a letter from the university to the International Medical Cops so that logisticians of this organization will freely participate in the study. In addition, the investigator will keep the information confidential in order to further protect the participants. Participants has been informed that the questioner shall be filled based on their willingness and it is for academic purpose only.

## CHAPTER FOUR

### RESULTS, DISCUSSION AND INTERPRETATION

This chapter presents the analysis of study findings on the practices, factors and performance of humanitarian logistics management in international medical corps. The findings were analyzed using the variables related to the research objective and presented basically in the form of frequency tables. Out of the 97 questionnaires distributed to respondents, 88 questionnaires representing 90.7 percent of the total questionnaires distributed were returned. Regarding the semi structured interviews, from the planned 7 respondents, only with three of them could be conducted and able to get their responses. With two of them face to face but with the remaining one it has been conducted over the phone.

#### 4.1 RESULTS

##### 4.1.2 Socio Demographic Characteristics of Respondents

This section discusses the demographic characteristics of the respondents. This includes the gender, age, experience, level of education Years of service in the organization and Service in humanitarian organization

**Table 4. 1: Demographic Characteristics of Respondents**

Characteristics	Category	Frequency	Percentage
Gender	Male	65	73.86
	Female	23	26.14
Age	under 20	7	7.95
	20-30	18	20.45
	30-40	41	46.59
	over 40 years	22	25.00
Educational qualification	grade 10	0	-
	grade 12	3	3.41
	diploma	29	32.95
	first degree	45	51.14

	second degree &above	11	12.50
Service in humanitarian Organization	2 years	28	31.82
	2-5 years	35	39.77
	6-10 years	21	23.86
	10 years above	4	4.55

Respondents were found to be aged from under 20 to more than 40 years. As it shows on the table 4.1 a great number of respondents (73.86 %). Further the result shows that a great number of respondents (71.59 %) were above 30years. Also Most of the respondents (63.64%) had a good education which is first degree and above. Furthermore, the result shows that 68.18 % of the respondent has been working greater than 2 years in the humanitarian organization.

#### 4.1.3 Humanitarian Logistics Practices of international medical corps

One of the objectives was to assess how humanitarian logistics is being practiced in International Medical Corps. The respondents were required to indicate on a Likert scale of 1-5 where: 1= No extent, 2= Small extent, 3= Moderate extent, 4= Large extent and 5= very large extent.

However, the computed mean scores were interpreted using the key stated in table 4.6 below:

**Table 4. 2: Interpretation Scale**

Scale	Interpretation
1.00-1.4999	No extent
1.50-2.4999	Small extent
2.50-3.4999	Moderate extent
3.50-4.4999	Great extent
4.50-5.000	Very great extent

The results are discussed in the as follows.

**Table 4. 3: Humanitarian Logistics Practices of international medical corps**

S.N	variables	mean	Std.dev	Result
1	<b>Situation Analysis</b>			
	International medical corps assesses the situation in the affected area during disasters in terms of the volume and type of supplies needed.	4.30	0.78	Great extent
	International medical corps assesses the situation in the affected area in terms of how the supplies will be delivered	4.13	0.98	Great extent
	International medical corps assesses the security situation of the affected area before deployment of logistics staff and supplies.	4.25	0.91	Great extent
	International medical corps assesses the extent of damage and the possibility of reoccurrence of the disaster in advance of delivering supplies.	4.24	0.80	Great extent
	International medical corps assesses the situation in the affected area in view of its urgency.	4.17	0.71	Great extent
	International medical corps provides Service based on its situation assessment.	4.32	0.80	Great extent
	<b>Overall Mean</b>	<b>4.23</b>		Great extent
2	<b>Procurement</b>			
	International medical corps establish a governing a supply chain council	4.01	0.94	Great extent
	Supplies that are required by International medical corps assessment team always match with supplies that are procured and/donated.	3.76	1.07	Great extent
	Procurement of supplies always match with the requested type and volume of supplies based on the information from the situation analysis team of International medical corps	4.00	0.88	Great extent
	<b>Mean of Procurement</b>	<b>3.92</b>		Great extent
3	<b>Transport</b>			

	International medical corps uses all modes of transportation available for the movements of supplies and people	4.34	0.74	Great extent
	International medical corps delivers relief supplies to where they are required during emergencies.	4.68	0.49	Very great extent
	there is a prequalified list of transport companies to IMC to choose from emergencies	4.53	0.57	Very great extent
	International medical corps uses various transport optimization models to deliver supplies with the least cost possible	4.59	0.60	Very great extent
	<b>Mean of Transport</b>	<b>4.54</b>		Great extent
4	<b>Warehouse Management</b>			
	International medical corps has consider a labour management tools to optimize performance	4.03	0.90	Great extent
	International medical corps warehouse have real actionable data	3.84	0.96	Great extent
	International medical corps warehouse is executing cycle counting operation to enhance inventory accuracy.	4.17	0.91	Great extent
	<b>Mean of Warehouse Management</b>	<b>4.02</b>		Great extent
5	<b>Distribution Management</b>			
	International medical corps distribution centers are well established to ease distribution and minimize cost of operation.	4.34	0.64	Great extent
	International medical corps distribution team has sufficient information as to whom the supplies should be delivered.	4.34	0.69	Great extent
	International medical corps distribution team clearly understands the urgency of the situation.	4.19	0.81	Great extent
	International medical corps distribution team is organized in such a way that on the spot situational decisions are encouraged to be made.	4.34	0.64	Great extent

	International medical corps gives appropriate training to the distribution team to make sure that they execute their duties at higher level of passion and commitment	4.40	0.65	Great extent
	<b>Mean of Distribution Management</b>	<b>4.32</b>		Great extent
	<b>Grand Mean of Humanitarian Supply Chain Management practices</b>	<b>4.2</b>		Great extent

**4.1 .1. Humanitarian Logistics Practices of international medical corps**

Table4.3 result shows that the IMC assesses the situation in the affected area during disasters in terms of the volume and type of supplies needed, assesses the situation in the affected area in terms of how the supplies will be delivered, assesses the security situation of the affected area before deployment of logistics staff and supplies, assesses the extent of damage and the possibility of reoccurrence of the disaster in advance of delivering supplies, assesses the situation in the affected area in view of its urgency and provides Service based on its situation assessment to a great extent as indicated by the mean values of 4.30 , 4.13 , 4.25 , 4.24 , 4.17 and 4.32 respectively. The overall mean value of4.23 indicated that situational analysis practice of the organization is great extent.

Further the result shows that International medical corps establish a governing a supply chain council, supplies that are required by International medical corps assessment team always match with supplies that are procured and/donated, and Procurement of supplies always match with the requested type and volume of supplies based on the information from the situation analysis team of International medical corps to a great extent as indicated by the mean values of 4.01, 3.76 and 4.00 respectively. The overall mean value of 3.92 indicated that procurement is practiced by the organization to a great extent.

Also, the result shows that International medical corps delivers relief supplies to where they are required during emergencies, there is a prequalified list of transport companies to IMC to choose from emergencies and International medical corps uses various transport optimization models to deliver supplies with the least cost possible to a very great extent as indicated by the mean values of 4.68, 4.53 and 4.59 respectively. Further the result shows that International medical corps uses all modes of transportation available for the movements of supplies and people to a great extent as indicated by the

mean value of 4.34. The overall mean value of 4.54 indicated that transportation practice of the organization is a very great extent.

Moreover, the result shows that International medical corps has consider a labor management tools to optimize performance, International medical corps warehouse have real actionable data and its warehouse is executing cycle counting operation to enhance inventory accuracy to a great extent as indicated by the mean values of 4.03, 3.84 and 4.17 respectively. Further, the overall mean value of 4.02 indicated that the Warehouse Management practice of the organization is a great extent.

Also, the result shows that International medical corps distribution centers are well established to ease distribution and minimize cost of operation and International medical crop’s distribution team has sufficient information as to whom the supplies should be delivered, clearly understands the urgency of the situation, team is organized in such a way that on the spot situational decisions are encouraged to be made, International medical corps gives appropriate training to the distribution team to make sure that they execute their duties at higher level of passion and commitment to a great extent as indicated by the mean values of 4.34, 4.34, 4.19, 4.34 and 4.40 respectively. Moreover, the overall mean value of 4.32 indicated that the distribution management practice of the organization is a great extent.

