An-Najah National University

Faculty of Graduate Studies

Investigating Factors Affecting Humanitarian Logistics Operations in the West Bank – Palestine

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This Thesis was successfully defended on: / /2019, and was approved by:

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1. Dr. / Supervisor	.....
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3. Dr. / Internal Examiner	.....

Dedication

- ***To my great religion... the Islamic religion and to my idol and first teacher... Prophet Muhammad, peace be upon Him***
- ***To my great home (Palestine), and my great people who are looking for peace and freedom***
- ***To my father and my brother ... may their souls rest in peace.***
- ***To my beloved mother and my sincere and beloved wife who support me and never give up believing in my abilities even when I doubt myself.***

(Thank you for everything)

Acknowledgment

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Thanks to my family, friends and colleagues for their encouragement and support, they gave me at every stage of this research.

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الإقرار

أنا الموقع أدناه، مقدم الرسالة تحمل العنوان:

استكشاف العوامل المؤثرة على اللوجستيات الإنسانية في الضفة الغربية في فلسطين

أقر بأن ما اشتملت عليه هذه الرسالة إنما هو نتاج جهدي الخاص، باستثناء ما تمت الإشارة إليه حيث أن هذه الرسالة كاملة، أو أي جزء منها، لم يقدم من قبل لنيل أي درجة أو لقب علمي أو بحث لدى أي مؤسسة تعليمية أو بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name: Rafat Kittaneh **اسم الطالب: رأفت كتانة**

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Date: **التاريخ:**

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Investigating Factors Affecting Humanitarian Logistics Operations in the West Bank - Palestine

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Abstract

During the past twenty years, global interest in issues related to humanitarian logistics has increased drastically, especially after the parties involved in the disaster risk management processes developed a solid awareness of the fact that the core concept of disaster risk management involves rapid response through developing systematic processes that are able to respond rapidly to unpredictable events. Building up a humanitarian logistics system is the first step towards rapid response planning in case of a disaster. Particularly, response and relief activities are always united with logistics and form the lifeblood of disaster risk management and the heart of response operations.

Logistics operations are the most crucial elements in disaster response operations. Successful logistics operations mean fewer losses, more saving of lives, stopping or minimizing deterioration, and rapid recovery.

Therefore, the humanitarian logistics context and its factors, barriers, and challenges in the West Bank of Palestine need to be investigated. The aim of this study is to investigate the factors affecting humanitarian logistics resulting in the creation of critical challenges, including demand surge, uncertain supplies, critical time, damaged infrastructure, vast scope, huge operation size under complex, chaotically circumstances, and results of Israeli occupations obstacles and challenges.

An exploratory research investigation using structured questionnaires with semi-structured interviews is used. This research discusses the factors, barriers, and challenges affecting the efficiency of humanitarian logistics operations in the West Bank of Palestine based on the findings of the literature review, eleven semi-structured interviews, and questionnaires submitted to 118 participants from around 93 different institutions distributed over the different geographic areas of the West Bank. The results of this research show that all studied factors were valid in the studied area and create a challenge impeding the efficiency of humanitarian logistics.

This study discusses the role of humanitarian logistics factors at each phase of the disaster risk management process (before, during, and after the disaster) and their impacts on the efficiency of humanitarian logistics.

The results of hypotheses testing show that there is a statistically significant relationship between humanitarian logistics factors and the efficiency of humanitarian logistics operations. Furthermore, the study provides a model that represents interested parties who need to work together to processes the humanitarian logistics factors in order to improve its efficiency at each phase and sub-phase of the disaster risk management process.

Finally, the study is expected to provide useful information to guide future research based on the results of this research.

Chapter One

Introduction

Chapter One

Introduction

1.1 Chapter Overview

This chapter provides a general overview of the research. It is consists of a brief introduction, problem statement, objectives of the research, research questions and hypotheses, and finally an overview of the thesis structure.

1.2 Background

When a disaster hits a community, an instant response of rescue and evacuation operations, and resources allocation is rapidly and effectively initiated in order to help the affected victims. The response should be suitable for the disaster type and its characteristics, and the main objective of the effective response should focus mainly on stopping or minimizing the deterioration of the disaster itself **(Alexander, 2015; Koseoglu & Yıldırımlı, 2015; Dynes, 2002).**

To achieve the required efficiency, disaster risk management and response institutions have to manage their resources in a manner that enables them to achieve their objectives at all phases of the disaster risk management process; before, during and after the disaster. Therefore, institutions have to plan and manage logistics in each phase of disaster risk management, as it constitutes one of the most dominant factors affecting resources utilization **(Alexander, 2015; Koseoglu & Yıldırımlı, 2015).**

Humanitarian Logistics is defined as the process of planning, investigating, and controlling the efficient flow and storage of goods and materials, based

on information, from the point of storage to the point of consumption for the purpose of palliative the suffering of vulnerable people **(USAID, 2011)**. Also, it is defined as systems and operations of rescue and evacuation of affected people, utilizing resources, proficiency, expertise, and knowledge to help vulnerable or affected people by the disaster **(Rao 2017, Wassenhove, 2006).**

It should be emphasized that the main core concept of disaster risk management is rapid response, in other words, how systematic processes can be developed to be able to respond rapidly to unpredictable events (Apte, 2009). In fact, building up a humanitarian logistics system is the first step of rapid response planning for a disaster (Amadou & Karduck, 2012). Particularly, response and relief activities are always united with logistics **(Alexander, 2015; Jock & Keith, 2013).**

Furthermore, humanitarian logistics is a keyword in successful relief processes. In other words, humanitarian logistics play important role in the management of the response supply chain (Jock & Keith, 2013). This means that the success or failure of emergency operations can be determined by logistics since aid, relief efficiency, and speed all depend on logistics **(Agostinho, 2013).**

Humanitarian logistics not only form a success factor in relief operations, but also their data reflects the aspects of all humanitarian relief processes implementation, such as supplier effectiveness, transportation, reallocation, cost, response timeline, suitability of donated goods and services to the affected community, and information management approach. Hence,

logistics is considered an important store of data and information that can be very useful in conducting analysis and in extracting learning lessons for future improvements. Logistics is a very crucial and serious issue for current and future humanitarian operations **(Thomas & Kopczak, 2005).**

However, neglecting logistics in disaster risk management is a very dangerous issue, it leads to catastrophic impacts and combined disasters. Without logistics, it is impossible to transit from the preparedness phase to the response phase. Furthermore, without logistics there will be no rapid and effective response to humanitarian needs such as providing nutrition, health care, shelters, water, and sanitation. It is also the method used in handling humanitarian needs through the supply chain, starting from warehouse to consumption points **(Thomas & Kopczak, 2005).**

After a disaster attacks a region, immediate actions are required. First, emergency systems should be activated **(Apte, 2009).** Then, rapid exploring of the size of damages, number of victims and their needs will be conducted. After that, logistics teams should be formed in order to transfer rescue stuff, doctors, nursing teams, and relief materials to victims in the affected areas **(Agostinho, 2013).** This should happen within 12 to 36 hours of the disaster. Number of staff and the transfer of vast volumes of materials are considered highly challenging, causing bottlenecks in access points and critical obstacles hamper the implementation of planned response and relief operations **(Agostinho, 2013; Apte, 2009).**

Humanitarian logistics is a vast scale displacement operation of victims and their needs. This scale creates complex conditions with hard challenges

(Agostinho, 2013; Apte, 2009; Gustavsson, 2003). Complexity comes as a result of interaction between many factors, such as damaged roads and the lack of fuel, suitable vehicles, facilities for storage and transfer, which have been destroyed or looted, speed of relief items delivery, people movement or evacuation, movement of humanitarian stuff, NGOs capacity difference, lack of logistics knowledge, technology and communication difficulties, and funding problems **(Gustavsson, 2003)**.

Moreover, humanitarian logistics has to work perfectly in very hard and difficult conditions, as well as in complex context. This is due to the challenges of sudden variation in circumstances in random and dynamic ways, which creates complex factors with negative impacts on logistics operations such as uncertain supplies with surge urgent demand, critical time, collapsed or damaged infrastructure, and huge scopes and operations size **(Jock & Keith, 2013).**

Additionally, humanitarian logistics context is very complex due to a number of combined barriers and factors, such as the availability of robust equipment that can be set up or disassembled quickly based on working conditions, an incompatible technology used by different players, unsteady political conditions, uncertain situation assessment, surge demand, supplier's uncertainty, time, and staff turnover **(Wassenhove, 2006).**

As a matter of fact, humanitarian logistics face many types of challenges, which were categorized in four main issues **(Fritz, 2005):** First, logistics experts' shortage; Second, inappropriate assessment and planning; Third, limited and restricted collaboration and coordination; Fourth, manually

operated supply chain **(Fritz, 2005).** Furthermore, challenges posed by humanitarian logistics were categorized into different issues with different point of view based on the phases of disaster risk management. According to Apte (2009), challenges are: Firstly, challenges in the preparedness phase, such as facility allocation, logistic planning, and resource allocation; Secondly, challenges in the response phase, such as inventory management, distribution of facilities, handling relief materials, and decision making (uncertainty and lack of data and information); Thirdly, challenges in the relief operations phase, such as transportation and evacuation challenges. In another point of view, challenges are distinguished based on organizational perspectives such as challenges arising from field of cooperation between players, training and educating staffs, donations and donors, and information management **(Kovács & Spens, 2009; Apte, 2009).** As mentioned before, challenges are a mixture of complex combinations between those issues and factors **(Wassenhove, 2006)**.

In developing countries, there are many deficiencies in the country's structures, especially in fields of economy, health, and education **(Chair, 2004; Sienou & Karduck, 2012)**.These defects create challenges that are very similar in all developing countries (Amadou & Karduck , 2012). Therefore, middle income or developing countries usually suffer from high losses due to disasters. Such high numbers of losses are due to the absence of disaster risk measures in governmental policies and programs **(Rodriguez et al., 2009).** This makes communities vulnerable and very sensitive to disasters **(Rodriguez et al., 2009; Sienou & Karduck, 2012).**

In fact, disaster risk management processes need highly professional coordination abilities, accurate resources quantification and identification, sufficient procurement systems, storage, distribution system and facilities, as well as tracking systems and transportation infrastructures. All of those requirements are very costly and create hard challenges on the weak economies of developing countries **(Apte, 2009; Sienou & Karduck, 2012).** Disasters have unequal impact on communities across the world; developing countries are the most widely affected regions **(Rodriguez, et al., 2009; Tatham & Houghton, 2011).** Palestine is a developing country that is facing political, economic and social barriers, leading to difficult challenges in governance, development, sustainability, and disasters risk reduction (Hawajri, 2016). Therefore, Palestine is classified as fragile state with medium vulnerability index scores **(GHA, 2014).** Similarly, all developing countries are vulnerable to different types of natural or man-made disasters and have similar problems or defects in their own structure **(Amadou & Karduck, 2012).** Therefore, challenges can be easily generalized on the Palestinian case.

In addition to the fragile structure of the Palestinian State, which is also facing ongoing conflicts, rapid unplanned urbanization, the limitation of resources and logistics, complex geopolitical situation, very weak socio-economical, and environmental situation, all previous factors are creating challenges for the government in integrating disaster risk reduction strategies in their development plans and policies at all levels of Palestinian community management **(Hawajri, 2016).**

Furthermore, logistics (commercial and humanitarian) in Palestine is facing difficulties referring to absolute dominant of the Israeli military army on cross point, forcing Palestinians to transfer good from one truck to another on crossing points coming in from Israel to the West Bank, for security reasoning. In addition, hard crossing procedures are being applied, which causes a delay in delivering relief materials to victims during disasters **(USAID, 2009)**.

This research aims at studying the barriers of humanitarian logistics in the areas of the West Bank in Palestine.

1.3 The Research Problem

Logistics operations are the most crucial element in disaster response operations. Successful logistics operations mean fewer losses, more saving of lives, stopping or minimizing deterioration, and rapid recovery **(Amadou & Karduck , 2012; Apte, 2009; Dynes, 2002; Agostinho, 2013; Jock & Keith , 2013; Wassenhove, 2006).**

However in occupied countries logistics is more sophisticated. This is the case in Palestine, which is an occupied state and the government does not have sovereignty over the land. Furthermore, Palestine has a weak economy that is based on international funds influenced by the political situation at hand **(DANIN, et al., 2012; OCHA, 2010).** In addition, Israeli restrictions on Palestinian trades and industries, and the fact that the majority of Palestinian resources are completely under Israeli military control, all directly affect the welfare of the community's infrastructure (Sherwood,

2013). So, the humanitarian situation in Palestine is more complex and poorer than any other developing countries **(UNICEF, 2017).** In case of any disaster, the situation will be worse and worse **(OCHA, 2016).** Humanitarian logistic operations in Palestine are facing challenges and obstacles more than any other place in the world **(OCHA, 2010, OCHA, 2016).** In addition to common challenges in developing countries, there are also specific challenges for the Palestinian case, which come as a result of the Israeli occupation. Obviously, the absence of sovereignty of the Palestinian authority over the land affects any humanitarian operations in the West Bank. Similarly, as other developing countries, poor resources, shortage in professional staff, high physical and institutional vulnerability, and the high dependency of NGOs and private sector in urgent time form big challenges **(OCHA, 2010)** . Moreover, there are the accessibility and movement obstacles faced by different humanitarian staff especially national staff due to Israeli restrictions, in addition to other restrictions on the types of needed relief materials, obstacles on materials delivery, and preventing humanitarian organizations from providing assistance **(OCHA, 2016).**

Therefore, the aim of this study is to investigate the factors affecting humanitarian logistics and result in the creation of critical challenges, including demand surge, uncertain supplies, critical time, damaged infrastructure, vast scope, huge operation size under complex, chaotically circumstances, and results of Israeli occupations obstacles and challenges.

1.4 Research Questions and Objective

The aim of this research is to investigate the factors affecting humanitarian logistics operations in the West Bank – Palestine. This can be realized by meeting the two main objectives of the study. First, identifying challenges of humanitarian logistics operations, which can cause failures in emergency response situations by observing the factors from literatures and experts interviews. Second, identifying the helping factors, which can improve humanitarian logistics operations by testing the validity of observed factors in the West Bank of Palestine to be maintained and to improve the efficiency of humanitarian logistics services. To achieve the objective of the research, the research will provide the answer to the first research question:

- ***What are the factors affecting humanitarian logistics operations in the West Bank?***

The expected research outcome is a comprehensive humanitarian logistics efficiency managerial tool that can be used by planners and logistics administrators to help them in modifying and improving their operations and setting up systematic processes models. This model is the expected outcome of the second research question:

- ***What model should be adopted by individuals working in the field of Humanitarian Logistics in Palestine in order to improve their performance?***

The aim and two main objectives of this research, as well as the expected outcomes are illustrated in Figure (1-1).