Finally, the result shows that the IMC humanitarian logistics practice is great as indicated the grand mean value of 4.2.

**Table 4. 4: Internal and external factors that affects the performance of IMC**

S.N	Variables	Mean	Std.dev	Result
1	<b>Lack of Recognition of logistics</b>			
	Lack of Recognition of the relief logistics requirements reduce the agility performance of IMC	2.2614	0.9407	Small
	Lack of Recognition of the relief logistics requirements increase the cost performance of IMC	2.9091	0.9302	Moderate
	Lack of Recognition of the relief logistics requirements reduce the responsiveness performance of IMC	2.5114	0.8576	Moderate

	Lack of Recognition of the relief logistics requirements reduce the reliability performance of IMC	2.4545	0.8958	Small
	Lack of Recognition of the relief logistics requirements reduce the asset management performance of IMC	2.2273	0.7540	Small
	<b>Overall Mean</b>	2.4727		Small
2	<b>Un availability of Adequate professional staff</b>			
	Un availability of Adequate professional staff reduce agility of IMCs humanitarian logistics performance	3.500	0.994	Great
	Un availability of Adequate professional staff reduce reliability of IMCs humanitarian logistics performance	3.932	0.708	Great
	Un availability of Adequate professional staff increase cost of IMCs humanitarian logistics performance	3.614	0.513	Great
	Un availability of Adequate professional staff reduce responsiveness of IMCs humanitarian logistics performance	3.602	0.720	Great
	Un availability of Adequate professional staff reduce asset management of IMCs humanitarian logistics performance	3.080	0.746	Moderate
	<b>Overall Mean</b>	3.545		Great
3	<b>In Adequate use of information technology</b>			
	In adequate use of information technology reduce agility of IMC humanitarian logistics performance	2.864	1.019	Moderate
	In adequate use of information technology increase cost of IMC humanitarian logistics performance	3.239	1.050	Moderate
	In adequate use of information technology reduce responsiveness of IMC humanitarian logistics performance	2.932	0.785	Moderate
	In adequate use of information technology reduce asset management of IMC humanitarian logistics performance	3.000	0.922	Moderate
	In adequate use of information technology reduce reliability of IMC humanitarian logistics performance	2.716	0.870	Moderate

	<b>Overall Mean</b>	<b>2.950</b>		Moderate
4	<b>Lack of Institutional learning</b>			
	Lack of institutional learning reduces agility of IMC humanitarian logistics performance	2.375	0.926	Small
	Lack of institutional learning increases cost of IMC humanitarian logistics performance	2.534	0.922	Moderate
	Lack of institutional learning reduces responsiveness of IMC humanitarian logistics performance	2.716	0.757	Moderate
	Lack of institutional learning reduces reliability of IMC humanitarian logistics performance	2.727	0.769	Moderate
	Lack of institutional learning reduces asset management of IMC humanitarian logistics performance	2.580	0.893	Moderate
	<b>Overall Mean</b>	2.586		Moderate
5	<b>Lack of Collaboration</b>			
	Lack of collaboration among humanitarian chain actors reduce agility of IMC humanitarian logistics performance	3.284	0.694	Moderate
	Lack of collaboration among humanitarian chain actors increase cost of IMC humanitarian logistics performance	3.261	0.686	Moderate
	Lack of collaboration among humanitarian chain actors reduce responsiveness of IMC humanitarian logistics performance	3.227	0.673	Moderate
	Lack of collaboration among humanitarian chain actors reduce reliability of IMC humanitarian logistics performance	3.216	0.669	Moderate
	Lack of collaboration among humanitarian chain actors reduce asset management of IMC humanitarian logistics performance	3.193	0.676	Moderate
	<b>Overall Mean</b>	3.236		Moderate

6	<b>Measuring performance of logistics</b>			
	Measuring performance of logistics increase agility of IMC humanitarian logistics performance	2.716	0.909	Moderate
	Measuring performance of logistics increase asset management of IMC humanitarian logistics performance	2.670	0.906	Moderate
	Measuring performance of logistics reduce cost of IMC humanitarian logistics performance	2.943	0.849	Moderate
	Measuring performance of logistics increase responsiveness of IMC humanitarian logistics performance	3.318	0.904	Moderate
	Measuring performance of logistics increase reliability of IMC humanitarian logistics performance	3.443	1.143	Moderate
	<b>Overall Mean</b>	3.018		Moderate
7	<b>Government situational factors</b>			
	Government situational factors increase agility of IMCs humanitarian logistics performance	3.830	0.861	Great
	Government situational factors reduce cost of IMCs humanitarian logistics performance	3.716	0.870	Great
	Government situational factors increase responsiveness of IMCs humanitarian logistics performance	3.739	0.941	Great
	Government situational factors increase reliability of IMCs humanitarian logistics performance	3.614	0.952	Great
	Government situational factors increase asset management of IMCs humanitarian logistics performance	3.318	0.824	Moderate
	<b>Overall Mean</b>	3.643		Great
8	<b>Infrastructural situational factor</b>			
	Provision of infrastructural situational factor increase agility of IMCs humanitarian logistics performance	4.045	1.049	Great

	Provision of infrastructural situational factor reduce cost of IMCs humanitarian logistics performance	3.636	0.949	Great
	Provision of infrastructural situational factor increase responsiveness of IMCs humanitarian logistics performance	3.568	0.841	Great
	Provision of infrastructural situational factor increase reliability of IMCs humanitarian logistics performance	2.977	0.871	Moderate
	Provision of infrastructural situational factor increase asset management of IMCs humanitarian logistics performance	3.307	0.862	Moderate
	<b>Overall Mean</b>	3.507		Great
9	<b>Socioeconomic situational factor</b>			
	Socioeconomic situational factor increase agility of IMCs humanitarian logistics performance	3.636	0.949	Great
	Socioeconomic situational factor reduce cost of IMCs humanitarian logistics performance	2.818	0.810	Moderate
	Socioeconomic situational factor increase responsiveness of IMCs humanitarian logistics performance	2.841	0.829	Moderate
	Socioeconomic situational factor increase reliability of IMCs humanitarian logistics performance	2.614	0.794	Moderate
	Socioeconomic situational factor increase asset management of IMCs humanitarian logistics performance	2.511	0.547	Moderate
	<b>Overall Mean</b>	2.884		Moderate
10	<b>Environmental situational factor</b>			
	Environmental situational factors increase agility of IMCs humanitarian logistics performance	4.011364	0.734915	Great
	Environmental situational factors reduce cost of IMCs humanitarian logistics performance	3.636364	0.714092	Great

	Environmental situational factors increase responsiveness of IMCs humanitarian logistics performance	3.443182	0.62252 7	Moderate
	Environmental situational factors increase reliability of IMCs humanitarian logistics performance	3.500000	0.78783 9	Great
	Environmental situational factors increase asset management of IMCs humanitarian logistics performance	3.363636	1.01914 8	Moderate
	<b>Overall Mean</b>	3.590909		Great
11	<b>Adequate donors funding</b>			
	Adequate donors funding availability increase agility of IMC humanitarian logistics performance	4.58	0.71	Great
	Adequate donors funding availability reduce cost of IMC humanitarian logistics performance	4.22	0.70	Great
	Adequate donors funding availability increase responsiveness of IMC humanitarian logistics performance	4.22	0.72	Great
	Adequate donors funding availability increase reliability of IMC humanitarian logistics performance	3.83	1.13	Great
	Adequate donors funding availability increase asset management of IMC humanitarian logistics performance	3.39	1.08	Moderate
	<b>Overall Mean</b>	4.05		Great

Table 4.4 result shows that Lack of Recognition of the relief logistics requirements increase the cost and reduce the responsiveness performance of IMC to a moderate extent as indicated by the mean values of 2.9091 and 2.5114 respectively. Further, the result shows that Lack of Recognition of the relief logistics requirements reduces the agility, reliability and the asset management performance of IMC to a small extent as indicated by the mean values of 2.2614, 2.4727 and 2.2273 respectively. The overall mean value of 2.4545 indicated that lack of recognition of the relief logistics has a small effect on the IMC humanitarian logistics performance.