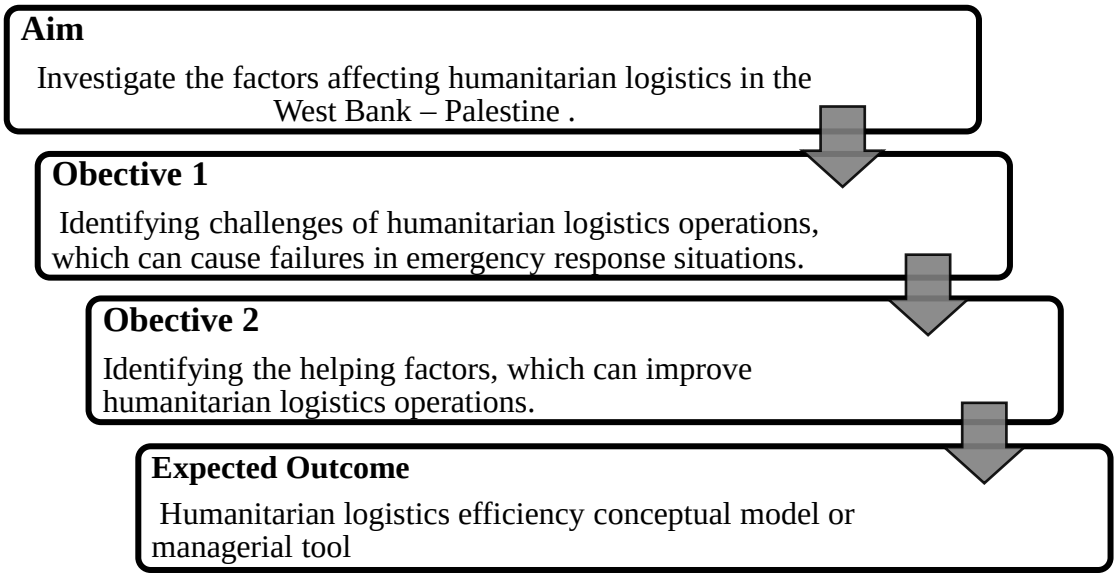

Figure (1.1) Aim, Objectives & Expected Outcomes of the Research

1.5 Research Hypotheses

To attain the study's aim of investigating the factors affecting humanitarian logistics in the West Bank – Palestine, the validity in West Bank for observed factors affecting the efficiency of humanitarian logistics should be tested. Then, the effect of those factors on the efficiency of logistics operations in its different phases needs to be tested in order to assess the relationships between the efficiency of disaster risk management phase and its logistics factors. For this purpose, the main hypothesizes of this research are:

- Poor humanitarian logistics factors in the preparedness phase affecting negatively on the efficiency of humanitarian logistics.
- Poor humanitarian logistics factors in the response phase affecting negatively on the efficiency of humanitarian logistics.
- Poor humanitarian logistics factors post-disaster phase affecting negatively on the efficiency of humanitarian logistics.

Based on the assumption that humanitarian logistics factors affecting negatively on the efficiency of humanitarian logistics at all phases, the following research sub-hypotheses have been used and represented in figure 1.2:

- **H1:** Poor planning for humanitarian logistics in preparedness phase has a significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.
- **H2**: Weak governmental, organizational and infrastructure in preparedness phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.
- **H3:** Poor technical operations in preparedness phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.
- **H4:** Poor efficiency of Humanitarian logistics in preparedness phase has significant and negative impact on humanitarian logistics efficiency in response phase in the West Bank of Palestine.
- **H5**: Poor procedures of emergency systems activation in the response phase have a significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.
- **H6:** Weak governmental, organizational and infrastructure factors in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

- **H7:** Poor technical operations in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.
- **H8:** Poor efficiency of humanitarian logistics in response phase has significant and negative impact on humanitarian logistics efficiency in recovery phase in the West Bank of Palestine.
- **H9:** Poor planning in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.
- **H10:** Weak governmental, organizational and infrastructure factors in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.
- **H11:** Poor technical operations in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.
- **H12:** Poor efficiency of humanitarian logistics operations in the preparedness phase has significant and negative impact on humanitarian logistics efficiency in recovery phase in the West Bank of Palestine.

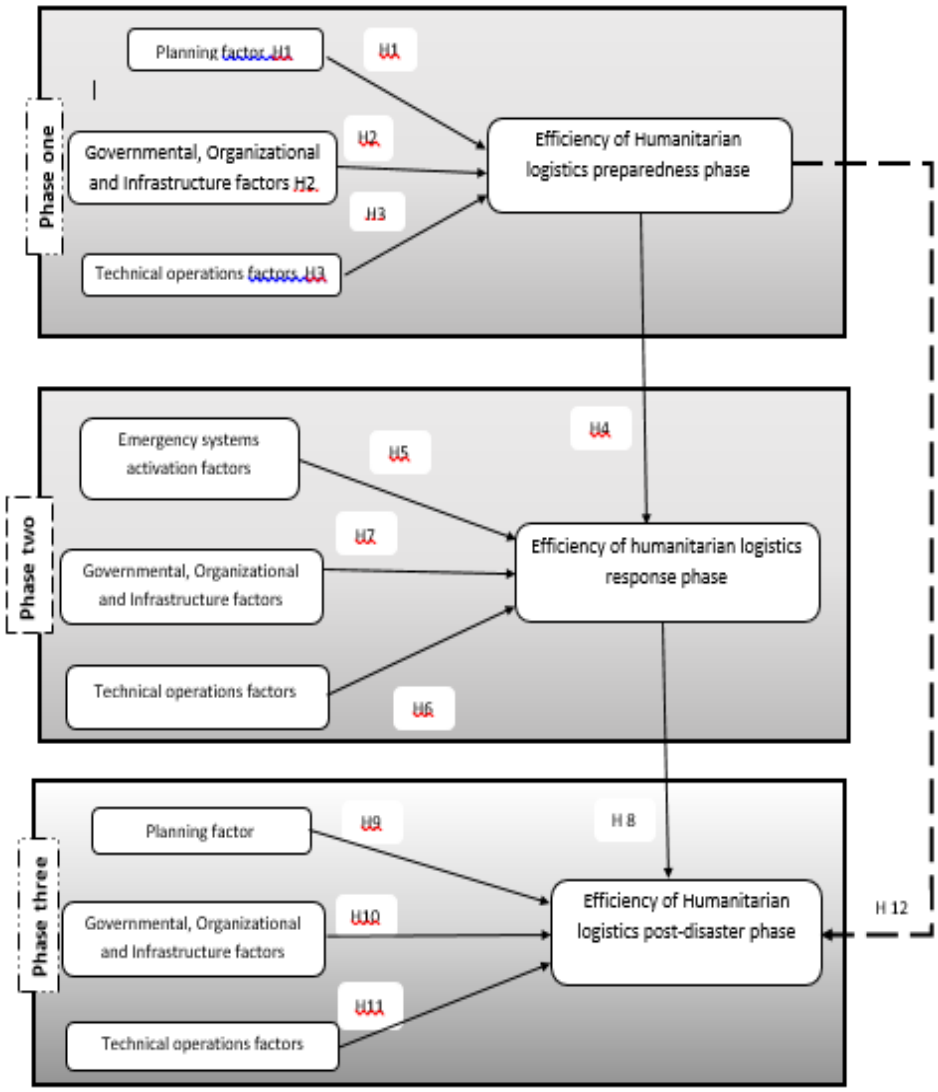

Fig 1.2 Research Hypothesis Model

1.6 Significance of the Study

This study sheds light on a new field in humanitarian logistics sciences in Palestine and is a hot topic all over the world. This study explores and assesses the current situation of factors affecting the efficiency of humanitarian logistics operations and provides a vision about the work factors affecting humanitarian logistics.

This vision will be presented by a conceptual model that will support and guide planners, decision-makers and officers in GOs, NGOs, and other related private sector organizations to modify logistics operational processes, in order to increase the effectiveness and efficiency of relief processes.

In fact, this study will define the humanitarian logistic factors that could be correlated with the efficiency of logistics operation in disaster risk management processes.

So, by using this study, institutions interested in any phase or field of disaster risk management would understand which actions it should adopt and implement in order to enhance the performance of humanitarian logistics operation based on national priorities and have more impact on dependent variable which represents the logistics efficiency. At the end of the study, the researcher will provide some recommendations for future studies and will highlight new researches pathways regarding logistics operations in disasters.

1.7 Thesis Structure

This research consists of six chapters. The first one is the “Introduction”, it introduces the study subject through concise background overview. The Introduction also highlights the research problem, its importance, aims, objectives, research questions and hypotheses.

The second chapter is the “Literature Review”; it provides a literature review and concise studies that treat the humanitarian logistics factors, barriers, and challenges; in addition to an overview of the preceding studies which support

the hypotheses formulation. Additionally, a wide view was taken to observe the barriers and challenges affecting humanitarian logistics.

The third chapter is the “Research Methodology”; it presents the methodology used in this study, such as the data collection process, the targeted population, sampling size and process, the instrument of data collection developing and the approach of data analysis.

The fourth chapter is the “Data Analysis and Result”; which presents the results and findings that explain the analytical results of quantitative and qualitative data and present the results of hypotheses tests.

The fifth chapter is “Discussion and model development”, which discusses the results and illustrate the findings mentioned in chapter four and presents the developed model.

Finally, the sixth chapter is the “Conclusion and Recommendation”. The final chapter provides brief outcomes on hypotheses' results, set of recommendations, and future research suggestions.

Chapter Two

Literature Review

Chapter Two

Literature Review

2.1 Chapter Overview

This chapter presents the reviews and discusses the existing literatures related to factors, barriers and challenges faced by humanitarian logistics workers during the different phases of disaster risk management. Additionally, this Chapter sheds light on the barriers present at the different economical (developed or developing countries), technological and organizational situation of the state. At the end of this chapter, and based on literature, a list of factors that have negative impact on humanitarian logistics will be developed.

2.2 Definition of Disasters and Their Types

The United Nations Office for Disaster Risk Reduction (UNISDR) (2017) defines a disaster as "a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts."

Moreover, a disaster is defined by the International Federation of Red Cross and Red Crescent Societies **(IFRC) (2017)** as a sudden and catastrophic event that leads to the distruption of community fuctions and huge losses in

human, material, economic, and environmental aspects, in a manner that exceeds a cummunity's abilities based on its own resources. Disasters can be caused naturally or by human activities.

In addition to classifying disasters based on its origins (nature or man-made disasters), there are also classifications that are based on the speed of disaster onset **(Koseoglu & Yıldırımlı, 2015):**

- Rapid starting natural disasters (earthquakes, tornados, storms).
- Rapid starting man-made disasters (terror attacks, industrial accidents).
- Slow starting natural disasters (starvation, famine, epidemics)
- Slow starting man-made disasters (economic crises, refugee crises).

  Rapid starting natural disasters are the most serious and dangerous type of disasters because they create a destructive and catastrophic impact in a very short time **(Koseoglu & Yıldırımlı, 2015).**

2.3 Disaster Risk Management

The possibility of the occurrence of a disaster rises sharply when vulnerable people reside in hazardous areas, and when there is an interaction between hazardous combinations (vulnerability and inability to stop or mitigate potential negative impacts of risks) **(IFRC, 2017).** As a result, to prevent or to mitigate the disaster impact the hazardous combination should be controlled as much as possible, and this leads to make the purpose of disaster risk management is to prevent or reduce damages and losses **(Donadio, 2018; Thiruchelvam, et al., 2018; Koseoglu & Yıldırımlı, 2015),** in addition to reducing the suffering of affected communities and quickly starting the reconstruction processes (Schulz, 2008).

Disaster risk management is defined by the Red Cross and Red Crescent National Societies as "the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters" **(IFRC, 2011).**

Disaster risk management consists of many critical activities like planning for possible scenarios, needs for resources assessment, coordination, preparedness, response, restoration and restructuring operations and processes **(Koseoglu & Yıldırımlı, 2015).** These activities are categorized into four phases as mentioned by Baird **(2010) and NEHRP (2009):**

- Mitigation: it is an ongoing process to reduce the risks of natural hazards on the community, such as preventing construction in flood plains, close to faults, landslides areas and more.
- Preparedness: preparing for a disaster. Simply be ready to respond to a disaster quickly and efficiently by suitable and not restrictive regulations and legislation to guide relief operations, community awareness, volunteers drilling, preparing well for logistics, etc.
- Response: responding to an emergency by trained personnel, apparatus and equipment, high efficient resource allocation, etc.
- Recovery: the process of restoring the affected community activities to its previous state.

NEHRP (2009) also represents the disaster risk management phases using a very clear model as shown in Figure 2.1, which reflects the continuity of the process, as shown below:

Fig. 2.1 Disaster risk management Cycle (NEHRP, 2009)

The potential negative impact of a disaster must be evaluated as accurately as possible. This evaluation is the main input of the preparedness phase especially in planning activities (Koseoglu & Yıldırımlı, 2015). Following the response phase, reconstruction, rehabilitation, and restructuring activities will be initiated to maintain the impact of the disaster **(Köseoglu, 2011; Koseoglu & Yıldırımlı, 2015).**

2.4 Definition and Types of Logistics

The Business Dictionary website (2018) defines logistics as: "Planning, execution, and control of the procurement, movement, and stationing of personnel, material, and other resources to achieve the objectives of a campaign, plan, project, or strategy. In other words, it is the management of inventory in motion and at rest".

Logistics is also considered the operational element of the supply chain including quantification, purchasing, inventory management, transportation and fleet management, and data collection and reporting; Logistics systems aim to put things in their correct place: the right goods in the right quantities

in the right condition then delivered to the right place at the right time for the right cost **(USAID, 2011).**

According to Swanson & Smith (2013), logistics is devided into two types: commercial and humanitarians logistics. There are clear differences between humanitarian and commercial logistics **(Oloruntoba & Gray, 2006).** Mainly, commercial logistics workes in predictable conditions like demand and average supplying time. But in case of humanitarian logistics, it is impossible to predict the needs, location, time interval to supply, and inventory issues **(Swanson & Smith, 2013).** As a result, humanitarian logistics is different and more complex than commercial logistics due to the fact that humanitarian logistics covers big areas and works in unknown locations situations **(Howden, 2011; Koseoglu & Yıldırımlı, 2015**).

2.5 Humanitarian Aids and Logistics

Humanitarian aid is related to saving lives, reducing suffering, and preserving human respect in crises and disastrous situations. Humanitarian aid contributions often consist of two parts: material aid and protection (Sida, 2017); While logistics covers acquiring and delivering the needs of supplies and services, at needed places and times, with the best value for the cost, immediately after the disaster, these supplies including food, water, temporary shelters, medicine, rescue teams and equipment, doctors teams, etc. **(IFRC, 2017)**.