Further, the result shows that Un availability of Adequate professional staff reduce agility, reliability, cost responsiveness of IMCs humanitarian logistics performance to a great extent as indicated the

mean values of 3.500, 3.932, 3.614 and 3.602 respectively. Also, the result shows that Un availability of Adequate professional staff reduce asset management of IMCs humanitarian logistics performance to a moderate extent as indicated the mean values of 3.080. The overall mean value of 3.545 indicated that Un availability of Adequate professional staff has a moderate effect on the IMC humanitarian logistics performance.

Furthermore, the result shows that in adequate use of information technology reduce agility, cost responsiveness, asset management of IMC humanitarian logistics performance reliability of IMC humanitarian logistics performance to a moderate extent as indicated by the mean value of 2.864, 3.239, 2.932, 3.000 and 2.716 respectively. The overall mean value of 2.950 indicated that in adequate use of information technology has a moderate effect on the IMC humanitarian logistics performance.

Also, the result shows that Lack of institutional learning increases cost, reduces responsiveness, reliability and asset management of IMC humanitarian logistics performance to a moderate extent as indicated by the mean values of 2.534, 2.716, 2.727 and 2.580 respectively. Further, the study shows that Lack of institutional learning reduces agility of IMC humanitarian logistics performance to a small extent as indicated the mean value of 2.375. The overall mean value of 2.586 indicated that Lack of institutional learning has a moderate effect on the IMC humanitarian logistics performance.

Moreover, the result shows that Lack of collaboration among humanitarian chain actors reduce agility, increase cost, reduce responsiveness, and asset management of IMC humanitarian logistics performance to a moderate extent as indicated by the mean values of 3.284, 3.261, 3.227, 3.216 and 3.193 respectively. The overall mean value of 3.236 indicated that Lack of collaboration among humanitarian chain actors has a moderate effect on the IMC humanitarian logistics performance.

Also, the result shows that Measuring performance of logistics increase agility, asset management, reduce cost, increase responsiveness and reliability of IMC humanitarian logistics performance to a moderate level as indicated by the mean values of 2.716, 2.670, 2.943, 3.318 and 3.443 respectively. The overall mean value of 3.018 indicated that measuring performance of logistics has a moderate effect on the IMC humanitarian logistics performance.

In addition, the result shows that Government situational factors increase agility, reduce cost, increase responsiveness and increase reliability of IMCs humanitarian logistics performance to a great extent as indicated by the mean values of 3.830, 3.716, 3.739 and 3.614 respectively. Further, the result shows that Government situational factors increase asset management of IMCs humanitarian logistics performance to a moderate extent as indicated by the mean value of 3.318. The overall mean value of 3.643 indicated that Government situational factors have a great effect on the IMC humanitarian logistics performance.

Besides, the result shows that Provision of infrastructural situational factor increase agility, reduce cost and increase responsiveness of IMCs humanitarian logistics performance to a great extent as indicated by the mean values of 4.045, 3.636 and 3.568 respectively. In addition, the study shows that Provision of infrastructural situational factor increase reliability and asset management of IMCs humanitarian logistics performance to a moderate extent as indicated by the mean values of 2.977 and 3.307 respectively. The overall mean value of 3.507 indicated that Provision of infrastructural situational factor have a great effect on the IMC humanitarian logistics performance.

In addition, the result shows that socioeconomic situational factor increase agility of IMCs humanitarian logistics performance to a great extent as indicated by the mean value of 3.636. Further, the study shows that Socioeconomic situational factor reduce cost, increase, reliability and asset management of IMCs humanitarian logistics performance to a moderate extent as indicated by the mean values of 2.818, 2.841, 2.614 and 2.511 respectively. The overall mean value of 2.884 indicated that socioeconomic situational factor have a moderate effect on the IMC humanitarian logistics performance.

Further, the result shows that Environmental situational factors increase agility, reduce cost and increase reliability of IMCs humanitarian logistics performance to a great extent as indicated by the mean values of 4.011364, 3.636364 and 3.5000 respectively. Also, the study shows that Environmental situational factors increase responsiveness and asset management of IMCs humanitarian logistics performance to a moderate extent as indicated by the mean values of 3.3443182 and 3.363636 respectively. The overall mean value of 3.590909 indicated that Environmental situational factors have a great effect on the IMC humanitarian logistics performance.

Furthermore, the study shows that adequate donors funding availability increase agility, reduce cost, increase responsiveness and reliability of IMC humanitarian logistics performance to a great extent as indicated by the mean values of 4.58, 4.22, 4.22 and 3.83 respectively. Also, the result shows that adequate donors funding availability increase asset management of IMC humanitarian logistics performance to a moderate extent as indicated by the mean value of 3.39. The overall mean value of 4.05 indicated that adequate donors funding availability have a great effect on the IMC humanitarian logistics performance.

## 4.2 Operational performance

**Table 4.5 : Operational performance**

S.N	Variables	Mean	Std.dev	Result
1	Reliability			
	IMC delivers relive logistics (right supplies) considering the demographic profile (religion and culture)of the beneficiaries	2.27	0.60	Small extent
	IMC delivers relief logistics to exact destination where beneficiaries are available within 72 hours of the disaster strike and deploy relief personnel within 48 hours of the disaster strike	2.45	0.59	Small extent
	International medical corps fulfils all the requested demands.	2.67	0.74	Moderately
	All the supplies are delivered at the right time in order that beneficiaries are properly aided by international medical corps	2.91	0.69	Moderately
	The supplies delivered by international medical corps are in a damage-free state with the correct configuration and hence no return or replacement is required.	2.97	0.78	Moderately
	There are no complaints reported during the execution of the relief operation in distribution of relief items by international medical corps.	2.56	0.60	Moderately

	<b>Overall Mean</b>	2.64		Moderately
2	<b>Agility</b>			
	The type of supplies required may change from the initial request during assessment and still can be absorbed by international medical corps without any problem.	2.92	0.68	Moderately
	The volume of supplies required may change from the initial request during assessment and still can be absorbed by international medical corps without any problem	2.74	0.67	Moderately
	International medical corps is flexible in a way it addresses unplanned demand requests	2.55	0.59	Moderately
	<b>Overall Mean</b>	2.73		Moderately
3	<b>Cost</b>			
	International medical corps is good at managing all the costs that arise from all its activities in supplying and distributing material to where needed.	3.88	0.86	Great
	There are systems designed by international medical corps to make sure that the optimum cost is incurred.	3.60	0.62	Great
	International medical corps recognizes cost management and optimization as important issues in its operations.	3.40	0.84	Moderately
	Distribution of supplies by international medical corps is made with optimum cost	3.25	0.81	Moderately
	Costs related to wrong supplies and quantities doesn't exist in international medical corps	3.18	0.60	Moderately
	Costs related to damaged supplies doesn't exist in international medical corps	3.00	0.59	Moderately
	international medical corps applies cost cutting measures to reduce total cost in its operations	2.86	0.82	Moderately

	<b>Mean of Transport</b>	3.31		Moderately
4	<b>Responsiveness</b>			
	All requested relief items are delivered at the right time	3.59	0.65	Great
	Decisions at all levels to expedite the logistics operations in international medical corps are made instantaneously.	3.23	0.69	Moderately
	There is proper follow-up of speeds of responding to the requests at any level of relief operations by IMC	2.88	0.69	Moderately
	<b>Mean of Warehouse Management</b>	3.23		Moderately
5	<b>Asset management</b>			
	The supplies are stored in international medical corps warehouse at the right quantity at any time	3.26	0.75	Moderately
	It takes very short time for international medical corps to avail supplies and deliver them to the beneficiaries.	3.15	0.77	Moderately
	international medical corps cost of carrying supplies in the warehouse is very small	2.88	0.74	Moderately
	Most packaging/shipping materials used by international medical corps are reusable.	2.47	0.69	Small
	There is no excess inventory in international medical corps	2.50	0.77	Moderately
	<b>Mean of Distribution Management</b>	2.85		Moderately
	<b>Grand Mean of IMC performance</b>	2.95		Moderately

As per table 4.5 above. The result shows that the IMC delivers relive logistics (right supplies) considering the demographic profile (religion and culture) of the beneficiaries and relief logistics to exact destination where beneficiaries are available within 72 hours of the disaster strike and deploy

relief personnel within 48 hours of the disaster strike to a small extent as indicated by the mean values of 2.27 and 2.45 respectively. Further, the study shows that International medical corps fulfils all the requested demands, All the supplies are delivered at the right time in order that beneficiaries are properly aided by international medical corps , the supplies delivered by international medical corps are in a damage-free state with the correct configuration and hence no return or replacement is required and also there are no complaints reported during the execution of the relief operation in distribution of relief items by international medical corps is shown a moderate extent as indicated by the mean values of 2.67 , 2.91 , 2.97 and 2.56 respectively. The overall mean value of 2.64 indicates that the overall performance of IMC interns of reliability was Moderate.