After a disaster attacks a region, immediate actions are required. First, emergency systems should be activated **(Farberman, 2018; FEMA, 2015, Apte, 2009).** Then, rapid exploring of the size of damages, number of victims

and their needs will be conducted. After that, logistics teams should be formed in order to transfer rescue staff, doctors, nursing teams, and relief materials to victims in the affected areas **(Donadiom, 2018; Thiruchelvam, et al., 2018; Agostinho, 2013).** This should happen within 12 to 36 hours of the disaster **(Agostinho, 2013; Apte, 2009).**

Simply, humanitarian aid is defined as materials and\or logistics provided to disaster victims for a humanitarian purpose and saving lives **(Rouleau & Redwood-Campbell, 2009; Koseoglu & Yıldırımlı, 2015; Textorus, 2018).** In the same way, the purpose of humanitarian aid is to save lives, decrease suffering, and maintain human respect **(Textorus, 2018).** Moreover, logistics is organizing and implementing complex operations that start from the origin point to consumption points to achieve the purpose: the right things in right place at the right time (logisticsworld, 2016; wikipedia, 2018). Therefore, it is a fact that the efficiency of humanitarian aid operations depend on the speed of handling accurate amounts of materials and services, on time and in suitable conditions to victims **(Donadio, 2018; Thiruchelvam, et al.; 2018; Koseoglu & Yıldırımlı, 2015).** To achieve the required efficiency, disaster risk management and response institutions have to manage their resources in a way that makes them able to achieve their objectives at all phases of the disaster risk management process; before, during and after the disaster **(Jiang & Yuan, 2019, Alexander, 2015).** Also, to ensure the efficiency of logistic operations, accurate evaluation or assessment and feasible plans with minimum faults are required **(Köseoglu, 2011, Koseoglu & Yıldırımlı, 2015).** Therefore, institutions have to plan

and manage logistics in each phase of disaster risk management, as it constitutes one of the most dominant factors affecting resources utilization **(Jiang & Yuan, 2019, Alexander, 2015).**

Actually, humanitarian aid activities always need vast logistics operations **(Schulz, 2008);** this means that logistics is the greatest and the most crucial issue in disaster risk management operations **(Amadou & Karduck , 2012; Apte, 2009; Dynes, 2002; Agostinho, 2013; Jock & Keith , 2013; Wassenhove, 2006; Thomas & Kopczak, 2005).**

It should be emphasized that the core concept of disaster risk management is rapid response, in other words, how systematic processes can be developed to be able to respond rapidly to unpredictable events **(Apte, 2009).** In fact, building up a humanitarian logistics system is the first step in the planning of a rapid response for a disaster **(Amadou & Karduck،2012).** Therefore, logistics is a system built by experts, and needs professionals, trained personnel *(Ugwu, 2016),* and a suitable environment to work efficiently. Then, in times of disasters and crisis, these logistic systems direct people. **(Köseoglu, 2011, Koseoglu & Yıldırımlı, 2015).**

Response and relief activities are always united with logistics. In other words, humanitarian aid and logistics are two united and integrated concepts expressed by Humanitarian Logistics **(Jock & Keith, 2013).**

2.6 Humanitarian Logistics (HL)

Humanitarian Logistics is a keyword in successful relief processes **(Yadav & Barve, 2015).** This is because it is a section of logistics that is concerned with delivering the relief material in emergency situations to the victims, to

minimize the loss, save human lives, respond, and provide relief operations **(Donadio 2018; Thiruchelvam, et al. 2018; Rao, 2017).**

HL is defined as the process of planning, investigating, and controlling the efficient flow and storage of goods and materials based on information, from the point of storage to the point of consumption for the purpose of reducing the suffering of victims **(Donadio 2018, Thomas & Kopczak, 2005**). HL is also defined as the systems and operations of rescue and evacuation of affected people, utilizing resources, proficiency, expertise, and knowledge to help vulnerable people, and those who are affected by the disaster **(Wassenhove, 2006).**

Moreover, referring to the International Federation of Red Cross and Red Crescent Societies IFRC (2011), the mission of HL includes providing and delivering demanded materials and services, at the time and the places they are needed for victims, such as food, water, shelter medicine, clothes, etc. **(Thiruchelvam, et al., 2018)**.

In addition, HL includes activities such as procurement, storage, fleet management, materials handling and transportation **(Donadio, 2018),** evacuation of personnel, and management of resource, facilities, security, information, and communication **(Howden, 2011).** Furthermore, it is a fact that logistics is a very crucial and serious issue for current and future humanitarian operations **(Thomas & Kopczak, 2005).**

To summarize the above statements, there is an intense relationship between logistics operations and disaster risk management. Because of this relation,

the challenges that face logistics during disasters have a deep effect on the efficiency of disaster risk management **(Sienou & Karduck, 2013).**

2.6.1 Phases of HL

According to Kovács & Spens (2007), Pache (2014) and Koseoglu & Yıldırımlı (2015), huminitarian logistics is classified into three phasess:

First, the time before the disaster attacks (pre-disaster), or the prepardness phase, wich consist of many activities such as vulnerabilities assessment, emergency planning, building of coordination system**,** response mechanisms mobilization, establishing early warning systems, purchasing, storing relief mterials, training, educating the community, and establishing logistics centers **(Howden, 2011; Koseoglu & Yıldırımlı, 2015).**

Second, the response phase; which starts immediately after disaster occurrence. The most activities used in this phase are logistics activities. In this phase, the humanitarian relief and emergency services are represented. Rapidity is the most crucial issue in all operations in the response phase, as effective rapid response means saving lives, reducing damage, and limiting losses (Donadio, 2018; Thiruchelvam, et al., 2018; Koseoglu & Yıldırımlı, 2015). Third, the recovery and rehabilitation or reconstruction and restoration phase. Recovery or reconstruction means the activities that aim at rebuilding or maintaining the affected buildings and infrastructure **(Koseoglu & Yıldırımlı, 2015; Pache, 2014)**. Rehabilitation or restoration means the activities that aim at normalizing the lives of affected people. This stage starts immediately after the response phase **(Howden, 2011; Koseoglu & Yıldırımlı, 2015).**

2.6.2 Importance of HL

Humanitarian logistics is a primary issue in effective disaster risk management at all its phases, especially after a disaster attacks. Planning for logistics is strongly needed in order to prevent or mitigate a catastrophic impact which can be caused due to the interaction between social, economic, and environmental vulnerability factors, which lead to a very complex combined disaster **(Pettit & Beresford, 2009; Apte, 2009; Agostinho, 2013).**

Humanitarian logistics is the most critical challenge in the field of logistics **(Wisetjindawata, et al., 2014)**. HL is a primary issue in effective disaster risk management at all its phases, especially after a disaster attacks **(Pettit & Beresford, 2009; Apte, 2009; Agostinho, 2013**). Logistics operations are the most crucial element in disaster response operations. Successful logistics operations mean fewer losses, more saving of lives, stopping or minimizing deterioration, and rapid recovery **(Thiruchelvam, et al., 2018; Agostinho, 2013; Jock & Keith, 2013; Amadou & Karduck, 2012; Apte, 2009; Dynes, 2002; Wassenhove, 2006).**

Therefore, planning for logistics is strongly needed in order to prevent or mitigate a catastrophic impact which can be caused due to the interaction between social, economic, and environmental vulnerability factors, which leads to a very complex combined disaster **(Pettit & Beresford, 2009; Apte, 2009; Agostinho, 2013).**

Notably, HL is the core concept of relief operations. After a disaster attacks, health relief should be quickly provided to victims, and the speed of response depends mainly on the efficiency of logistics systems **(Apte, 2009, Amadou & Karduck, 2012; Koseoglu & Yıldırımlı, 2015).** Purchasing and transportation are main components of the logistics systems and the most expensive part of its activities. Around 80% of the cost of humanitarian aid operations and disaster risk management activities consist of logistics operations and logistics management activities **(Wassenhove, 2006; Altay, 2009; Köseoglu, 2011; Koseoglu & Yıldırımlı, 2015),** but also, logistics is very expensive and the most costly set of operations in the disaster risk management processes **(Sienou & Karduck, 2012).** Around 80% of relief expenses are payed for logistics, 65% of which are related to purchasing cost for different requirements such as materials and equipment, and the other 15% is related to transportation, handling and storage cost **(Wassenhove, 2006; Apte, 2009; Köseoglu, 2011; Koseoglu & Yıldırımlı, 2015).** All these expenses do not include the expenses of logistics preparedness operations **(Apte, 2009).**

In the same way, Jock & Keith (2013) and Eshkenazi (2015) emphasized the same idea which is the important role that HL plays in the management of the response supply chain. This means that the success or failure of emergency operations can be determined by its logistics, since aid, relief efficiency, and speed all depend on logistics **(Agostinho, 2013).**

Furthermore, logistics is a component of the supply chain management that is interested in the challenges of planning, implementing, and coordinating

the flow of human, materials, and information **(lexicon, 2018).** Moreover, logistics is responsible for critical and various activities such as procurement, handling, transportation, storage materials and equipment, fleet management, assets and facilities management, security, and information and communication management **(Apte, 2009; Köseoglu, 2011; Koseoglu & Yıldırımlı, 2015; L'Hermitte, et al., 2015; Donadio 2018).**

What is more important is that logistics is considered as a data store, this is due to its tracking of goods through supply chain. So, it reflects the operational aspects, such as suppliers' effectiveness, efficiency of transportation systems, timely responses, appropriateness of donated goods for victims or operations, and information management that can be very useful in conducting analysis and in extracting learning lessons for future improvements **(Thomas & Kopczak, 2005; Thomas, 2008**).

Altogether, the challenge of achieving the expected response is building an efficient supply chain during response activities **(Merminod, et al., 2014).**

In conclusion, logistics is the lifeblood of disaster risk management and the heart of response operations **(Thomas, 2008).**

2.7 Factors Affecting HL

HL is a wide scale operation concerned with the displacement of victims and meeting their needs. This scale creates complex conditions with hard challenges **(Agostinho, 2013; Apte, 2009; Gustavsson, 2003).** Complexity comes as a result of interaction between many factors, such as damaged roads and the lack of fuel, the availability of suitable vehicles, facilities for

storage and transfer, which might have been destroyed or looted (**Abdelhamid, 2018; IRU, 2017; Habermann & Hedel, 2018; Thiruchelvam, et al. 2018),** speed of relief items delivery, people movement or evacuation, movement of humanitarian staff, NGOs capacity difference (Al Adem, et al., 2018), the lack of logistics knowledge, technology and communication difficulties (**Donadio, 2018),** and funding problems **(Burkart, et al., 2016; Gustavsson, 2003).**

Altay (2009) mentioned in his article that logistics management in disasters should be carefully planned on multiple levels or stages: first, strategic planning level, which involves decisions making, such as selection of supplier and accreditation of communication procedures and protocols **(L'Hermitte, et al., 2015).** Second, preparedness level, which is related to selecting the amount of relief supplies and the locations to be stored. Third, response level, which is related to making decisions immediately after and during the disaster

(Camacho, et al., 2019). Fourth, post-disaster planning, which is related to actions that are to be taken after a disaster has occurred. Thus, Altay (2009) considered efficient planning as the main challenge in humanitarian logistics that helps in achieving a speedy and an efficient response that can mitigate the catastrophic interaction between the vulnerability factors.

Moreover, humanitarian logistics has to work perfectly in very hard and difficult conditions, as well as in complex context. This is due to the challenges of sudden variation in circumstances in random and dynamic ways, which creates complex factors with negative impacts on logistics

operations, such as uncertain supplies with surge urgent demand, critical time, collapsed or damaged infrastructure, and huge scopes and operations size **(Jiang & Yuan, 2019; Jock & Keith, 2013).**

Altay (2009) also emphasized that the context of logistics during disasters is very complex. This is due to the shortness of the timeframe during which help should be provided to victims, and the very long distance for transferring supplies from warehouses to the distribution point. In addition, the complexity is also a result of the high uncertainty during the occurrence of dynamic conditions on the ground, along with high demand levels and the constant changes in resources **(Jiang & Yuan, 2019, Vaillancourt, 2015)**. Furthermore, damaged road infrastructures and the scarcity of information about the situation in the affected area creates huge challenges in humanitarian logistics operations, such as the inability to plan for relief operations. Other challenges arise as a result of the need for coordination with hundreds of organizations around the word with different interests, priorities, and languages **(Gavidia, 2017).**

Humanitarian logistics consists of very complex operations with special challenges related to their uniqueness and the complicated aspects, the delivery of multiple supplies through uncertain, different types of transportation networks, under very short and hard time constraints, and requiring a professional coordination between the different players **(Wisetjindawata, et al., 2014; Gavidia, 2017).** Additionally, vertical and horizontal humanitarian cluster coordination (vertical coordination refers to the setup of efficiency and resilience in multi-tiered systems; horizontal

coordination can refers both to coordination between players operating at the same regional scale and between sectors **(Jahre & Jensen, 2010),** is a very hard activity, especially under limited resources and strict conditions, and it is identified as a major challenge **(Jiang & Yuan, 2019Vaillancourt, 2015).** Kovács & Spens (2009) mention in their article that the challenges facing humanitarian logistics are related to the different types of disasters, the phase of disaster relief, the intervention of humanitarian organizations, and the coordination between stockholders (GOs, NGOs, private sectors, donors, and victims) as shown in Figure (2.2) below, which is basically based on the requirements of victims and suppliers, and the applicable state regulations.

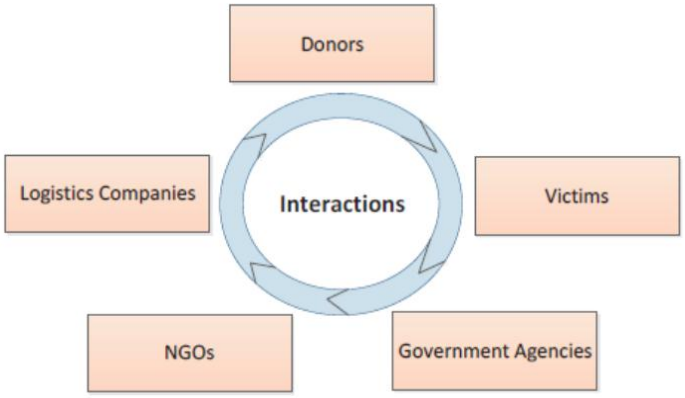

Fig. 2.2 Humanitarian Logistics Stockholders (Wisetjindawata, et al., 2014)

Kovács & Spens (2009) further improved the conceptual model shown in Figure 2.3 below:

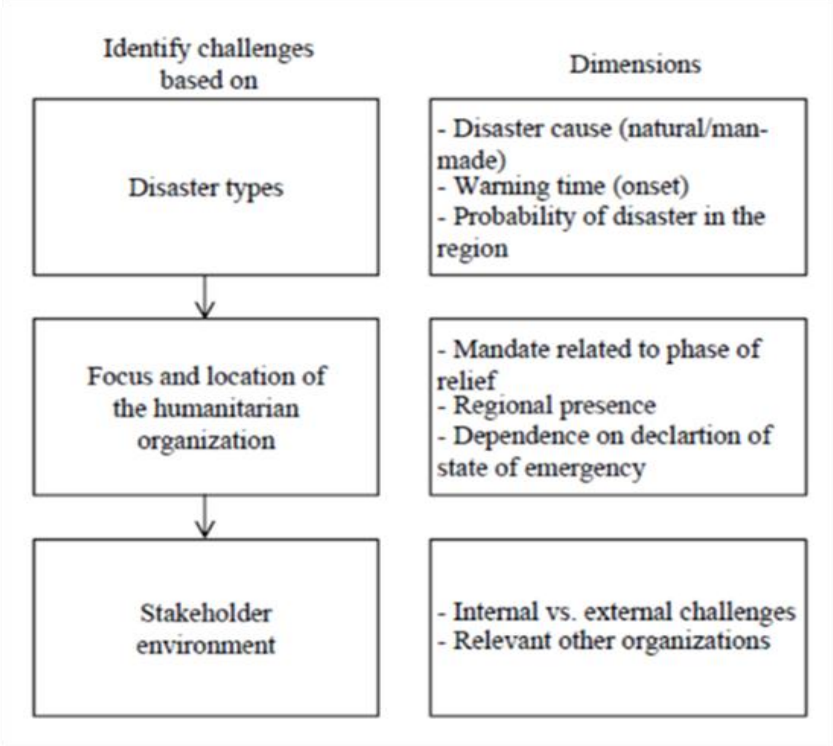

Figure 2.3: Conceptual model used to identify the Challenges of Humanitarian Logistics (Kovács & Spens, 2009)

Coordination between stakeholders is a very important and critical issue; many resources of logistics that are necessary to improve the relief operations, such as vehicles, equipment, and trained staff, are owned by logistic supplier companies. Professional stockholder coordination will improve the efficiency of logistics operations; it reduces the unnecessary use of resources and minimizes issues faced during the humanitarian logistics operations. Thus, proper coordination is a major challenge in disaster relief logistics operations **(Wisetjindawata, et al., 2014; Gavidia, 2017).**

Similarly, Von & Cozzolino (2012) and Wilson, et al.(2018) argue that optimization is the core challenge of humanitarian logistics. Optimization that is based on integrating all activities of the actors involved in disaster risk management **(Von & Cozzolino, 2012).** Logistics is concerned with moving

someone or something from one point to another. So, agility and leanness concepts have to be considered in humanitarian logistics. Agility (effectiveness and speed) in humanitarian logistics means saving time, which means saving more lives. Leanness (efficiency) means saving cost, this means the ability to help more victims. Agility and leanness are crucial challenges in humanitarian logistics taking into consideration international agreements and protocols subscribed between states, which can impede international humanitarian aid **(Shafiq & Soratana, 2019; Donadio, 2018; L'Hermitte, et al., 2015; Cozzolino, et al., 2012).** Main role players affecting the efficiency of humanitarian logistics operations are governments, military, donors, logistics and other private sectors companies, NGOs and aid agencies. Furthermore, Pettit & Beresford (2009) use the words "critical success factors of logistics". Each critical factor reflects one of the challenges. The authors use positive words instead of negative words. Based on their opinions, the challenges are: first, strategic planning. Strategic planning should be done based on the type of disaster, the size of operation, location, sources, financial issues, relationships, and victims' needs. Moreover, suitable and not restrictive standard operations procedure should be applied in order to guide relief operations **(L'Hermitte, et al., 2015; Gavidia, 2017),** operation monitoring, management commitment and support, and organizational infrastructure. Second, inventory management. Inventory management is concerned with the volume of material, its flow, timing, and coordination. Third, transportation planning for availability, capacity, and its constraints. Fourth, the capacity of providing needs on the

long and short terms, capacity and number of warehouses, and the capacity and number of vehicles. Fifth, information management, which is concerned with the utilization and integration of systems. Sixth, human resource management, including the number of educated and trained staff, and their culture **(Balcik et al, 2010).** Seventh, the supplier's relation management based on competition and price negotiations. Eighth, supply chain strategy **(Fritz, 2005; Pettit & Beresford, 2009; Merminod, et al., 2014; Gavidia, 2017),** which leads to just-in-time, agility, and lean supply. By comparing Pettit & Beresford (2009) with previous references, a clear process operational approach was used. Process aspects were clearly defined. All aspects are nested or overlapped. So, all of these aspects have the same importance or priority from the authors' point of view. In other words, the authors are looking for optimization in relief process or integration between managerial and technical aspects is the real challenge, this is also emphasized recently by Wilson, et al. (2018).