Further, the result shows that the type of supplies required may change from the initial request during assessment and still can be absorbed by international medical corps without any problem, the volume of supplies required may change from the initial request during assessment and still can be absorbed by international medical corps without any problem and international medical corps is flexible in a way it addresses unplanned demand requests to a moderate extent as indicated by the mean values of 2.92, 2.74 and 2.55 respectively. The overall mean value of 2.73 indicates that the overall performance of IMC interns of agility was Moderate.

Furthermore, the result shows that International medical corps is managing all the costs that arise from all its activities in supplying and distributing material to where needed and there are systems designed by international medical corps to make sure that the optimum cost is incurred to a great extent as indicated the mean values of 3.88 and 3.60 respectively. Also, the result shows that International medical corps recognizes cost management and optimization as important issues in its operations, Distribution of supplies by international medical corps is made with optimum cost, Costs related to wrong supplies and quantities doesn't exist in international medical corps, Costs related to damaged supplies doesn't exist in international medical corps, international medical corps applies cost cutting measures to reduce total cost in its operations are moderate extent as it indicated by the mean values of 3.40 , 3.25, 3.18, 3.00 and 2.86 respectively. The overall mean value of 3.31 indicates that the overall performance of IMC interns of cost was Moderate.

The result also shows that all requested relief items are delivered at the right time is great extent as indicated by the mean value of 3.59. Further, the study shows that decisions at all levels to expedite

the logistics operations in international medical corps are made instantaneously and there is proper follow-up of speeds of responding to the requests at any level of relief operations by IMC is moderate as indicated as per the mean values of 3.23 and 2.88 respectively. The overall mean value of 3.23 indicates that the overall performance of IMC interns of responsiveness was Moderate.

Also, the result shows that the supplies are stored in international medical corps warehouse at the right quantity at any time; It takes very short time for international medical corps to avail supplies and deliver them to the beneficiaries. International medical corps cost of carrying supplies in the warehouse is very small and there is no excess inventory in international medical corps is moderate extent as indicated by the mean values of 3.26, 3.15, 2.88 and 2.50 respectively. Further, most packaging/shipping materials used by international medical corps are reusable at a small extent as indicated by the mean value of 2.47. The overall mean value of 2.85 indicates that the overall performance of IMC interns of asset management was Moderate. Finally, the grand mean value of 2.95 indicates that the overall performance of IMC was Moderate.

### **4.3 DIAGNOSTIC TEST**

Multiple linear regressions has been one of best statistical tools and frequently used to explain multiple relationships of variables as well as to achieve best prediction of set of variables (Robert 2006). In this study, multiple linear regression was used for the diagnostic tests and regression.

The first specific objective that to assess the humanitarian logistics practice of the International Medical Corps (IMC's) has already been analyzed in the descriptive analysis. In order to analysis the remaining specific objectives and to test the developed eleven hypotheses, the summarized data found in the Annex IV which is collected from research data was used.

#### **4.3.1. NORMALITY TEST**

Normality test has been conducted by using Shapiro-Wilk test and the result is presented in table 4.6 below. The result shows that the P values of X1, X2, X3, X4, X5, X6, X7, X8, X9, X10 and X11 are

0.21223, 0.19168, 0.21630, 0.09518, 0.13588, 0.06360, 0.78759, 0.15127, 0.43007, 0.26667 and 0.10700 respectively. Which are greater than 0.05 and it indicates that the data is normally distributed.

**Table 4. 6 : NORMALITY TEST**

Shapiro-Wilk W test for normal data					
Variable	Obs	W	V	z	Prob>z
X1	88	0.98067	1.435	0.795	0.21323
X2	88	0.97999	1.485	0.872	0.19168
X3	88	0.98077	1.428	0.785	0.21630
X4	88	0.97559	1.812	1.310	0.09518
X5	88	0.97782	1.647	1.099	0.13588
X6	88	0.97308	1.999	1.525	0.06360
X7	88	0.99062	0.696	-0.798	0.78759
X8	88	0.97849	1.597	1.031	0.15127
X9	88	0.98541	1.083	0.176	0.43007
X10	88	0.98213	1.327	0.623	0.26667
X11	88	0.97632	1.758	1.243	0.10700

### 4.3.2. Multicollinearity test

As per the variance inflation factor (VIF) findings in table 4.14, all the VIF values are less than 10. It indicates that there is no multicollinearity problem. Which means in this study, the assumption of multicollinearity has not been violated.

**Table 4. 7 Multi-collinearity test**

Variable	VIF	1/VIF
X8	8.46	0.118234
X5	8.32	0.120190
X2	7.77	0.128621
X7	7.59	0.131773
X11	7.57	0.132150
X6	2.14	0.467878
X3	1.66	0.602482
X4	1.56	0.639296
X1	1.31	0.761297
X9	1.13	0.881590
X10	1.10	0.905897
Mean VIF	4.42	

**Where;**

Y = Over all operational performance

X1 = Lack of recognition of log

X2 = Un availability of Adequate professional staff

X3 = In adequate use of IT

X4 = Lack of Institutional learning

X5 = Lack of Collaboration

X6 = Measuring performance of logistic

X7 = Government situational factor

X8 = Infrastructural situational factor

X9 = Socioeconomic situational factor

X10 = Environmental situational factor

X11 = Adequate donors funding

### 4.3.3. Heteroskedasticity Test

**Table 4. 8 Heteroskedasticity Test**

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity		
Ho: Constant variance		
Variables: fitted values of Y		
chi2(1)	=	5.26
Prob > chi2	=	0.0218

Table 4.8 Since the P-value 0.0218 is less than 0.05, there is no heteroscedasticity problem.

### 4.3.4. REGRESSION ANALYSIS

To test the eleven hypotheses multiple linear regression analysis has been regressed and its result has been presented here below.

**Table 4. 9** Regression analysis

Source	SS	df	MS	Number of obs	=	88
Model	1.46642607	11	.133311461	F(11, 76)	=	420.87
Residual	.024073046	76	.000316751	Prob > F	=	0.0000
Total	1.49049912	87	.017132174	R-squared	=	0.9838
				Adj R-squared	=	0.9815
				Root MSE	=	.0178

Y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
X1	-.0075207	.0028089	-2.68	0.009	-.0131151	-.0019264
X2	-.0340759	.0080526	-4.23	0.000	-.050114	-.0180377
X3	.0016227	.0029003	0.56	0.577	-.0041538	.0073992
X4	-.0009492	.0030228	-0.31	0.754	-.0069697	.0050713
X5	-.0663995	.0083672	-7.94	0.000	-.0830642	-.0497348
X6	.007668	.0034221	2.24	0.028	.0008524	.0144836
X7	.0278413	.0066995	4.16	0.000	.0144981	.0411845
X8	.0346095	.0075598	4.58	0.000	.0195528	.0496663
X9	.003734	.0033991	1.10	0.275	-.0030359	.0105038
X10	-.0004903	.0029658	-0.17	0.869	-.0063972	.0054165
X11	.0369277	.0079527	4.64	0.000	.0210885	.052767
_cons	2.900244	.064291	45.11	0.000	2.772198	3.028291

## Regression Result

Dependent variable: performance

Independent variable: X1, X2, X3, X4 , X5 ,X6, X7, X8, X9, X10 andX11

**Source: Research data**

Where

Y = Over all operational performance

X1 = Lack of recognition of log

X2 = Un availability of Adequate professional staff

X3 = In adequate use of IT

X4 = Lack of Institutional learning

X5 = Lack of Collaboration

X6 = Measuring performance of logistic

X7 = Government situational factor

X8 = Infrastructural situational factor

X9 = Socioeconomic situational factor

X10 = Environmental situational factor

X11 = Adequate donors funding

The R square value of 0.9838 shows that the independent variables namely (Recognition of Logistics, Adequate Donors Fund, Adequate Professional Staff, Adequate Use of Information Technology, Institutional Learning, Sufficient Collaboration, Measuring Performance of Logistics, Government Situational Factor, Infrastructural Situational Factor, Socioeconomic Situational Factor and Environmental Situational factor) Accounted for 98.38 % of the variation in the dependent variable performance. The P-value (0.000) is less than 0.05 it indication that the regression model is fit and significant.