Also, Merminod, et al. (2014) says that disaster context is very special and needs a very huge, powerful, and agility operations when responding to disaster to save lives and ensure minimum organizational stability for different resources, the required approach to create this stability in a short time with critical context is a real challenge. Moreover, agility is also considered a challenge. The same idea is emphasized by Shafiq & Soratana (2019), Donadio (2018), and Cozzolino, et al. (2012). Equally, L'Hermitte, et al. (2015) point of view considers that agility is still the major HL challenge.

Furthermore, Balcik et al. (2010) found that humanitarian logistics organizations have a clear difference in terms of their size, mandate (international, national, and local organizations), accumulated experiences and proficiency, resources, capacities, cultures, interests and implementation mechanisms **(Al Adem, et al., 2018).** This means that the types and levels of logistics challenges vary from one organization to another, which should be taken into consideration. Similarly, RATLIFF (2007), Kovács & Spens (2009), Hellingrath & Widera (2011), and Balcik et al. (2010) have the same point of view, which indicates that the organizational issue forms the most important challenge in humanitarian logistics.

Moreover, Kuijpers & Koenen (2007) divide challenges into three main types of challenges:

- Firstly, operational challenges; Operational challenges are related to logistics operations in the affected area. and it was divided into subcategorizes, such as: first, roads, transportation, and infrastructure challenges as collapsed bridges, airports, and roads **(Abdelhamid, 2018; IRU, 2017; Habermann & Hedel, 2018; Thiruchelvam, et al. 2018; Hellingrath & Widera, 2011; Jock & Keith, 2013),** limited transport capacity with sudden increase of trucks, boats and airplanes in affected area, shortage in fuel **(Gustavsson, 2003).** Second, cultural challenges. This includes challenges related to the difference in cultures **(Pettit & Beresford, 2009; Balcik et al., 2010),** values, and religious views between international respondent and affected communities. A great number of local, regional, national and international governments and organizations are involved in

international disaster logistics, with a set of laws and regulations for each participating institution **(NEHRP, 2009; Kovács & Spens, 2009; Baird, 2010; Hellingrath & Widera (2011).** Third, cooperation and coordination challenges. There is a large number of participants in disaster relief operations. Cooperation and coordination between large number of aid agencies and other participants is a very hard and difficult challenge that requires some special professionalism, and is considered a very critical challenge **(Fritz, 2005; Oloruntoba & Gray, 2006; Pettit & Beresford, 2009; Kovács & Spens, 2009; Apte, 2009;. Hellingrath & Widera, 2011; Amadou & Karduck, 2012; Wisetjindawata, et al., 2014 Koseoglu & Yıldırımlı, 2015; Gavidia, 2017).** Fourth, the different goals of stakeholder are one of factors that affects logistics operations. Different goals means different interests and motivations to fund logistics activities, and this create a real challenge in relation to the funding of logistics operations **(Khan, et al., 2019; Burkart, et al., 2016; Gustavsson, 2003).** Fifth, is the complexity of challenges related to logistics which are represented by the uncertainty resulting from speed and dynamic changes in area conditions and circumstances, due to unpredictable interaction between vulnerability factors **(Jiang & Yuan, 2019; wikipedia, 2018; logisticsworld, 2016; Wisetjindawata, et al., 2014; Agostinho, 2013; Jock & Keith, 2013; Gustavsson, 2003; Wassenhove, 2006; Kovács & Spens, 2009; Altay, 2009).**

-Secondly, learning lessons challenges, such as employee turnover, which means the tendency of trained and professional employees to leave relief

agencies due to the stress of hard work conditions while it is hard to find suitable employee. As a result, there is a lack in logistical knowledge in staff because of insufficient cumulated experiences especially at senior level and this creates a challenge in disaster logistics. Accordingly, this creates a short memory in logistics provider institutions and sharp shortage in logistics professionals **(Apte, 2009; Kovács & Spens, 2009; Wisetjindawata, et al., 2014).**

- Thirdly, different type of challenges are titled by Kuijpers & Koenen, (2007) and Donadio (2018) as other challenges such as: information and technology challenges that are related to information and technology systems which are used widely in HL logistics specially in tracking supplies (Oloruntoba & Gray, (2006); Pettit & Beresford, (2009); Hellingrath & Widera (2011)). Also, organizational issues challenges like the recognition of logistics departments in disaster risk management institutions generally and specially at response agencies, neglecting logistics in structured operations, misunderstanding between policy makers and logistics officers **(Kuijpers & Koenen, 2007).**

As a matter of fact, humanitarian logistics face many types of challenges, which were categorized in four main fields (Fritz, 2005). First, the shortage in logistics experts (Ugwu, 2016); second, the inappropriate assessment and planning (Jiang & Yuan, 2019); third, limited and restricted collaboration and coordination (Gavidia, 2017); fourth, manually operated supply chains (Fritz, 2005). Furthermore, challenges posed by humanitarian logistics are categorized into different categories with different points of view based on

the phases of disaster risk management. According to Apte (2009), challenges are: Firstly, challenges in preparedness phase, such as facility allocation, logistic planning, and resource allocation; Secondly, challenges in response phase, such as inventory management, distribution of facilities, handling relief materials, and decision making (uncertainty and lack of data and information) **(Camacho, et al., 2019);** Thirdly, challenges in relief operation phase, such as transportation and evacuation challenges (Apte, 2009). In another point of view, challenges are distinguished based on organizational perspectives, such as challenges arising from field of cooperation between players, training and educating staffs, donations and donors, and information management **(Kovács & Spens, 2009; Apte, 2009).** As mentioned above, challenges are a mixture of complex combinations between those issues and factors **(Wassenhove, 2006).**

Hellingrath & Widera (2011) also point out that the major humanitarian logistics challenges are highlighted in four main issues: First, information and technology issues **(Donadio, 2018).** The authors found that there is a clear conflict in information about the use of funds. Also, there are problems related to the compatibility and the capacity of IT systems that support humanitarian logistics **(Donadio, 2018).** Second, organizational issues. Challenges related to process and coordination issues were clear in applying storage **(Gavidia, 2017),** last mile distribution concepts, and integration between providers **(Wilson, et al., 2018).** Third, infrastructure challenges, starting with the need for transportation planning in damaged infrastructure, suitable communication technologies **(Donadio, 2018; L'Hermitte, et al.,**

2015), transportation infrastructure database, and risk analysis for logistics providers based on an acceptable level of information **(Jiang & Yuan, 2019).** Fourth, politics and governmental issues, such as the absence of central point for legal issues, lack or absence of central coordination point **(Shafiq & Soratana 2019;UNDAC, 2018; Gavidia, 2017),** and cooperation quality with a government representative **(UNDAC, 2018).** Kovács & Spens (2009) and Hellingrath & Widera (2011) emphasizes that organizational and governmental issues (politics and regulations) were main challenges rather than different priorities which are related to the type and phase of disasters, as well as infrastructure and information technology.

On the other hand, challenges of humanitarian logistics are categorized by RATLIFF (2007) based on two main perspectives, which are the technical and organizational perspectives. First, the technical perspective, such as surge and unpredictable demand, change of relief locations due to mixed up circumstances, damaged infrastructure, and unavailability of resources to support a variety of relief locations, building, and implementing relief supply chain in a very short time, and status of very limited resources with visibility of needs **(Gavidia, 2017).** Second, organizational perspective, such as coordination difficulties with decentralized organizations and with huge number of unorganized volunteers (**Shafiq & Soratana, 2019),** relief efforts are usually funded after the disaster occurrs, which makes it difficult to build and maintain a logistic system with professional staff, and the lack of information and decision making technology in the procurement process to satisfy the needs of the relief process (**Jahre & Jahre, 2019);.** By comparing

RATLIFF (2007) with Jahre & Jahre (2019), Gavidia (2017); Kovács & Spens (2009) and Hellingrath & Widera (2011), organizational issues are still the most important challenge. Particularly, RATLIFF (2007) discusses organizational issue more deeply and highlights new topics, such as technical issues related to relief operations field.

Furthermore, Apte (2009), who uses a more comprehensive, logical, and applicable approach than other researchers, suggests that challenges posed by humanitarian logistics were categorized into different issues based on different perspectives. The first perspective is the supply chain point of view **(Apte, 2009; Pettit & Beresford, 2009),** which includes three phases; preparation, response, and relief **(Apte, 2009; Kovács & Spens, 2009).** First, challenges in the preparation phase deal with positioning facilities and critical services in an optimum location **(Donadio 2018, Apte, 2009; Pettit & Beresford, 2009),** carrying out goods, important supplies as drugs, critical services, people evacuation from affected areas, and scarcity with an extreme need of resources that have to be managed in an optimum way **(Jiang & Yuan, 2019; Von & Cozzolino, 2012; Apte, 2009; Pettit & Beresford, 2009).** Second, challenges related to response phase including inventory management challenges **(Apte, 2009; Pettit & Beresford, 2009),** which means developing a model that can manage inventories and determine the optimal reorder points for relief response **(Beamon & Kotleba, 2006; Von & Cozzolino, 2012).** Distribution of facilities and relief materials challenges are similar to the prepositioning challenges, planning for distribution facilities and critical need within a specific timeframe is also a crucial issue

(Jiang & Yuan, 2019; Gavidia, (2017); Merminod, et al. (2014); Apte, 2009; Kovács & Spens, 2009; Pettit & Beresford, 2009). In an emergency situation, there is a lack of data and certain information (Kovács & Spens, 2009; Apte, 2009; Hellingrath & Widera, 2011; Pettit & Beresford, 2009), which leads to decision-making challenges. Therefore, there is a need to take and implement quick and correct decisions using decision support systems with the aspect of humanitarian logistics. Third, relief operation phase includes transportation challenges, which are related to carrying out relief goods from source to affected people, there is a critical problem of workflow with a timeframe **(Jiang & Yuan, 2019).** They also include evacuation challenges, which are a combination of considerations of disaster types to decide if an operation is totally or partially required, far or nearby relief location, and long-term or temporary evacuation. Infrastructure status guides the decision related to the type of transport to be used, availability of vehicles fleet and their capacity, circumstances, physically, and financial aspects.

The second perspective is the organizational point of view, which is divided into four sectors. The first sector is the collaboration between humanitarian organizations together and organizations with the affected community, information, and knowledge management which are needed to make response agile by answering the following questions: What was affected? What was needed? What were the available resources? **(Jiang & Yuan, 2019; Cozzolino, et al., 2012; Oloruntoba & Gray, 2006; Tomasini & Wassenhove, 2003).** The second sector is training and educating the staff who are considered the cornerstones of logistics efficiency since untrained

or uneducated staff may restrain the efficiency and effectiveness of humanitarian logistics **(Apte, 2009).** The third sector is the donors' roles and their donations, as they add challenges to humanitarian logistics because it is difficult to forecast type, quality, and suitability of donations **(Aflaki & Pedraza-Martinez, 2016; Apte, 2009).** The fourth sector is risk management, such as the risk related to the lack of coordination between needs and supplies **(Shafiq & Soratana, 2019),** the risk of the downturn of the economy, the risk of the inability to supply, etc. **(Apte, 2009; Hellingrath & Widera, 2011).** Apte (2009) also highlighted that the disaster relief process is mainly based on logistics. It has been estimated that 80 cents from each Dollar spent on relief goes to logistic operations.

Finally, more than 80 references were reviewed, these references were distributed between journals articles, books, official websites, sometimes theses, conference papers, etc. Humanitarian logistics factors were similar all over the word with some differences resulting from the impact of the situation in each country, components strength and consistency. However, in developing countries there are more special factors that are created as result of the defects in state and community structure. The following table (2.1) summarizes the common factors affecting humanitarian logistics:

Table 2.1 Common Affecting Factors on Humanitarian Logistics

No	Factor
1.	logistics Planning for different type of disaster, the size of operation, location, sources, financial issues, relationships, victims' needs, and suitable and not restrictive standard operations procedure to guide relief operations, operation monitoring, management commitment and support, organizational infrastructure, transportation capacity, and its constraints
2.	Sudden and randomly variation in circumstances
3.	Uncertain supplies with surge urgent demand and critical time
4.	Collapsed or damaged infrastructure, roads, transportation systems, bridges, and airports
5.	Limited transport capacity and shortage in fuel with sudden increase of trucks.
6.	Huge scopes and operations size
7.	Scarcity of information, information management and technology.
8.	Intervention of humanitarian organizations and coordination between the different players with different goal00000000s, interests, priorities, cultures, languages, values, and religious
9.	phase of disaster relief
10.	state regulations
11.	Optimization in relief process and integration between managerial and technical aspects
12.	Supply chain strategy, agility(effectiveness and speed) and leanness operations(efficiency)
13.	Inventory management
14.	Human resource management
15.	Organizational issue
16.	Cooperation and coordination challenges
17.	Funding of logistics operations
18.	Shortage on logistics professionals
19.	Inappropriate assessment and planning
20.	Facility and resources allocation
21.	Handling relief materials
22.	Decision making technology
23.	Risk analysis for logistics providers
24.	Politics and governmental issues
25.	Huge number of unorganized volunteers
26.	Donors roles and their donations

2.7.1 Factors Affecting HL in Developing Countries

Developing countries are more affected by disasters than other developed countries, and there is clear increase in losses resulting from disasters. This is mainly due to unplanned or programmed development and randomly urbanization (**Patel & Jay, 2019),** in addition to the insufficient interest in disaster risk management as whole within governmental plans and political programs **(Gavidia, 2017; Rodriguez, et al., 2009; Tatham & Houghton, 2011).** This is directly reflected on the community in negative way; it makes it more sensitive and vulnerable to disasters. As a result, in case of a disaster in developing countries, humanitarian relief operations are handled with poor logistic support, due to the weak transportation infrastructure, the lack of facilities, and the narrow or closed roads (**Abdelhamid, 2018; IRU, 2017; Habermann & Hedel, 2018; Thiruchelvam, et al. 2018).** Those factors directly affect the delivery time, financial efficiency, and the accuracy of assessments **(Rodriguez, et al., 2009; Sienou & Karduck, 2012).**

The weak economies of developing countries and the inappropriate infrastructure of disaster vulnerable areas create problems for humanitarian aid operations and huge form obstacles and challenges on logistics operations **(Koseoglu & Yıldırımlı, 2015).** Additionally, weak capacities in airports and ports, risky storage areas, shortage in equipment, poor conditions of railroads and highways, the constrains and limitations on charging and shipment operation, limitations of tunnels and bridges, and poor road signal systems all lead to a decrease in the efficiency of logistics

operations **(Jiang & Yuan, 2019; Koseoglu & Yıldırımlı, 2015; Köseoglu,, 2011**). Furthermore, the insufficiency of stored good and equipment is another logistics problem faced during disasters. In addition, the lack of coordination, or poor coordination, between the logistics role-players and the poor information flow create additional barriers and challenges facing logistics operations during disasters **(Shafiq & Soratana, 2019; UNDAC, 2018; Gavidia, 2017; Oloruntoba & Gray, 2006).**

Chair (2004) documents that the International Federation of Red Cross and Red Crescent Societies (IFRC) held a conference in 2004 and the participants in the Conference were able to identify the challenges of disaster risk management that directly affect humanitarian logistics in developing countries. Such challenges include partnership challenges, especially when representatives speak in different languages and have different goals, and the issue related to the methods used for linking between local institutions (extremely poor institutions) and global institutions which provide the needed funds.