This regression model presented as follows:

$$Y=2.900244-0.0075207X1-0.0340759X2+0.0016227X3-0.0009492X4-0.0663995X5+0.007668X6+0.0278413X7+0.0346095 X8 +0.003734 X9-0.0004903X10 +0.0369277X11$$

Where:

Y = Over all operational performance

(X1-X11)= Factors

The regression result shows that a unit change in Lack of recognition of logistic, Un availability of adequate professional staff, In adequate use of IT, Lack of Institutional learning, Lack of Collaboration, Measuring performance of logistic, Government situational factor, Infrastructural situational factor ,Socioeconomic situational factor, Environmental situational factor and Adequate donors funding results -0.0075207, -0.0340759, 0.0016227, -.0009492, -0.0663995, 0 .007668, 0.0278413, 0 .0346095 , 0 .003734 , -0.0004903 and 0.0369277 unit respective effect on the overall performance of IMC.

Further, the result shows that the coefficients of X1, X2 and X5 are negative and their p-values are 0.009, 0.000 and 0.000 respectively. It indicates that they have a negative and significant effect on the overall performance of IMC. As a result, the following assumptions (H1, H2 and H5) have been supported by the study.

*H1. Lack of Recognition of logistics negatively and significantly affects the performance of humanitarian logistics.*

*H2. Un Availability of Professional Staff negatively and significantly affects the performance of humanitarian logistics.*

*H5. Adequate Collaboration positively and significantly affects the performance of humanitarian logistics.*

The study results for hypothesis one (H1) result is similar with the study of *Wassenhove(2006)* shown that, humanitarian logistics lacks recognition resulting in unmet logistics requirements. The study results for hypothesis two (H2) result is similar with the study of *Tatham, Kovacs & Larson (2010)* that the skills the current humanitarian logisticians possessed are too much of administrative and functional. The study results for hypothesis one (H5) is similar with the study done by *Chandes & Pache (2010)* emphasized that lack of coordination affects performance of humanitarian logistics operations.

Furthermore, the result shows that the coefficients of X6, X7, X8 and X11 are positive and their p-values are 0.028, 0.000, 0.000 and 0.000 respectively. It indicates that they have a positive and significant effect on the overall performance of IMC. As a result, the following assumptions (H6, H7, H8 and H11) have been supported by the study.

*H6. Measuring Performance of humanitarian logistics is positively and significantly affected by measuring its performance.*

*H7. Suitability of government situational factors positively and significantly affects performance of humanitarian logistics.*

*H8. Suitability of infrastructural situational factors positively and significantly affects performance of humanitarian logistics.*

*H11. Sufficiency of donors funding positively and significantly affect performance of humanitarian logistics.*

The study results for hypothesis sixth (H6) is similar with study done by Beamon & Balcik (2008) that Performance of the relief chains would be improved through effective performance measurement systems. Further the result for hypothesis seven (H7) is similar with Kunz & Reiner 2012; Long & Wood 1995; Tomasini & Wassenhove (2004) that Adequate assistance from the government, fast customs clearing process, safety & security and flexibility of local governments will increase performance of humanitarian logistics. Also, the result for hypothesis eight (H8) is similar with study conducted by Wassenhove (2006) also supported that humanitarian logistics operates in such areas where roads are often inadequate, with fragmented technology and poorly defined manual processes. In addition, The study results for hypothesis eleven (H11) is similar with the study discussions that, this is due to the fact that humanitarian organizations that spend the least on overhead are often considered the most efficient and hence they hesitate to spend money on complex systems (Long, 1997). However, so long as humanitarian organizations want to improve their logistics performance, it is imperative for them to invest adequate funds on logistics systems and long term disaster preposition (Thomas & Kopczak 2005; Wassenhove 2006; Maon, Lindgreen & Vanhamme 2009). Whiting & Ostrom (2009) and Thomas (2003)

Also, the result shows that following hypothesis have not been supported by this study.

*H3. In Adequate Use of Information Technology has negatively and significantly effects on the performance of humanitarian logistics.*

*H4. Lack of Institutional learning negatively and significantly affects the performance of humanitarian logistics.*

*H9. Suitability of socioeconomic situational factors positively and significantly affect performance of humanitarian logistics.*

*H10. Suitability of environmental situational factors positively and significantly affect performance of humanitarian logistics.*

However, the study conducted by Demeke (2016) shows that *Institutional learning, Suitability of socioeconomic situational factors and Suitability of environmental situational factors have a positive and significant effect on the humanitarian logistics performance of IRC Ethiopia. This is therefore, the study result for Hypothesis four, nine and ten is not similar with the study conducted by Demeke (2016).*

Furthermore, it has been discussed that in adequate use of technology is also an important bottleneck for performance of humanitarian logistics. Even if the effectiveness of the information system is a key determinant of success of a humanitarian logistic and supply chain (Long & Wood 1995), this is not similar with the study result for hypothesis thee (H3).

Finally, the study result findings are summarized and presented here in the below table 4.10.

**Table 4. 10:** summary of findings and hypothesis test summary

<b>Objective</b>	<b>Indictors</b>	<b>Result/ Extent</b>
Objective 1; To assess the humanitarian logistics practice of the International Medical Corps (IMC's)	Situation Analysis	Great extent
	Procurement	Great extent
	Transport	Great extent
	Warehouse Management	Great extent
	Distribution Management	Great extent
	<b>Proxy</b>	<b>Results</b>
Objective 2;To examine the effect of internal factors on the humanitarian logistics	Lack of Recognition of logistics	(-) and in significant
	Un Availability of Professional Staff	(-) and significant
	In Adequate Use of Information Technology	(+) and in significant

performance of international medical corps	Lack of Institutional learning	(-) in and significant
	Lack of Adequate Collaboration	(-) and significant
	Measuring Performance of humanitarian logistics	(+) and significant
Objective 3; To examine the effect of external factors on the humanitarian logistics performance of International Medical Corps (IMC's).	Suitability of government situational factors	(+) and significant
	Suitability of infrastructural situational factors	(+) and significant
	Suitability of socioeconomic situational factors	(+) and in significant
	Suitability of environmental situational factors	(-) and in significant
	Sufficiency of donors funding	(+) and significant
Objective 4; To measure the International Medical Corps (IMC's) humanitarian logistics performance	Reliability	Moderately extent
	Agility	Moderately extent
	Cost	Moderately extent
	Responsiveness	Moderately extent
	Asset Management	Moderately extent

## **CHAPTER FIVE**

### **SUMMARY CONCLUSION AND RECOMMENDATION**

#### **INTRODUCTION**

The section provides summarized views of study; it presents the conclusion and proposals made based on the results obtained from the study. It looks at research limitations and also looks at suggestions for further research.

#### **5.1 SUMMARY OF FINDINGS**

It is the finding of the study that a great number of participants were male. Also a great number of participants had first degree holders and no one attained below higher education level. In addition, a great number of participants had age group from 30 to 40 and a great number of participants had work experience on logistics organization above two years.

The study shows that the practices of Situation Analysis, Procurement, Transport, Warehouse Management and Distribution Management of IMC were great extent.

Further, the result shows that from the postulated five internal factors only three (H1, H2 and H5) hypothesis have been supported by the study. As a result, (H1) Lack of Recognition of logistics negatively and significantly affects the performance of humanitarian logistics. (H2) Un Availability of Professional Staff negatively and significantly affects the performance of humanitarian logistics. and (H5) Adequate Collaboration positively and significantly affects the performance of humanitarian logistics. However, the result shows that H3 and H4 were not supported by the study. His is therefore, In Adequate Use of Information Technology has no negatively and significantly effects on the performance of humanitarian logistics and Lack of Institutional learning does not negatively and significantly affects the performance of humanitarian logistics.

Furthermore, the result shows that from the external factors four hypothesis (H6, H7, H8 and H11) have been supported by the study. As a result, (H6) Measuring Performance of humanitarian logistics is positively and significantly affected by measuring its performance. (H7) Suitability of government situational factors positively and significantly affects performance of humanitarian logistics. (H8) Suitability of infrastructural situational factors positively and significantly affects performance of humanitarian logistics. (H11) Sufficiency of donors funding positively and significantly affect performance of humanitarian logistics. However, H9 and H10 were not supported by the study. This is therefore, (H9) Suitability of socioeconomic situational factors does not positively and significantly affect performance of humanitarian logistics and (H10) Suitability of environmental situational factors does not positively and significantly affect performance of humanitarian logistics.

In addition, the study result shows that the IMC performance in terms of reliability, agility, cost, responsiveness and asset Management were moderate. Further, the study shows that the overall performance of IMC was moderate.

## **5.2 CONCLUSION**

The study shows that the practices of Situation Analysis, Procurement, Transport, Warehouse Management and Distribution Management of IMC were great extent. It can be concluded that the humanitarian logistics practice of the International Medical Corps was great.

As per the study result, seven hypotheses among the total eleven hypotheses have been supported. Those are listed as follows based on their significance level: lack of collaboration, adequate donor funding, infrastructural situational factor, unavailability professional staff, government situational factors, Measuring the performance of humanitarian logistics and lack of recognition of logistics. Further, the study shows that the remaining factors have positive relationship with dependent variable except the environmental situational factors which is positive and insignificant.

In addition, the study result shows that the IMC performance in terms of reliability, agility, cost, responsiveness and asset Management were moderate. It can be concluded that the study shows that the overall performance of IMC was moderate.

### **5.3 RECOMMENDATION OF THE STUDY**

The study shows that the practices of Situation Analysis, Procurement, Transport, Warehouse Management and Distribution Management of IMC were great extent.. It can be concluded that the humanitarian logistics practice of the International Medical Corps was great. as a result the study recommends the organization to improve the practice to step up to the next extent (Very great).

As per the study result, seven hypotheses among the total eleven hypotheses have been supported. Those are listed as follows based on their significance level: lack of collaboration, adequate donor funding, infrastructural situational factor, un availability professional staff, government situational factors, Measuring the performance of humanitarian logistics and lack of recognition of logistics. This this therefore, the study recommends the case organization and other concerned bodies to cooperate and invest more on those seven factors.

In addition, it can be concluded that the study shows that the overall performance of IMC was moderate. This is therefore; the study recommends improving their performance and investing more so as to save beneficiaries.

### **5.4 SUGGESTIONS FOR FUTURE DIRECTION**

This research was conducted in a single humanitarian organization where the scope is very limited. Accordingly, it is advised for future researchers include other organizations by including other performance indicators. In addition, this study not supported the four hypotheses (H3, H4, H9 and H10). the study therefore, recommends an additional research assessing the effect of those factors on the other case organizations .

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## Annex I: DATA SOURCE SUMMARY