After that, Amadou & Karduck (2013) categorizes challenges of humanitarian logistics in developing countries into two categories. First, the pre-disaster challenges, such as poor alert systems, multiple and inconsistent data sources (Vega, 2018) and the lack of community awareness. The second category is related to disaster response challenges, such as weak coordination which leads to late participation of the main players (**Shafiq & Soratana, 2019; UNDAC, 2018),** bad communication system with multi-directions and levels leading to the distortion of information, causing

confusion **(L'Hermitte, et al., 2015 ; Gavidia, 2017),** weak sectorial evaluation with bad data integration, using different approaches for evaluation producing different results, difficulties in reallocating contingency budget and lake in human, transportation and technology resources **(Cevik & Huang 2018; Biddison, et al., 2018).**

Later, the Logistics Cluster Report (2016) assures that the logistics context in devoloping countries is more complex than the logistics context in devoloped contries, particularly in man-made disasters, such as civil wars and political coflicts. In such cases, the impact of the disaster will be more catastrophic than natural disasters. Logistics challenges in this cases are larger in number and harder in terms of their impact. In addition to challenges mintioned before, there are some aditional challenges that are created based on the speciality of situation, such as: access to beneficiaries and security during the delivery of relief suplies. Also, in cases of civil wars, special coordination techniques are required. This is due to the need for coordination between more than one axes in different countries with different regulations and legislations, this creates a very hard challenge represented by how to coordinate between different axes of logistics in different countries with different regulations under one umbrella. Access to information is also a main challenge which directly affects logistics, since any mandate or permissions for conducting any relief operation is based on the availability of such information.

Moreover, the Logistics Cluster Report (2016) states that there are key challenges in developing countries as well, such as dynamically changing

conditions, bad security situation, which sometimes look like fluid situations that could change in few hours, logistics access restrictions, and transport market is unstable.

Notably, structural defects, system problems, barriers, and challenges are approximately similar in developing countries; which creates similar challenges across developing countries **(Amadou & Karduck, 2013).**

Finally, the following table 2.2 summarized the additional humanitarian logistics

factors which was created in developing countries as a result of defects in there state organizations and community structures:

Table 2.2 Factors of Humanitarian Logistics in Developing Countries

No	Factor
1	Unplanned and randomly urbanization
2	Insufficient or absence of disaster risk reduction strategies and its implementation tools.
3	Weak transportation infrastructure, the lack of facilities, and the narrow or closed roads, limitations of tunnels and bridges
4	Weak economies
5	Inappropriate infrastructure
6	Weak capacities in airports and ports
7	Risky storage areas
8	Shortage in equipment
9	Constrains and limitations on charging and shipment operation
10	Poor road signal systems
11	Lack or poor coordination and bad communication system
12	Partnership challenges (in different languages and have different goals)
13	Inconsistent data sources and information management
14	Lack of community awareness
15	Weak sectorial evaluation with bad data integration
16	Reallocating contingency budget
17	Lake in resources
18	Difficulties in access to beneficiaries and security during the delivery of relief supplies
19	Unclear mandate or permissions for conducting any relief operation

2.7.2 Factors Affecting HL in the West Bank - Palestine

According to Hawajri (2016), occupied Palestine is one of the hottest disaster areas in the word and is facing ongoing conflicts since more than sixty years. The humanitarian situation is becoming worse and worse due to the arbitrary activities of Israeli occupation. This is in addition to problems facing Palestinians in governance, stability, development, and sustainability. As a direct result of occupation, the state's vulnerability is continuously increasing. Therefore, Palestine is classified as a fragile state with medium vulnerability index score (GHA, 2014). Hawajri (2016) also points out that the conflict can directly affect response to disasters and hinder disaster risk reduction activities.

Similarly, all developing countries are vulnerable to different types of natural or man-made disasters and have similar problems or defects in their own structure **(Amadou & Karduck, 2012).** Therefore, challenges can be easily generalized on the Palestinian case.

In addition to the fragile structure of the Palestinian State, and similar to many other developing countries, urbanization is rapidly increasing and most residential areas are located faulty or seismic prone areas **(Patel & Jay, 2019; AL Dabbeek, 2010)**. Additionally, variety in building systems, poor quality of building materials, and inability to control the quality of design and construction, all these factors are the result of the absence of sovereignty of Palestinian government on the land, which makes it unable to force the community to adopt land use policy, building codes, and other related regulations **(Hawajri, 2016; AL Dabbeek, 2010; Al-Dabbeek & El-**

Kelani, 2008). As a result of the previously mentioned previous factors, vulnerability is very high. This means that the areas that will be damaged or collapsed in case of disaster attack will be very large, and this leads to numerous barriers and challenges facing humanitarian logistics **(Jiang & Yuan, 2019; Thiruchelvam, et al. ,2018; Donadio, 2018; OCHA, 2017; Hawajri, 2016).** Occupation and its colonization policies are defined as the main challenge facing disaster risk management activities in general, and logistics activities in particular; this is due to the direct and indirect impact of occupation on all Palestinian activities **(Sherwood, 2013; Hawajri, 2016).** More challenges are identified such as: lack of awareness in disaster risk management, capacity weakness in all disaster risk management issues including logistics, very weak socio-economic and environmental conditions, limited legal frameworks for disaster risk managements, and the absence of comprehensive and integrated national strategy disaster risk managements **(UNDAC, 2018, Hawajri, 2016; DANIN, et al., 2012).** However, referring to OCHA (2010), humanitarian logistics in Palestine face serious challenges. Such challenges include the safety of staff, which is considered one of the main challenges. In addition, there are challenges related to the barriers of movement imposed on daily operations, the Israeli policies, the division and disconnection between the areas of Palestinian Authority (Gaza Strip, East Jerusalem, the closed area between the barrier and the Green Line, and the rest of the West Bank) **(Hawajri, 2016),** in addition to challenges resulting from crossing points, checkpoints, bureaucratic constraints, such as the need for Israeli permits for each access

or operation in Palestinian regions, and the hostilities and attacks on humanitarian staff and assets by Israeli army **(OCHA, 2010).**

Furthermore, logistics in Palestine is facing difficulties due to the absolute dominance of the Israeli military army on cross point, forcing Palestinians to transfer goods from one truck to another on crossing points coming in from Israel to the West Bank, for security reasons. In addition, hard crossing procedures are being applied, which cause a delay in delivering relief materials to victims during disasters **(USAID, 2009).**

Similarly, Elagraa et al (2014), identifies the main challenge of logistics in the West Bank as the loss of Palestinian control over all gateways. The Israeli military arranged hard procedures with many obstacles, barriers, and restrictions to impede the movement of logistics, such as:

- The separation barrier (wall): which is a 708 kilometer long barrier, and Palestinians are forced to use underpasses and secondary road with bad construction and infrastructure built by Israeli authorities for Palestinians use only, in order to separate between Palestinians and settlers. This narrow and unprepared roads are one of logistics barriers and challenges **(OCHA, 2009; Elagraa, et al., 2014).**
- West Bank commercial crossing points: the Israeli government built special crossing points for goods and another for personnel along the separation barriers. Such crossing points hinder the materials flow and logistics operations **(Elagraa, et al., 2014; OCHA, 2010).**
- Bureaucratic constraints and administrative procedures: such as having to issue permits from Israeli authorities for each operation, back-to-back

system for charging supplies from Israeli to Palestinian trucks, etc. Such procedures hinder the normal flow of supplies and logistics operations **(Elagraa, et al., 2014; OCHA, 2010).**

- Lack of information and resources: Israeli authorities do not share any information with Palestinian logistics institutions, causing a delay in logistics operations due to the sudden variation in Israeli administrative orders in crossing points **(Elagraa, et al., 2014).**
- Security procedures: it is a great challenge because the related activities and required time cannot be predicted **(Elagraa, et al., 2014; Cluster, 2016; USAID, 2009).**

Similarly, Levy (2016) and PSC (2012) report that the impact of lengthy Israeli security procedures imposed on Palestinian supplies are one of the greatest challenges facing Palestinian logistics providers. Furthermore, they highlight some challenges such as: the lack and insufficient information about security procedures at Israeli checkpoints and cross points, back to back charging system, and unloading containers onto pallets. The following table 3.3 summarized the humanitarian logistics factors which was created just in West Bank of Palestine due the complex conflict with the Israeli occupation.

Table 2.3 Factors of Humanitarian Logistics in the West Bank of Palestine.

No	Factor
1	Polices and activities of Israeli occupation (barriers of movement and disconnection between the areas, crossing points, checkpoints, bureaucratic constraints, and Israeli permits for each access)
2	Rapidly urbanization in faulty or seismic prone areas with bad construction materials.
3	lack of awareness in disaster risk management
4	capacity weakness in all disaster risk management issues including logistics
5	weak socio-economic and environmental conditions
6	limited legal frameworks for disaster risk managements
7	absence of comprehensive and integrated national strategy disaster risk managements
8	safety of staff (hostilities and attacks on humanitarian staff and assets by Israeli army)
9	Lack of information and resources

As clearly visible, after the literature was reviewed, it is clear that there are very critical challenges posing the humanitarian logistics in all vulnerable urban communities at all states over the word. However, the impact of those factors is significantly different from one country to another. This difference in impact comes as a result of the quality of state and community structures. In developing countries, those factors have a sharp and negative effect on the efficiency of humanitarian logistics operations. Conversely, in developed countries, not only were those factors managed, maintained and their negative impact became limited and controlled, but they are achieving advancements in managing the challenges facing humanitarian logistics, they are looking for keys of performance indicators, accountability systems, and sustainable humanitarian logistics.

Chapter 3

Research Methodology

Chapter 3

Research Methodology

3.1 Chapter Overview

Research is defined as a planned, methodical, data-based, analytical, objective, and scientific examination into a specific problem, initiated with the purpose of getting answers or solutions to it. Therefore, a research should be designed carefully **(Creswell, 2008; Lewis & Thornhill, 2012).** Research design is the act of describing in details the plans and procedures used in a research to answer the specific research questions. This is implemented by clearly identifying the considerations related to justified decisions of the methods of data collection, data analysis, and results interpretations **(Bhattacherjee, 2012; Creswell, 2014).**

This chapter aims at discussing the procedures, techniques, and criteria that were used in this research. This includes the research purpose, type, approach, strategy, methodology flowchart, population and sampling criteria, data collection tools, data collection approach, data validation techniques, and data analysis.

After reading this chapter, the reader will be able to grasp a better understanding of the methodological set of guidelines, tools, approaches, and criteria that the researcher has adopted in order it to achieve the objectives of the study.

This chapter shows the design of the methodology of this research which consist of data collection, sampling, instrument of data collection, and data analysis.

3.2 Research Type

Creswell (2008) defines research as a set of procedures used to collect and analyze data and information to explore or increase the understanding of a spacific issue. Researches are clasified by Bhattacherjee (2012) and Bhat (2018) into three types, based on the purpose of each research:

***1. Exploratory research*:** is adopted in order to determine the nature of the problem or phenomena, and it is not designed to provide conclusive evidence, but it helps in getting a better understanding of the problem or phenomena **(Lewis & Thornhill, 2012)**. Therefore, it is used to explore a certain problem or phenomena, and the research questions may or may not give a final conclusion **(Bhat, 2018; Bhattacherjee, 2012).** Exploratory research aims at achieving three goals: first, probing the problem or phenomena. Second, creating initial ideas about the problem or phenomena. Third, examining if it is feasible to do more studies about the problem or phenomena **(Bhattacherjee, 2012).** Furthermore, the sample sizes of an exploratory research may be smaller than the sample sizes in other types of research **(Nargundkar, 2008).** This type of research has many advantages such as: flexibility and adaptability to changing directions as a result of detection of new data and new insights

(Lewis & Thornhill, 2012). This type of research has many advantages (Bhattacherjee, 2012), such as:

2. Descriptive research: this type of research can be described as a tool for reporting affairs as they are in the present with having no control over variables **(Ethridge, 2004).** This type of research is considered a process used for focusing on a current problem or phenomena through precise monitoring and with full and complete documentation for the behaviors related to such problem or phenomena. In a descriptive research, only one variable is required (quantity or quality) to conduct a study.

The purpose of this type of research is to describe, explain, and validate the results **(Bhat, 2018; Bhattacherjee, 2012).** This type of research has many advantages such as **(Ethridge, 2004):**

- Effective to analyze non-quantified topics and issues;
- The opportunity to integrate the qualitative and quantitative methods of data collection;
- Requires less time to conduct than quantitative experiments;

On the other hand, it has a many **disadvantages, such as (Ethridge, 2004; Bhattacherjee, 2012):**

- Inability to conduct statistical tests;
- Results may reflect a level of bias because of absence statistical tests;
- Unrepeatable research because it is based on observations;
- Descriptive studies are not useful in identifying the cause behind described phenomenon.

***3. Explanatory research*:** this type of research is conducted in order to identify the extent and nature of cause-and-effect relationships and is used to explain the monitored problem or phenomena by understanding the effect of variation of standard procedure. In the other words, it is can be conducted in order to evaluate the impacts of specific changes on existing criteria, various processes etc. Explanatory research focuses on an analysis of a specific problem to understand and explain the patterns of relationships between variables. Experiments are the most popular tool to collect data in studies with explanatory or causal research design **(Bhat, 2018).** This type of research seeks to answer why and how questions **(Bhattacherjee, 2012).** As matter of fact, an explanatory research has many advantages, such as **(Zikmund, et al., 2012):**

- Playing a main role in identifying reasons behind a wide range of processes;
- Repeatable research if it necessary;
- This type is associated with greater levels of internal validity because of the selection of subjects are doing systematically.

However, explanatory research have some disadvantages, such as **(Zikmund, et al., 2012**):

- Accident in events may be understood as cause-and-effect relationships;
- While casualty can be concluded, it cannot be proved with a high level of certainty.

Table 3.1 below compares the main characteristics of explanatory research to exploratory and descriptive research types:

Table 3.1 Main Characteristics of Research Designs (Zikmund, et al., 2012):

	Explanatory research	**Exploratory research**	**Descriptive research**
Amount of uncertainty characterizing decision situation	Clearly defined	Highly ambiguous	Partially defined
Key research statement	Research hypotheses	Research question	Research question
When conducted?	Later stages of decision making	Early stage of decision making	Later stages of decision making
Usual research approach	Highly structured	Unstructured	Structured

This research aims at investigating the challenges imposed on humanitarian logistics operations, which result in negative impacts on the effectiveness of disaster response in all its phases. First, challenges faced during the preparedness phase, such as facility and resources allocation, logistic planning challenges, laws, legislation and organizational challenges, technology system challenges, etc. Second, challenges faced during the emergency response phase, like inventory management challenges, distribution of relief materials challenges, including demand surge, uncertain supplies, critical time, damaged infrastructure, vast scope, huge operation size under complex and chaotically circumstances, in addition to Israeli occupational barriers and obstacles, which produce serious challenges. Third, challenges faced during recovery and rehabilitation, like activities that aim at rebuilding or maintaining the affected buildings and infrastructure,

and the activities that aim at normalizing the lives of affected people **(Howden, 2011; Koseoglu & Yıldırımlı, 2015).**

As shown in the Literature Review section of this research, exploring the humanitarian logistics context is strongly needed due to the scarcity of previous studies on the challenges of humanitarian logistics in developing countries in general, and in the Palestinian context in particular. Therefore, a managerial or conceptual model is to be formulated to guide planners, decision makers and officers in GOs, NGOs, and other related private sector organizations to modify logistics operational processes, in order to increase the effectiveness and efficiency of relief processes. Therefore, the type of research used is the exploratory research type.

3.3 Research Approach

Research approach is the set of detailed plans and procedures that describe all study steps (data collection, analysis and interpretation) **(Creswell , 2014; Chetty, 2016).** Selecting the research approach depends on the nature of the problem and the purpose of the study **(Creswell , 2012; Chetty, 2016).** A research approach can be divided into two components: approach of data collection and approach of data analysis or reasoning **(Lewis & Thornhill, 2012; Chetty, 2016).** Figure 3.1 below shows the structure of a research approach:

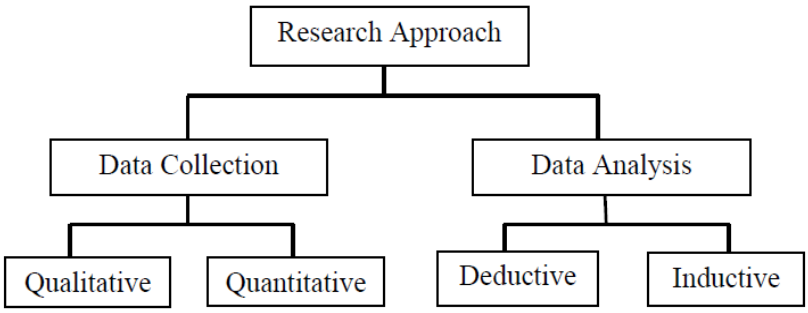

Fig. 3.1 Research Approach Components (Chetty, 2016)

3.3.1 Data Collection

Data collection is the systematic approach used to collect and measure information from different and relevant sources to get a complete, clear, and accurate picture of an interest topic (Creswell, 2012; Chetty, 2016; Dudovskiy, 2018). This process aims at enabling a person or organization to get answers to relevant questions, evaluate outputs, and predicts future probabilities and trends **(Dudovskiy, 2018).** Data collection methods can be categorized into two types:

First, secondary method of data collection is related to the process of collecting the data and information which was published in books, newspapers, magazines, journals, online portals etc. Therefore, secondary data selection should be conducted based on an appropriate set of criteria to ensure accepted level of research validity and reliability. These criteria include for example publication date, authors' information, source reliability, discussions quality, depth of analyses etc.

(Dudovskiy, 2018).

Second, primary methods of data collection, which can be divided into two categories:

- Quantitative data collection methods: which are related to the collection of data that requires mathematical calculations in different formats to explain the studied topic. Methods of quantitative data collection include closed-ended questionnaires, correlation, regression, mean, mode and median etc.

  (Creswell, 2008; Chetty, 2016; Dudovskiy, 2018).

- Qualitative data collection methods: which are related to non-quantifiable elements or data and do not involve numbers like emotions, feeling, colors etc. This type of data aims at providing a deep understanding of the study topic. Usually such data is collected using open-ended questionnaires, interviews, focus groups, observation etc. **(Chetty, 2016; Dudovskiy, 2018).**

3.3.2 Data Analysis

There are two types of approaches to analyze data: deductive and inductive approaches (Dudovskiy, 2018; Trochim, 2006).

A. Inductive Approach:

This approach leads to moving from observations to theories and generalizations. In inductive reasoning approach, the process starts with specific observations and measures (plan or course of action taken to achieve a particular purpose), starts to detect patterns or modality and regularities or harmony, formulate some empirical hypotheses to explore, and then,

developing general conclusions or theories. This is based on analyzing qualitative data **(Dudovskiy, 2018; Creswell, 2008; Trochim, 2006).** The inductive approach is concerned with introducing a new theory. The inductive approach is summarized below in Figure 3.2:

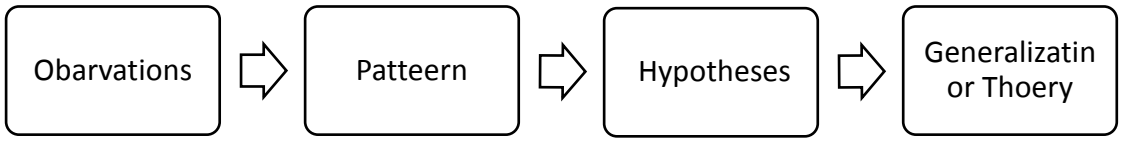

Fig. 3.2 Inductive Approach Thinking Path (Trochim, 2006)

B. Deductive Approach:

This approach works in the other way, it starts from generalizations or theory and moves to more specific items. The process of this approach starts with thinking about a theory related to the topic of interest, then starts to narrow down thinking to achieve some hypothesis that can be tested (Trochim, 2006). Finally, hypothesis tests with specific quantitative data leads to confirming or rejecting the theory **(Trochim, 2006; Dudovskiy, 2018).** The deductive approach is summarized in Figure 3.3 below:

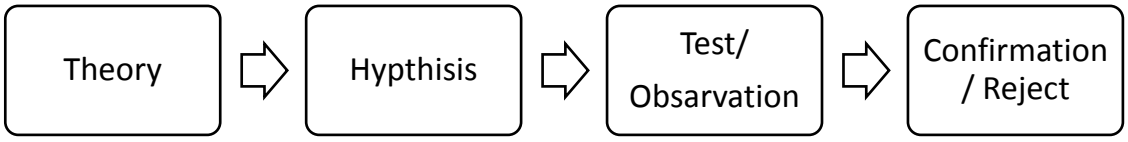

Fig. 3.3 Deductive Approach Thinking Path (**Dudovskiy, 2018; Trochim, 2006)**

The following Table 3.2 summarizes the main differences between inductive and deductive approaches:

Table 3.2 differences between inductive and deductive approaches (Gabriel, 2013)

Dimensions of comparison	Deductive	Inductive
Aim	Testing the theory	Generating theory
Starts with	Hypothesis	Research questions to narrow the scope of research
Emphasis on	Causality	Exploring new phenomena

In the case of mixed type of data, both approaches of analysis (inductive and deductive) need to be used **(Dudovskiy, 2018).** The inductive approach is more exploratory and open-ended. Conversely, the deductive approach is more narrow and concerned with testing hypotheses **(Trochim, 2006).** Based on the fact that this study is an exploratory type and there is a need to test the hypothesis, mixed of deductive and inductive approach need to be used.

3.3.3 Qualitative Research

A qualitative research is an exploratory or interrogative research that aims at going deeply under the surface of the phenomena **(Jost, 2016).** The aim of an exploration is to understand the circumstances of the studied problem (Creswell, 2012). Additionally, it is uses to measure something by its quality without quantity. Usually, numbers cannot be used to describe those things. Qualitative studies work with descriptions **(Penn, 2016).** Basically, qualitative research use methods to collect or generate data with lower dependency on analytical techniques to understand the data. **(Dudovskiy, 2018; Saunders, et al., 2009).**

3.3.4 Quantitative Research

Quantitative studies explore and test the correlation between certain variables that reflect the attributes of a population **(Creswell, 2012)**, and it is used to measure something by quantity rather than quality using and producing numerical data **(Penn, 2016; Creswell, 2012).** Quantitative research is used in exploring facts, measures, numbers, percentages, statistics, formulae, and data.

(Penn, 2016). The following table 3.3 summarizes the main differences between qualitative and quantitave research:

Table 3.3 Differences between Qualitative and Quantitative Research (Surbhi, 2016)

COMPARISON BASIS	QUALITATIVE RESEARCH	QUANTITATIVE RESEARCH
Meaning	Qualitative research is a method of inquiry that develops understanding on human and social sciences, to find the way people think and feel.	Quantitative research is a research method that is used to generate numerical data and hard facts, by employing statistical, logical and mathematical technique.
Nature	Holistic	Particularistic
Approach	Subjective	Objective
Research type	Exploratory	Conclusive
Reasoning	Inductive	Deductive
Sampling	Purposive	Random
Data	Verbal	Measurable

COMPARISON BASIS	QUALITATIVE RESEARCH	QUANTITATIVE RESEARCH
Inquiry	Process-oriented	Result-oriented
Hypothesis	Generated	Tested
Elements of analysis	Words, pictures and objects	Numerical data
Objective	To explore and discover ideas used in the ongoing processes.	To examine cause and effect relationship between variables.
Methods	Non-structured techniques like In-depth interviews, group discussions etc.	Structured techniques such as surveys, questionnaires, and observations.
Result	Develops initial understanding	Recommends final course of action

Finally, both approaches (qualitative and quantitative) can be used in a single research **(Saunders, et al., 2009).**

3.3.5 Mixed Methods Research

It is the research where the quantitative and qualitative research methods, approaches, concepts are combined into a single study **(Creswell , 2012; Surbhi , 2016; Datt, 2016).** The purpose of using mixed methods approach is to gain the benefits from the strengths of each method and to compensate the weaknesses of each method **(Creswell , 2014; Saunders, et al., 2009)**. Based on Creswell (2014) there are three types of mixed methodologies:

- The convergent parallel mixed method: qualitative and quantitative data are collected and analyzed in parallel and then their results are compared.

- The explanatory sequential mixed methods: quantitative data is first collected and analyzed, and then the results are used to plan for the collection of the qualitative data.
- The exploratory sequential mixed method: qualitative data is firstly collected and analyzed then the results used to plan for collection of quantitative data.

This study addresses the challenges of humanitarian logistics operations in the West Bank of Palestine. In fact, it is the first time that challenges facing humanitarian logistics in the West Bank are investigated. In order to cover this topic from all aspects, the researcher used a mixed methodology approach; the collected qualitative and quantitative data were analyzed and then integrated. Qualitative data was collected first, looking for factors that were not mentioned in literature review. So, the research approach is the sequential exploratory methodology. A mixed methodology research compensates for the weaknesses of both qualitative and quantitative research, providing more comprehensive problem understanding, and is useful in explaining the results as a causal process **(Creswell, 2014).** For the collection of data, the researcher used semi structured interviews and questionnaires.

To summarize, this research is explanatory sequential mixed methods of both qualitative and quantitative data collection methods that need to be analyzed using both deductive and inductive approaches.

3.4 Research Methodology Flow Chart

The research methodology is divided into five steps. The first step is the literature review, which is used to clearly define the idea, concept purpose, scope of research, and concept of humanitarian logistics, and then the research questions were formulated.

Then second step is the collection of qualitative data, which was done through conducting semi structured interviews with logistics professionals such as scientists, planners, decision makers and officers at NGOs, GOs, and other private logistics institutions. Interviews helped in exploring the contextual factors that were not mentioned in the literature review, these additional new contextual factors were useful in enriching the survey to get a comprehensive surveying tool **(Edwards & Holland, 2013**).

The third step is quantitative data collection using a closed ended questionnaire, which was designed based on the information and data collected from the literature review and the conducted interviews. This qualitative data was statistically analyzed to test the correlation between variables and to answer the first question of the research.

The fourth step is the model developed based on the analysis of the data that was collected in the previous step. The fifth step is the formulation of the conclusion, interpretations, and recommendations, as shown in Figure 3.4.

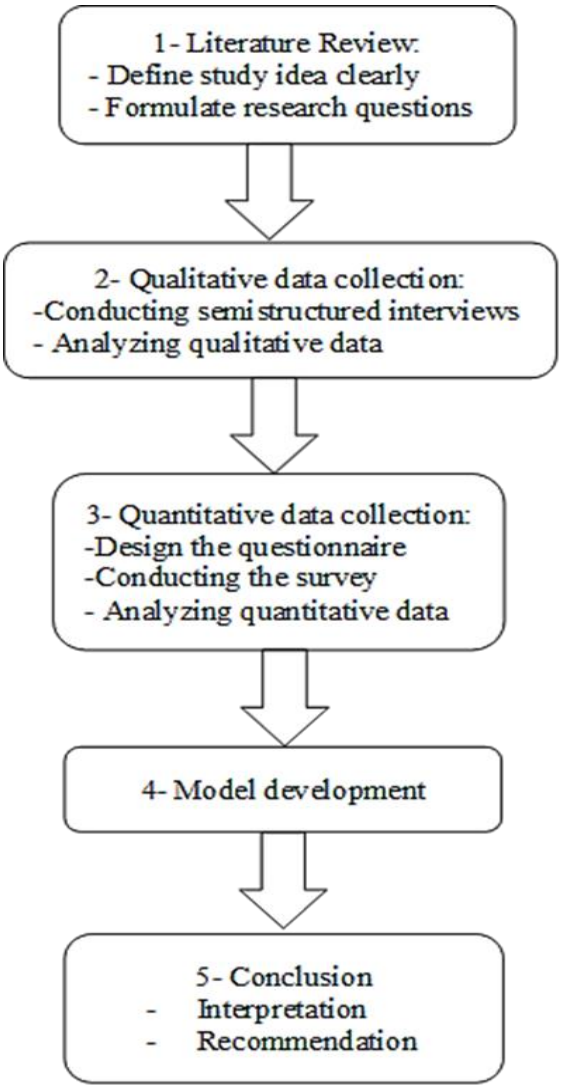

Fig. 3.4 Research Methodology Flow Chart

3.5 Research Population and Sample Size:

The research population consists of the institutions providing logistics services in the West Bank of Palestine (including NGOs, GOs, and other private logistics institutions). The Palestinian Civil Defense and United Nations Office for the Coordination of Humanitarian Affairs OCHA in Nablus were contacted to get a list of institutions or organization that legally works in field of disaster risk management (at any phase) and provide logistics service as part of their activities all over the West Bank. Based on

the data provided by the Civil Defence and OCHA office, the targeted population was defined as shown in Table 3-4 below:

Table 3-4 Main Characteristics of Research Designs (Zikmund, et al., 2012)

Type of Organization	Number of Organizations
Governmental Organizations (GOs)	57
Non-Governmental Organization (NGOs)	55
Private Sector Organization	8
Total	120

The sample size is one of the important issues in a survey. Determination of a minimum sample size is very crucial in order to provide a statistical representation of the population and to generalize the results over all of the population **(Saunders, et al., 2009).** To meet this purpose, the Thompson formula was used **(Thompson, 2012).**

$$n = \frac{N * P(1-P)}{\left[\left(N-1\right) * \left(\frac{d^2}{z^2}\right)\right] + P(1-P)}$$

Where,

n = the sample size.

N = population size, 120

d = accepted marginal error (0.05)

P = proportion of the property offers and neutral (0.5)

z = z value is the upper α/2 of the normal distribution (1.96 for 95% confidence level).

Based on the above equation, the sample size was 92 institutions, who were asked to complete the survey. More than 160 electronic and hard questionnaires were distributed to logistics professionals such as scientists, planners, decision makers and officers at NGOs, GOs, and other private logistics institutions. Sampling was done using the random stratified method. However, the usable returned filled questionnaires were 108; which represents a 67.5 % response rate.