S/N	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	y
1	3.600	4.400	3.800	3.800	4.000	2.000	2.000	2.600	2.800	2.600	2.800	2.720
2	3.600	4.400	3.000	3.000	4.000	2.200	2.400	2.600	3.600	3.400	3.800	2.751
3	3.600	4.400	3.600	2.800	4.000	2.600	2.400	2.600	2.200	4.400	2.800	2.751
4	3.400	4.400	2.400	1.400	4.000	2.400	2.400	2.600	3.800	3.600	3.000	2.751
5	3.400	4.400	2.000	2.200	4.000	2.800	2.800	2.600	2.000	4.400	2.800	2.774
6	3.200	4.400	2.200	1.200	4.000	3.200	2.800	2.600	3.000	4.400	3.600	2.799
7	3.200	4.400	1.600	1.800	4.000	3.400	3.000	2.600	2.400	2.600	3.200	2.783
8	3.200	4.400	2.800	2.800	4.000	3.200	2.800	2.600	2.800	3.600	3.800	2.815
9	2.800	4.400	3.200	2.400	4.000	3.600	3.000	2.600	3.200	4.400	3.800	2.815
10	2.600	4.400	4.200	3.000	4.000	4.200	3.000	3.200	3.400	3.400	3.800	2.844
11	2.800	4.400	3.600	3.800	4.000	4.200	3.000	2.600	3.600	2.600	2.800	2.815
12	2.400	4.400	3.800	3.000	4.000	4.200	3.000	3.400	2.200	4.400	3.800	2.853
13	2.400	4.000	3.600	3.800	4.000	4.200	3.200	3.400	3.200	2.600	3.800	2.874
14	2.200	3.800	2.400	2.800	3.800	3.400	3.200	3.400	3.000	2.600	3.800	2.887
15	2.400	4.000	2.800	1.400	4.000	3.200	3.200	3.400	2.800	4.400	3.800	2.874
16	2.200	3.800	2.200	1.800	3.600	3.400	3.400	3.400	3.200	4.400	3.800	2.901
17	2.000	3.800	1.600	1.400	3.400	3.200	3.600	3.600	2.200	3.600	3.800	2.925
18	2.000	3.800	3.400	2.200	3.000	2.600	3.600	3.600	3.800	4.000	3.800	2.938
19	2.000	3.800	2.800	2.800	3.400	1.800	3.600	3.600	3.000	3.600	3.800	2.925
20	1.800	3.800	3.600	3.800	3.000	2.400	3.600	3.600	3.400	2.600	3.800	2.938
21	1.400	3.600	4.200	3.000	3.000	1.800	3.800	3.600	2.600	4.400	3.800	2.952
22	1.400	3.600	4.000	2.200	3.000	3.400	3.800	3.600	2.000	4.200	3.800	2.952
23	1.000	3.600	2.200	3.800	3.000	1.800	3.800	3.600	3.000	2.600	3.800	2.952
24	1.000	3.600	3.600	3.000	3.000	1.400	3.800	3.800	2.800	3.600	3.800	2.962
25	1.800	3.600	3.000	3.200	3.000	2.400	4.200	3.800	3.400	3.600	4.000	2.970
26	2.000	3.400	2.000	2.800	3.000	2.600	4.000	3.800	1.600	2.600	4.200	2.992
27	1.800	3.600	2.400	2.000	3.000	3.200	3.800	3.800	3.400	4.000	4.200	2.978
28	2.000	3.400	1.600	2.200	3.000	2.600	3.800	3.800	2.800	4.400	4.400	3.008
29	2.000	3.400	2.200	1.000	3.000	3.200	4.400	3.800	3.200	2.600	4.600	3.024
30	2.200	3.400	3.600	3.200	3.000	3.400	4.400	4.200	3.000	3.400	4.800	3.051
31	2.200	3.400	2.800	2.800	3.000	4.200	4.400	3.800	2.600	4.400	4.800	3.032
32	2.400	3.400	3.600	3.800	3.000	3.400	4.400	4.200	3.400	3.800	4.800	3.051
33	2.400	3.000	4.200	3.000	3.000	4.200	4.400	4.400	2.000	3.800	4.800	3.074
34	2.800	2.600	3.000	3.200	3.000	4.200	4.400	4.400	3.400	2.600	4.800	3.088
35	2.600	2.600	3.800	2.800	3.000	3.400	5.000	4.400	2.200	2.600	4.800	3.088
36	2.800	2.600	2.400	3.000	3.000	4.200	4.600	4.400	3.200	4.400	4.800	3.095
37	3.200	2.600	1.600	2.000	2.800	3.400	4.600	4.400	2.800	3.600	4.800	3.102
38	3.200	2.600	2.000	1.400	2.000	3.200	4.400	4.400	2.600	3.600	4.800	3.143
39	3.200	2.600	2.200	2.000	2.600	2.800	4.800	4.400	3.200	3.800	4.800	3.116
40	3.200	2.600	2.800	1.400	2.000	3.200	5.000	4.400	2.000	2.600	4.800	3.143
41	3.400	2.600	3.800	2.800	2.000	2.600	5.000	4.400	3.800	2.600	4.800	3.143
42	3.600	2.400	3.400	3.000	2.000	2.400	5.000	4.400	2.600	3.800	4.800	3.150
43	3.400	2.600	4.200	1.400	2.000	1.400	5.000	4.400	3.400	4.400	4.800	3.143
44	3.600	2.200	3.200	3.200	2.000	1.800	5.000	4.400	3.000	3.600	4.800	3.156
45	3.600	2.600	4.200	3.200	2.000	1.800	5.000	4.400	3.000	3.400	4.800	3.143
46	3.400	2.600	3.000	3.800	2.000	3.400	5.000	4.400	3.200	3.800	4.800	3.143
47	3.600	2.600	3.600	2.800	2.000	1.800	5.000	4.400	2.000	3.600	4.800	3.143
48	3.400	2.600	2.600	2.800	2.000	2.600	5.000	4.400	3.600	2.600	4.800	3.143
49	3.200	2.600	2.000	1.000	2.200	3.200	4.800	4.400	3.000	4.400	4.800	3.129
50	3.200	2.600	2.200	2.000	2.800	2.400	4.600	4.400	2.000	4.400	4.800	3.102
51	3.200	2.600	1.000	1.400	2.400	3.200	4.800	4.400	2.600	2.600	4.800	3.122
52	3.200	2.600	2.800	2.200	3.000	3.400	4.600	4.400	2.600	2.600	4.800	3.095
53	2.800	2.600	3.000	3.000	3.000	3.800	4.400	4.400	2.800	4.200	4.800	3.088
54	2.600	3.200	4.200	2.800	3.000	3.400	4.400	4.400	3.400	3.400	4.800	3.068
55	2.800	2.600	3.600	3.400	3.000	3.600	4.400	4.400	2.600	4.400	4.800	3.088
56	2.400	3.400	4.000	3.800	3.000	3.600	4.400	4.400	3.800	4.400	4.800	3.061
57	2.400	3.400	3.600	3.000	3.000	4.200	4.400	4.000	3.800	2.600	4.800	3.042
58	2.200	3.400	2.400	3.200	3.000	3.800	4.400	3.800	2.000	3.400	4.600	3.024
59	2.200	3.400	3.000	2.800	3.000	4.200	4.400	4.000	3.600	4.400	4.800	3.042
60	2.000	3.400	2.000	2.000	3.000	3.200	4.200	3.800	2.200	3.600	4.600	3.017
61	2.000	3.600	1.600	1.400	3.000	3.400	4.000	3.800	3.200	3.800	4.200	2.986
62	1.800	3.600	2.800	1.400	3.000	3.200	3.800	3.800	2.000	4.400	3.800	2.962
63	2.000	3.600	2.200	2.000	3.000	2.400	3.800	3.800	3.800	3.000	4.200	2.978
64	1.400	3.600	3.000	2.800	3.000	1.800	3.800	3.800	3.200	2.600	3.800	2.962
65	1.000	3.600	3.600	3.200	3.000	2.600	3.800	3.600	2.800	4.400	3.800	2.952
66	1.200	3.600	3.800	3.000	3.000	1.800	3.600	3.600	2.600	3.800	3.800	2.945
67	2.200	3.600	4.200	3.800	3.000	1.400	3.800	3.600	2.200	3.400	3.800	2.952
68	1.600	3.800	4.200	3.000	3.000	2.200	3.600	3.600	3.400	3.800	3.800	2.938
69	1.800	3.800	2.800	2.200	3.000	1.800	3.600	3.600	2.800	2.600	3.800	2.938
70	2.000	3.800	2.400	2.800	3.400	2.400	3.600	3.400	3.800	2.400	3.800	2.915
71	2.000	3.800	3.000	1.400	3.200	3.200	3.600	3.600	2.600	4.400	3.800	2.931
72	2.000	3.800	1.000	2.000	3.400	3.400	3.600	3.400	2.200	4.400	3.800	2.915
73	2.200	3.800	1.800	2.800	3.800	2.600	3.200	3.400	3.600	3.400	3.800	2.887
74	2.400	4.200	3.000	1.000	4.000	3.200	3.200	3.400	2.600	3.800	3.800	2.867
75	2.200	3.800	2.800	2.400	4.000	3.600	3.200	3.400	3.800	3.800	3.800	2.880
76	2.400	4.200	3.600	3.800	4.000	5.000	3.200	3.400	2.600	3.200	3.800	2.867
77	2.600	4.400	4.200	3.000	4.000	3.600	3.000	3.000	2.600	4.400	2.800	2.834
78	2.800	4.400	3.600	3.000	4.000	4.200	3.000	2.600	1.800	3.600	3.800	2.815
79	2.600	4.400	4.000	3.800	4.000	3.600	3.000	2.800	3.000	3.600	3.800	2.824
80	2.800	4.400	3.000	2.200	4.000	3.400	3.000	2.600	3.800	3.400	3.800	2.815
81	3.200	4.400	2.400	2.200	4.000	4.000	2.800	2.600	2.200	3.800	3.600	2.799
82	3.200	4.400	1.200	2.800	4.000	3.400	2.800	2.600	3.400	2.600	3.800	2.766
83	3.200	4.400	2.000	2.000	4.000	3.200	2.800	2.600	1.600	3.800	3.400	2.791
84	3.400	4.400	2.200	2.200	4.000	2.400	2.600	2.600	3.000	4.400	2.800	2.758
85	3.400	4.400	2.800	3.000	4.000	3.200	2.400	2.600	3.400	2.200	2.800	2.751
86	3.600	4.400	3.600	1.400	4.000	2.600	1.800	2.400	3.200	3.400	2.800	2.710
87	3.600	4.400	3.000	2.800	4.000	1.800	2.400	2.600	3.000	4.400	2.800	2.751
88	3.600	4.400	4.200	3.600	4.000	1.800	1.800	2.200	1.800	4.000	2.800	2.700

## Annex II: Questionnaire

This questionnaire is divided into three sections. Section A will be used to obtain the general information about the respondent. Section B will be used to obtain the Humanitarian logistics management practices, factors affecting its performance, and finally section C is about the open ended question.

### Section A: General Information

1. Gender  
I. Female  II. Male
2. Age  
I. Under 20 Years Old  III. 20-30 Years Old   
II. 30-40 Years Old  IV. Over 40 Years Old
3. Educational Qualification:  
I. Grade 10 completed  IV. First Degree   
II. Grade 12 completed  V. Second Degree and above   
III. College Diploma
4. Years stayed at the organization:  
I. Less than 2 years  III. 6-10 Years   
II. 2-5 Years  IV. Over 10 Years
5. How long have you been working in humanitarian sector/relief chain operation?  
I. Under 2 Years  III. 6-10 Years   
II. 2-5 Years  IV. Over 10 Years

**Section B: Humanitarian logistics practices.**

Please indicate your choice by putting the tick mark (√) on the appropriate cell. Where,

**1** = No Extent , **2** = Small extent, **3** = moderately Extent **4** = Great extent, **5** = very great extent.

Variables	Items	scale				
		1	2	3	4	5
<b>Situation Analysis</b>	International medical corps assesses the situation in the affected area during disasters in terms of the volume and type of supplies needed.					
	International medical corps assesses the situation in the affected area in terms of how the supplies will be delivered					
	International medical corps assesses the security situation of the affected area before deployment of logistics staff and supplies.					
	International medical corps assesses the extent of damage and the possibility of reoccurrence of the disaster in advance of delivering supplies.					
	International medical corps assesses the situation in the affected area in view of its urgency.					
	International medical corps provides Service based on its situation assessment.					
<b>Procurement</b>	International medical corps establish a governing a supply chain council					
	Supplies that are required by International medical corps assessment team always match with supplies that are procured and/donated.					