3.6 Data Collection:

As mentioned above, this research is an exploratory sequential mix research. Thus, the qualitative data was collected and analyzed first (Creswell , 2014) through reviewing the related literature in books, internet, published journal articles in addition to data from experts interviews. Qualitative data collected analyzed and the results were used to build up the quantitative data tool, as shown in the following sub-sections:

3.6.1 Semi-structured Interviews:

An interview is a method of data collection (Sekaran & Bougie, 2010). Interviews are classified by Saunders et al. (2009), Lewins, et al. (2010) and Edwards & Holland (2013) into three types:

- Structured interview: is a standardized interview, in which the interviewer asks clear and identical set of questions that were prepared in advance before the interview.

- Semi-structured interview: it is non-standardized interview, in which the interviewer prepares a list of predetermined topics and questions to be covered during the interview. The questions in this type of interview may vary from one interview to another. Also, interviewers have the flexibility to neglect, add, or change the order of questions or topics, and may omit, change order or explore the research objectives clearly.
- Unstructured interview or in-depth interview: it is an informal interview and does not include predetermined questions. The interviewer has a clear idea about the topic to be explored.

Interviews have advantages such as the thematic dialogue with interactional exchange was conducted to extract information that was provided by experts **(Bhattacherjee, 2012; Edwards & Holland, 2013; Creswell , 2012)**. However, interviews also have some disadvantages, such as consuming time and money, in addition to having some difficulties in analyzing the collected information **(Bhattacherjee, 2012; Creswell, 2012).** Interviews can be conducted through direct meetings, telephone calls, or online **(Sekaran & Bougie, 2010; Bhattacherjee, 2012).**

Semi-structured Interviews are used to collect focused, qualitative, textual data and it is the best used technique when there is no ability to conduct the interview more than one time. In addition, it provides reliable and comparable qualitative data, and provides a chance for identifying new directions of topic understanding **(Cohen & Crabtree , 2006).**

Moreover, semi-structured interviews have many advantages that encourage the researchers to adopt them as a qualitative data collection technique, such

as allowing informants to feel free to express their point of views in their own words, facilitating two-way of communication which enable interviewed to ask questions to the interviewer so it can use as an extension tool, usually the information collected will not provide answers only, but also reasons for the answers, and easily discuss sensitive issues deeply **(Keller & Conradin, 2018).**

As a result, semi-structured interviews with eleven professional logistics working in different institutions were conducted. Interviews were summarized in written documents describing the findings and related key information, and they were then coded and tabulated based on the relevant disaster risk management phase **(Lewins, et al.; 2010).**

As mentioned before, this research is a sequential exploratory research due to the serious lack of information related to the factors affecting humanitarian logistics in the West Bank. In addition, based on Edwards & Holland (2013) and Creswell (2012), a semi-structured interviewing type was selected in order to explore any contextual factors that were not mentioned in the literature review. Therefore, face-to-face semi-structured interviews were conducted with logistics professionals, such as scientists, planners, decision makers and officers at NGOs, GOs, and other private logistics institutions.

3.6.2 Questionnaire

A questionnaire is defined as set of questions formulated to be answered by respondents in order to document their answers with identical arrangement **(Sekaran & Bougie, 2010; Giesen, et al., 2012).**

It is a widely used data collection instrument usually used for large samples. The advantage of this instrument is that it is considered a rapid, simple, and effective method to collect data with less effort, time, and cost **(Saunders et al., 2009; Giesen, et al., 2012).** However, using a questionnaire requires that a researcher possesses good awareness about the interest variables and how they can be tested **(Sekaran & Bougie, 2010; Giesen, et al., 2012).**

Questionnaires can be in an electronic form or a hard copy, so they can be distributed by hand, through mail, or through special links to the respondents, where respondents answer the questionnaire as anonymous.

3.6.2.1 Questionnaire Design:

A set of questions were formulated to be answered by respondents. The researcher selected the close-ended questionnaire type as it is an easier and faster method for respondents to take a decisions. Additionally, the information collected using the questioner can be coded and analyzed easily **(Creswell , 2012, Creswell , 2014).** Furthermore, Likert scales are very suitable for looking deeply into a specific topic and exploring what the population thinks about that topic **(Creswell, 2008).** The researcher used a five-point Likert scale questionnaire to evaluate the level of negative impact that various factors have on humanitarian logistics operations. Each of the respondents chose one option, which mostly agree with his/her opinion.

The questionnaire was formulated after reviewing previous surveys used in different exploratory studies, and based on the data collected from literature reviews and interviews, in addition to the input of workers in the field of

logistic in the different phases of disaster risk management; logistics before disaster (preparedness and mitigation phase), during disaster or response phase, post-disaster (recovery and rehabilitation phase) (Kovács & Spens, 2007; Pache , 2014; Koseoglu & Yıldırımlı, 2015), as shown in **Figure 3.5**.

Fig. 3.5 Customized Disaster risk management Cycle (Koseoglu & Yıldırımlı, 2015)

After the questionnaire was formulated based on the analyzed qualitative data, it was reviewed by many experts and academic arbitrators (see Appendix C Table 1) to evaluate the effectiveness of the questionnaire. Then, the quantitative data collection step was initiated using a closed-ended questionnaire **(Creswell, 2014).** Additionally, other local and international experts revised the questioner and proposed some modifications which were taken into considration. The questionnaire consisted of four sections:

- Section One:

The purpose of this section is to collect demographic information related to respondents and their institutions. This section consists of eleven statements, which are: gender, age, academic qualifications, name of organization, job title, field of work, years of experience in the field of humanitarian logistics,

working area governorate, number of years of institutional experience in the field of humanitarian logistics, legal situation, and type of institution.

- Section Two:

The purpose of this section is to collect data about the obstacles facing humanitarian logistics during the disaster preparedness phase. It consists of thirty three statements distributed into three groups of questions, each group related to identical groups of activities or special level of management; the first level is related to the planning process, the second to governmental, organizational and infrastructure issues, and the third is related to technical operations for humanitarian logistics.

- Section Three:

The purpose of this section is to collect data and information about the obstacles and challenges facing humanitarian logistics during the response phase. This section consists of twenty-seven statements distributed into three groups of questions; each group related to identical axis of activities or special level of management. The first group is related to obstacles and challenges facing the activation of emergency systems during emergencies and their effect on humanitarian logistics. The second group is related to governmental, organizational and infrastructure obstacles and challenges to humanitarian logistics during the response phase. The third group is related to obstacles and challenges facing technical operational processes of humanitarian logistics during the response phase. This section is the most critical section because all logistics operation should be in maximum effectiveness under very high pressure with complex, chaotic mixed up and

lawless situation. Thus, the negative impact factors should be cleared enough to be maintained.

- Section Four:

The aim of this section is to collect data and information about obstacles and challenges facing humanitarian logistics during the post-disaster phase (the reconstruction and rehabilitation phase).This section consists of thirteen statement distributed into three groups: first, obstacles of planning for logistics operations during the reconstruction and rehabilitation phase. Second, governmental, organizational and infrastructure obstacles of humanitarian logistics during the reconstruction and rehabitation phase. Third, obstacles and challenges facing technical operations of logistics during the reconstruction phase.

In order to evaluate its validity and the ability to achieve its purposes, experts in the field of humanitarian logistics and disaster risk management reviewed the questionnaire. Their notes and recommendations were taken into consideration and the questionnaire was modified. The final version of the questionnaire was issued in English language **(see Appendix A).** Then, the questioner was translated into Arabic to make it easier to understand for the respondent **(See Appendix B).**

After the final version of the questionnaire was issued, the phase of quantitative data collection was initiated by distributing the questionnaire. A questioner distribution processes can be done using various methods such as: by hand, e-mail, or online. Online survey is the most efficient method because it has many advantages, such as accessibility to populations which

sometimes cannot be reached **(Wright, 2017),** saving time **(Wright, 2017; Wile, 2017),** especially for researcher who can reach large number of sampled people in a very short time **(Wright, 2017).** Furthermore, online surveys are inexpensive, as they do not require paper and eliminate labor, postage and distribution costs, especially in case of large sample size. Online surveys provide isnstant feedback and give the researcher the ability to see data instantly **(Wile, 2017).** Despite that, online survey also has some disadvantages, such as inaccurate demographic data (age, gender, experience period…etc) **(Wright, 2017; Wile, 2017).** Another disadvantage is technical issues. In some cases, the respondant can submit the survey twice, or more, which leads to the collaction of inaccurate data **(Wile, 2017).** Other disatvantages include sampling proplems; a shortage in information about the characteristcs of the respondnt, the ability of listing e-mail of some members of virtual sample group according to the privicy of organizations, multiple e-mail addresses for the same person **(Wright ،2017).** The researcher took all these problems into consideration during the data collection and analysis phases. In addition, the researcher followed a procedure to follow up with the people who did not respondent rapidly, through which a reminding email was sent every two days after the day on which the questionnaire was sent, as well as calling them a person did not respond for a week. The quintitative data was collected though a hard and an online questionnaire that was desighed using Google Drive forms.

The collection of data continued for a period of forty five days. The qustionnaire was sent as a link through an e-mail with a cover letter and some

times by hand as as ahard copy, in order to invite individuals to fill the the questionnaire. The collected data was stored in a special database in special forms with anonymous user.

3.6.2.2 Questionnaire Pilot Study

It is a small scale study that was conducted to explore whether the study can achieve its purposes or not, and to examine if the full-scale study can be conducted in accordance to the designed plan or if it should be modified **(Cadete, 2017).** Also, the pilot study is useful to discover potential problems imposed by the respondents of the questionnaire, which enabled the researcher to evaluate the validity and suitability of the included questions (**Saunders et al.,2009; Cadete, 2017).**

Additionally, according to Bhattacherjee (2012), a pilot sample is extremely needed to be a part of the research plan or process. A pilot test was conducted by ten experts and officers working in the humanitarian logistics field (Refer to Appendix D) to make sure that the questioner does not have any deficiencies. The feedback received from the respondents of the pilot test focused mainly on rephrasing some statements to be more clear and achieving its purpose. Generally, all respondents agreed that the questionnaire was valid and easy to use. All of the recommendations provided by the respondents were taken into consideration before the final questionnaire was distributed to the full sample.

3.6.2.3 Questionnaire Reliability

Reliability it is a term used to describe whether the data collection instrument and methodology are cosistant, stable, ansd can produce precise results in different conditions and at different times **(Saunders et al., 2009; Sekaran & Bougie, 2010; Bolarinwa, 2016).** Based on Creswell (2012) and Creswell (2014), Cronbach alpha method was adopted to test the reliability of the questionnaire by mrasuring the consistancy or colloration between each item and the others. Cronbach alpha test was coducted for the pilote sample and the results was as follow:

To inspect the reliability of the questionnaire, the reliability coefficient was calculated using the Cronbach alpha equation. Based on the result shown in Table 4-3, the Cronbach's Alpha test, the reliability of all elements or phases of the survey are over 80%.

3.6.2.4 Questionnaire Validity

The validity of the questionnaire means that it satosafctorly fulfills the purposes for which the instrument was designed, which is confirmed by proofing that the insrtrument is measuring the required parameters **(Saunders, et al., 2009; Sekaran & Bougie, 2010; Collingridge, 2014; Bolarinwa, 2016).** To validate the research quetionnaire, the researcher followed three steps.

Collingridge (2014) and Bolarinwa (2016) classify the stages of validating the questioneer as follows: First, the face validity is evaluated by presenting the questionnaire to two types of experts: experts in humanitarian logistics and disaster risk managements, in order to evaluate the effeciency of the

questions in capturing the research topic. The other type is expert on questionnaire design, in order to check for common errors (**Collingridge, 2014; Bolarinwa, 2016).** Second, a pilot sample test was codacted and maintained as described in Section (3.6.2.2) of this Chapter (Collingridge, 2014). Third, Cronbach's Alpha test was conducted, also as described in Section (3.6.2.3) of this Research. Based on Kimberlin and Winterstein (2008), the instrument cannot be reliable without being valid.

3.7 Data Analysis Approach

As explained in this Chapter, this research is a sequential exploratory study, which is a type of mixed research methodologies. Thus, the data analysis will follow the mixed methodology approach according to the following steps:

3.7.1 Semi-Structured Interviews Analysis (Qualitative Data Analysis):

Eleven semi-structured interviews were conducted to collect data about humanitarian logistics from local professionals in disaster risk management, emergency response, and humanitarian logistics fields. Based on Maguire and Delahunt (2017) and Creswell (2012), qualitative data collected from the interviews was analysed using a thematic analysis approach. Thematic analysis is defined as the process of identifying themes or patterns for qualitative data **(Maguire & Delahunt, 2017).** Thematic analysis is distinguished by its simplicity and flexibility to extract new ideas by identifying, analyzing, and reporting themes within data **(Maguire & Delahunt, 2017).**

According to Creswell (2012) and Maguire and Delahunt (2017), thematic analysis consists of six steps:

- Summarize the interview in text. Then, reading and re-reading, to be familiar with collected data and develop the ability to initiate information;
- Creating initial codes by organizing data in a systematic and meaningful way, to generate a pattern collecting similar features of data;
- Looking for themes, gathering codes with similar features in one theme, which can describe the data carefully, correctly, and capturing something significant about the data;
- Reviewing themes to make sure that they make sense and serve the study
- Defining theme names;
- Writing-up some kind of report or dissertation**.**

In this study the mentioned six steps were followed, reading and rereading texts of interviews to be familiar with their content, then codes were generated, after that gatharing the similar codes into sections or issues, then merge the similar sections or issues into themes, and finally defining and naming the themes.

3.7.2 Questionnaire Analysis

The researcher used the "Statistical Package for the Social Sciences (SPSS)" software for analyzing data collected through the questionnaire. This software is efficient in testing the different types of collected data, in addition to exploring the relationship between the different elements of the questionnaire **(Landau & Everitt, 2004).**

The researcher used the descriptive statistical analysis method to obtain information that describes the study sample. At 95% confidence interval, p values less than or equal to 0.05 were considered significant. For comparative study, SPSS was used as mentioned below:

• Cronbach alpha test was conducted in order to test the reliability of the questionnaire.

• Frequencies test, percentages, mean and standard deviation have been done to analyze the answers of the study sample regarding the respondents' data profile.

Chapter 4

Data Analysis and Results

Chapter 4
Data Analysis and Results

4.1 Chapter Overview

In this chapter, the researcher will analyze the qualitative data extracted from the conducted interviews and the quantitative data collected through the questionnaires, as described in Chapter (3). The factors affecting humanitarian logistics were discussed with specialists working in the different fields of disaster risk management using face-to-face interviews. As for the quantitative data obtained through the questioners, the researcher used the Statistical Package for the Social Sciences (SPSS) software to analyze questionnaires and represent the results using descriptive statistics and hypotheses testing. The purpose of this research is to determine the real factors affecting on humanitarian logistics operations in the West Bank of Palestine.

4.2 Interview Analysis

In order to obtain more information about humanitarian logistics in West Bank, face-to-face semi-structured interviews were conducted with people who work in different positions at nine different disaster risk management levels and at different legal mandate institutions.

Eleven semi-structured interviews were conducted with different experts working in different phases of disaster risk management as summarized in Table 4-1.