	Procurement of supplies always match with the requested type and volume of supplies based on the information from the situation analysis team of International medical corps					
3. Transport	International medical corps uses all modes of transportation available for the movements of supplies and people					
	International medical corps delivers relief supplies to where they are required during emergencies.					
	there is a prequalified list of transport companies to IMC to choose from emergencies					
	International medical corps uses various transport optimization models to deliver supplies with the least cost possible					
4. Warehouse Management	International medical corps has consider a labour management tools to optimize performance					
	International medical corps warehouse have real actionable data					
	International medical corps warehouse is execute cycle counting operation to enhance inventory accuracy.					
5. Distribution Management	International medical corps distribution centres are well established to ease distribution and minimize cost of operation.					
	International medical corps distribution team has sufficient information as to whom the supplies should be delivered.					
	International medical corps distribution team clearly understands the urgency of the situation.					

	International medical corps distribution team is organized in such a way that on the spot situational decisions are encouraged to be made.					
	International medical corps gives appropriate training to the distribution team to make sure that they execute their duties at higher level of passion and commitment					

**C. Internal and external factors that affects the performance**

variables	Items	scale			
		1	2	3	4
<b>Lack of Recognition of logistics</b>	Lack of Recognition of the relief logistics requirements reduce the agility performance of IMC				
	Lack of Recognition of the relief logistics requirements increase the cost performance of IMC				
	Lack of Recognition of the relief logistics requirements reduce the responsiveness performance of IMC				
	Lack of Recognition of the relief logistics requirements reduce the reliability performance of IMC				
	Lack of Recognition of the relief logistics requirements reduce the asset management performance of IMC				
<b>Un availability of Adequate professional staff</b>	Un availability of Adequate professional staff reduce agility of IMCs humanitarian logistics performance				
	Un availability of Adequate professional staff reduce reliability of IMCs humanitarian logistics performance				
	Un availability of Adequate professional staff increase cost of IMCs humanitarian logistics performance				
	Un availability of Adequate professional staff reduce responsiveness of IMCs humanitarian logistics performance				

	Un availability of Adequate professional staff reduce asset management of IMCs humanitarian logistics performance				
<b>In Adequate use of information technology</b>	In adequate use of information technology reduce agility of IMC humanitarian logistics performance				
	In adequate use of information technology increase cost of IMC humanitarian logistics performance				
	In adequate use of information technology reduce responsiveness of IMC humanitarian logistics performance				
	In adequate use of information technology reduce asset management of IMC humanitarian logistics performance				
	In adequate use of information technology reduce reliability of IMC humanitarian logistics performance				
<b>Lack of Institutional learning</b>	Lack of institutional learning reduces agility of IMC humanitarian logistics performance				
	Lack of institutional learning increases cost of IMC humanitarian logistics performance				
	Lack of institutional learning reduces responsiveness of IMC humanitarian logistics performance				
	Lack of institutional learning reduces reliability of IMC humanitarian logistics performance				
	Lack of institutional learning reduces asset management of IMC humanitarian logistics performance				
<b>Lack of Collaboration</b>	Lack of collaboration among humanitarian chain actors reduce agility of IMC humanitarian logistics performance				
	Lack of collaboration among humanitarian chain actors increase cost of IMC humanitarian logistics performance				
	Lack of collaboration among humanitarian chain actors reduce responsiveness of IMC humanitarian logistics performance				
	Lack of collaboration among humanitarian chain actors reduce reliability of IMC humanitarian logistics performance				

	Lack of collaboration among humanitarian chain actors reduce asset management of IMC humanitarian logistics performance					
<b>Measuring performance of logistics</b>	Measuring performance of logistics increase agility of IMC humanitarian logistics performance					
	Measuring performance of logistics increase asset management of IMC humanitarian logistics performance					
	Measuring performance of logistics reduce cost of IMC humanitarian logistics performance					
	Measuring performance of logistics increase responsiveness of IMC humanitarian logistics performance					
	Measuring performance of logistics increase reliability of IMC humanitarian logistics performance					
<b>Government situational factors</b>	Government situational factors increase agility of IMCs humanitarian logistics performance					
	Government situational factors reduce cost of IMCs humanitarian logistics performance					
	Government situational factors increase responsiveness of IMCs humanitarian logistics performance					
	Government situational factors increase reliability of IMCs humanitarian logistics performance					
	Government situational factors increase asset management of IMCs humanitarian logistics performance					
<b>Infrastructural situational factor</b>	Provision of infrastructural situational factor increase agility of IMCs humanitarian logistics performance					
	Provision of infrastructural situational factor reduce cost of IMCs humanitarian logistics performance					
	Provision of infrastructural situational factor increase responsiveness of IMCs humanitarian logistics performance					

	Provision of infrastructural situational factor increase reliability of IMCs humanitarian logistics performance				
	Provision of infrastructural situational factor increase asset management of IMCs humanitarian logistics performance				
<b>Socioeconomic situational factor</b>	Socioeconomic situational factor increase agility of IMCs humanitarian logistics performance				
	Socioeconomic situational factor reduce cost of IMCs humanitarian logistics performance				
	Socioeconomic situational factor increase responsiveness of IMCs humanitarian logistics performance				
	Socioeconomic situational factor increase reliability of IMCs humanitarian logistics performance				
	Socioeconomic situational factor increase asset management of IMCs humanitarian logistics performance				
<b>Environmental situational factor</b>	Environmental situational factors increase agility of IMCs humanitarian logistics performance				
	Environmental situational factors reduce cost of IMCs humanitarian logistics performance				
	Environmental situational factors increase responsiveness of IMCs humanitarian logistics performance				
	Environmental situational factors increase reliability of IMCs humanitarian logistics performance				
	Environmental situational factors increase asset management of IMCs humanitarian logistics performance				
<b>Adequate donors funding</b>	Adequate donors funding availability increase agility of IMC humanitarian logistics performance				
	Adequate donors funding availability reduce cost of IMC humanitarian logistics performance				
	Adequate donors funding availability increase responsiveness of IMC humanitarian logistics performance				

	Adequate donors funding availability increase reliability of IMC humanitarian logistics performance					
	Adequate donors funding availability increase asset management of IMC humanitarian logistics performance					

#### D. Humanitarian Logistics Performance of international medical corps

variables	Items	scale				
		1	2	3	4	5
Reliability	IMC delivers relive logistics (right supplies) considering the demographic profile (religion and culture)of the beneficiaries					
	IMC delivers relief logistics to exact destination where beneficiaries are available within 72 hours of the disaster strike and deploy relief personnel within 48 hours of the disaster strike					
	International medical corps fulfils all the requested demands.					
	All the supplies are delivered at the right time in order that beneficiaries are properly aided by international medical corps					
	The supplies delivered by international medical corps are in a damage-free state with the correct configuration and hence no return or replacement is required.					
	There are no complaints reported during the execution of the relief operation in distribution of relief items by international medical corps.					
Agility	The type of supplies required may change from the initial request during assessment and still can be absorbed by international medical corps l without any problem.					
	The volume of supplies required may change from the initial request during assessment and still can be absorbed by international medical corps without any problem					
	international medical corps is flexible in a way it addresses unplanned demand requests					

	International medical corps accommodates in any change in terms of types of relief logistics supplies.				
Cost	International medical corps is good at managing all the costs that arise from all its activities in supplying and distributing material to where needed.				
	There are systems designed by international medical corps to make sure that the optimum cost is incurred.				
	International medical corps recognizes cost management and optimization as important issues in its operations.				
	Distribution of supplies by international medical corps is made with optimum cost				
	Costs related to wrong supplies and quantities doesn't exist in international medical corps				
	Costs related to damaged supplies doesn't exist in international medical corps				
	international medical corps applies cost cutting measures to reduce total cost in its operations				
Responsiveness	All requested relief items are delivered at the right time				
	Decisions at all levels to expedite the logistics operations in international medical corps are made instantaneously.				
	there is proper follow-up of speeds of responding to the requests at any level of relief operations by IMC				
Asset Management	The supplies are stored in international medical corps warehouse at the right quantity at any time				
	It takes very short time for international medical corps to avail supplies and deliver them to the beneficiaries.				
	international medical corps cost of carrying supplies in the warehouse is very small				

	Most packaging/shipping materials used by international medical corps are reusable.					
	There is no excess inventory in international medical corps					