Table (4.1): Features of the Institutions and Positions of Interviewees

Institution	Scope	Legal Status	Interviewee Position	Years of Experience
Nablus Municipality Firefighting Department	-Preparedness -Capacity Building -Response	Local Government	Deputy Director	16
Multipurpose Resource Center (old city of Nablus)	-Preparedness -Capacity Building -Response	Local NGO	Director	20
Hebron Municipality	-Preparedness -Mitigation -Response	Local Government	Director of Logistics and Disaster risk management Department	5
Tulkarem Governorate	-Planning -Coordination	Government	Director of Disaster risk management Department	10
Military Medical Services	-response	Government	Officer Lieutenant	7
Palestine Red Crescent Society	- Planning and Preparedness -Capacity Building -Response	Local NGO	coordinator	10
Palestinian Medical Relief Society	-Capacity Building - Response	Local NGO	Director Of Nablus branch	15
Civil Defense	- Planning -Preparedness -mitigation -Capacity Building -Response - Coordination	Government	Captain in the Operations Department in Tulkarem Directorate	8
			Captain at the Central Operations Room at the General	10

Institution	Scope	Legal Status	Interviewee Position	Years of Experience
			Headquarters of Civil Defense	
			Colonel at the Department of Disaster Risk Management at the General Headquarters of Civil Defense	18
United Nations Office for the Coordination of Humanitarian Affairs (OCHA)	- Coordination	International Institution	Head of the North West Bank Sub-office, Nablus	16

Recording interviews is better than taking notes during the interview, because it provides the researcher a full and accurate record of the conversation **(Creswell, 2012).** Therefore, the analysis will be much easier and unbiased. Therefore, Interviews were recorded using mobile phone application after obtaining the interviewee's approval; in cases where the recording was not acceptable by the interviewees, the interviews were documented by writing notes. Also, it was emphasized for the interviewees that the information will be used for scientific research purpose only and will not be shared with anyone. Then, the thematic interviews analysis was started.

Interviews were analyzed based on thematic analysis approach, which guided with two main guidelines that are indicated by Braun and Clarke (2006) and Maguire and Delahunt (2017). The main objective of a thematic

analysis is to observe and demonstrate the actual situation of humanitarian logistics at West Bank of Palestine and detect the actual factors affecting the efficiency of logistics operations at all disaster risk management phases.

The outputs of semi-structured interviews were categorized into six central themes.

The used codes, issues discussed, as well as the basic and central themes were identified as shown in Table 4-2 below.

Table (4.2): Summary of Identified Codes, Basic Themes, and Central Themes Codes

Code	**Issues Discussed**	**Basic Themes**	**Central Themes**
Barriers and checkpoints	-Israeli polices and constrains - Israeli domination over crossings and checkpoints	Occupation	Political and Organizational issues
Governmental arrangement	-State disaster risk reduction strategy availability -Disaster risk management organization structure in West bank -Decision maker identification. -Decision making authority. -Governmental representative -Mandate for different parties -Legislations and legal. -Conflicts of laws, policies and working systems among respondents	Legal issues	
Management Requirements	-Time utilization -Resources assessment -Human resources: professional staff, trained staff and voluntaries, and staff turnover. -Data resources and availability	Resource	Resource Management

Code	Issues Discussed	Basic Themes	Central Themes
	-Type of data: hazard maps, risk maps, statistical data, etc		
Losses and damages	- Damage assessment -Losses assessment -Accessibility to affected areas	Assessment	Planning for needs assessment
Needs	- Drugs, blood units, Anesthetics, food, and other needs - Fuel validity -Equipment suitability		
Communication	- Communication and coordination between emergency room and technical operational staff. - Communication and coordination between partners - Communication effectiveness between local and international institutions - Effectiveness of available communication systems - Integration between partners.	Effective coordination	Integration and Optimization
Processes	- Planning process. - Response process - Integration between processes - Optimization of facilities and warehouse allocation	Process approach	
Risk	-Risk facing planning phase - Risk facing implementing response plans -Risk facing respondents -Security measures to control conditions in chaos	Effective plans implantation	Ensure efficiency and safety
Sciences	-Concept of disaster risk management -Differences between disaster and crises -Disaster risk management expertise	Common language and unification of understanding	Standardization
Documentation	- Documented plans - Activities documentation		

Code	Issues Discussed	Basic Themes	Central Themes
	- Respondents standard operation procedures		

The six themes arising from the analysis of the semi-structured interviews are detailed below:

4.2.1 Theme 1: Political and Organizational Issues

This theme aims at indicating the major factors affecting humanitarian logistics in relation to the current political situation, the organizational structure in West Bank and its constrains. All the interviewees agreed and emphasized on the fact that the complex political situation, which is the result of the Israeli occupation of the West Bank, is one of the major complex factors affecting all Palestinian daily activities, including all logistics operations related to the different disaster risk management phases. The imposed polices include strict constrains, and in some cases the prevention, of the suitable and required land use, enhancement of infrastructure, opening and paving new roads, importing suitable equipment and importing new technologies. Additionally, there is a complete Israeli dominance over all crossings and checkpoints. This results in more difficulties for the Palestinian side and disruption of all exerted efforts.

As a natural result, all the above constrains lead to defects in Palestinian systems, especially in its structure and to the associated regulations and legislations related to disaster risk management and its logistics operations. It was clear for the interviewees that there is no integrated state disaster risk reduction strategy until now; since the government's current priority is to

resist occupation. Additionally, the interviewees assured that there is disaster risk management organization structure in the West Bank, except for one interviewee who though that there is a clear structure but it is not documented and not widely shared with partners. Most of the interviewees, especially those working at NGOs, believe that there is a problem in decision maker identification, authority, and what institution he represents. Also, some of the interviews mentioned that there is a conflict in the legal mandate of the different parties, which is the result of non-consistent legislations, laws, policies, and working systems among respondents.

4.2.2 Theme 2: Resource Management

This theme aims at indicating the major factors affecting humanitarian logistics in relation to the requirements of humanitarian logistics management requirements. Some of the interviewees emphasized on the issue of time, stressing that time is the most critical factor and that time utilization is a real challenge and should be employed before disaster in risk management (preparedness and mitigation) to achieve the main goals: prevent or minimize risk impact and efficient rapid response. On the other hand, some of the interviews said that the accurate assessment of different available resources in each phase of disaster risk management is one of the most effective elements due to the lack of the ability to conduct accurate evaluation. This point was presented by the interviewees who consider the human professional staff, trained staff and voluntaries the major challenge. One of the interviewees indicated that staff turnover should be taken into

consideration as one of the factors that has directly effect on managing humanitarian logistics.

Some interviewees, especially those who worked in the planning process, have explicitly assured that the availability of the different types of required data and information, such as: hazard maps, risk maps, statistical data, historical data, etc, is the most crucial factor in managing humanitarian logistics.

4.2.3 Theme 3: Planning for Needs Assessment

This theme aims at indicating the major factors affecting humanitarian logistics related to needs assessment. These factors were deeply discussed, mainly with people who were interested in the response phase. They talked about the different types of assessment. First, assessment for needs before a disaster, which mainly depends on judgments that are made based on the available data, information coming from history and studies, and it is part of planning for response in the preparedness phase. These needs may include drugs, blood units, anesthetics, food, fuel, and other human needs. Second, the first assessment after the disaster attack, such as damage assessment, losses assessment, accessibility to affected areas assessment, fuel validity, and equipment availability and suitability, this assessment should be done in black hours (first 72 hours after disaster attacks). Third, a need assessment for rehabilitation phase. This need may include clothes, shelters, sanitation systems, health care, kitchen utensils, etc. All interviewees were unable to discuss this assessment type as they did not live such an experience.

However, all of them extremely believed that assessment is the controller of the humanitarian logistics.

4.2.4 Theme 4: Integration and Optimization

This theme aims at indicating the major factors affecting humanitarian logistics related to processes integration and optimization. Many of the interviewees thought that one of the main factors that prevents the achievement of integration and optimization were effective coordination with efficient communication systems. Also, the interviewees monitored some other factors that affect the integration between humanitarian logistics processes, such as: poor coordination tools, weak communication between emergency rooms and technical operational staff, poor communication and coordination between partners, weak communication between local and international institutions, limited communication systems, and weakness in use integration concepts between partners.

One expert mentioned that the process approach is missing in disaster risk management, mainly in planning, response processes, and this impedes the integrating between operation and processes. Also, he indicated that there is a problem in selecting the location of facilities and warehouses due to the constrain of land use polices and regulation, absence of land risk assessment maps, and the scarcity of public property land, so optimization the location is difficult. As a result, humanitarian logistics will be hampered due to the lack of optimization of locations.

4.2.5 Theme 5: Ensure Efficiency and Safety

This theme aims at indicating the major factors affecting humanitarian logistics related to risks facing system components (staff, plans, software, and equipment). Interviewees with a technical background mentioned that there are many types of risks that they face while conducting their operational activities during the implementation of plans or when responding to an event. On the other side, interviews who participate in planning processes are also aware that their plans will be hampered, or in some cases destroyed, due to the unpredictable risks and dynamic variation in predictable risks, especially risks facing respondents and security measures and requirements to pose a chaotic situation in case of disaster. All interviewees believe that these complex combinations of risks interactions at any phase of disaster risk management have a direct impact on humanitarian logistics.

4.2.6 Theme 6: Standardization

This theme aims at indicating the major factors affecting humanitarian logistics related to common language and unification of understanding. It was clear during the interviews that there are different uses for concepts and vocabularies related to disaster risk management in general and humanitarian logistics specifically, this is due to the different background of interviewees and scope of their institutions. Most of the interviewees agreed that they sometimes get confused when dealing with other people from different backgrounds and institutional scopes, especially international organizations,

which have different interests and goals. Additionally, the lack of disaster risk management and humanitarian logistics experts who can properly unify the concept and make it consistent

Some of the interviewees also stressed on the importance of the documentation of data in sub-systems, and then integrating all the data in a unified system. The documentation starts from the planning process and continues throughout the different processes of all phases. Some other interviewees talked about the importance of standard operation procedures that regulate the practical aspects of the different operations, unify respondents' behaviors, unify concepts, and clarify responsibilities. Finally, all of the interviewees strongly agreed that the variations in communication vocabularies and concepts used in humanitarian logistics management and operations are main factors that lead to the insufficiency and ineffectiveness of logistic operations.

4.3 Questionnaire Analysis

The questionnaire was designed in two types; an electronic questionnaire and hard copy of the questionnaire. The questionnaire was distributed in different ways such as by hands and email to collect qualitative data that will be used to test hypotheses that was formulated in Chapter 1.

All respondents were stored in a database as anonymous. Then the variables were defined and coded using the SPSS software. Based on Creswell (2012) and Creswell (2014), the Cronbach Alpha method was used to test the internal consistency and reliability of the questionnaire in the questionnaire design phase. Table 4.3 below shows the quantity of Cronbach alpha for all

elements. Then, many statistical analysis tools were used in order to investigate the relations between the questionnaire elements such as frequency, percentages, means ranking, Cronbach's Alpha, Pearson, and ANOVA test.

Table 4.3 Results of Cronbach's Alpha of the questionnaire elements.

Phase	**Stage**	**No. of items**	**Cronbach's Alpha**			**Reliability factor** $\sqrt{Cronbach's\ Alpha}$		
Disaster Preparedness Phase	Planning for logistics	18	0.82	0.892	0.946	0.906	0.944	0.973
	Logistics governmental, organizational and Infrastructure issues	6	0.813			0.902		
	Logistics technical operations issues	9	0.732			0.856		
Disaster Response Phase	Activation of Emergency Systems	3	0.68	0.894		0.825	0.945	
	Logistics governmental, organizational and Infrastructure issues	9	0.735			0.857		
	Logistics technical operations issues	14	0.863			0.929		
Post-disaster Phase (Reconstruction and	Planning for logistics	3	0.66	0.840		0.812	0.916	
	Logistics governmental, organizatio	5	0.74			0.860		

Phase	Stage	No. of items	Cronbach's Alpha			Reliability factor $\sqrt{Cronbach's\ Alpha}$		
Rehabilitation)	nal and Infrastructure issues							
	Logistics technical operations issues	5	0.702			0.838		
	Total	72						

4.3.1 Population of Study

Measuring of the number of occurrences of a particular score in a given set of data is called Frequency, frequency table is used to organizing raw data in a compact table form by displaying a series of scores **(Salkind, 2010).** Frequency table can be used to measure the trends in the frequency of discrete random events **(KEIM & CRUISE ،1997).** As mentioned before in Chapter 4, this is an exploratory study that has never been done before, such descriptions are simply not available in literature or previous reports. So it will be useful to understand the study population and the trends of their ideas related to humanitarian logistics. Frequency tests were used in this section to describe the population of study.

4.3.1.1 Gender

Table 4.4 represents the gender of respondents, most of the respondents from the targeted institutions are males, while females constitutes of 21.3% of the respondents.

Table 4.4 Gender of Respondents

Gender	% of respondents
Male	78.7
Female	21.3

4.3.1.2 Respondents' Age

Table 4.5 represents the age intervals of respondents; the majority of the respondents' ages are located in the interval of 30-39 years.

Table 4.5 Age Intervals of Respondents

Age	Percentage
Less than 30	22.2
30-39	53.7
40-49	20.4
50-59	3.7
More than 60	0

4.3.1.3 Academic Qualifications

Table 4.6 represents the educational degree of respondents. The majority of the respondents hold a Bachelor's degree.

Table 4.6 Educational Degree of Respondents

Educational degree	Percent
Diploma	35.2
bachelor	52.8
master	11.1
doctorate	0.9

4.3.1.4 Job Title

Table 4.7 represents the job titles of the respondents. Technical workers and officers formed most of the job titles of the respondents.

Table 4.7 Job Title of Respondents

Job Title	Percentage
Technical	33.3
Officer	31.5
head of department	11.1
manager	18.5
director	5.6

4.3.1.5 Field of Work

Table 4.8 below represents the field of work for the respondents. The majority of the respondents are distributed in three main fields: Logistics planning, administrative, and partners activities coordination tasks.

Table 4.8 Field of Work of Respondents

Field	Percentage
Logistics planning	14.6
administrative tasks	35.1
Coordination tasks	17.0
rescue equipment handling	4.9
staff transfer	9.7
victim transfer	9.7
food and drug handling	5.5
housing apparatus handling	3.5

4.3.1.6 Respondent's Experience

Table 4.9 represents the years of experience in the field of humanitarian logistics. More than 36% of respondent have between 5-9 years of experience in at least one of the humanitarian logistics fields.

Table 4.9 Respondent's Experience

Years of Experience	Percentage
less than 5	24.1
5-9	36.1
10- 20	28.7
21- 30	11.1

4.3.1.7 Respondent's Location

Table 4.10 represents governorates in which the respondents work. The respondents were distributed over all the West Bank governorates. The

highest rate of responses was in Tulkarem governorate and the lowest were in Qalqilia and Tubas.

Table 4.10 Governorate of Respondents

Governorate	Percentage
Hebron	8.3
Bethlehem	5.6
Jerusalem	5.6
Ramallah	12
Salfit	11.1
Nablus	13
Qalqilia	4.6
Jenin	10.2
Tulkarem	17.6
Jericho9	7.4
Tubas	4.6

4.3.1.8 Institutional Experience

Table 4.11 represents number of years of experience that the institution in which the respondent works has in the field of humanitarian logistics. The majority of the respondents' institutions have an experience period between 21-30 years.

Table 4.11 years of institutional experience interval

Institutional Experience	Percentage
less than 5	11.1
5-9	14.8
10- 20	20.4
21- 30	49.1
31-40	1.9
more than 40	2.4

4.3.1.9 Institutional Legal Status

Table 4.12 represents the legal status of respondents' institutions. Most of respondents' institutions were governmental institutions.

Table 4.12. Legal Status

Legal Situation	Percentage
Governmental	54.6
Non-governmental	42.6
Private Sector	2.8

4.3.1.10 Type of Institution

Table 4.13 represents the types of the respondents' institutions. Most of the respondents' institutions are local institutions.

Table 4.13 Type of Respondents' Institution

Type of Institution	Percentage
Local	86.1
Regional	5.6
International	8.3

4.3.1.11 Descriptive Analysis

This section reflects an overall vision of the respondents ranking for the importance of factors affecting on humanitarian logistics at each phase of the disaster risk management process.

4.3.1.11.1 Factors Affecting Humanitarian Logistics (HL) During the Disaster Preparedness Phase

First, the respondents' perception about the factors affecting the planning process of humanitarian logistics during the disaster preparedness phase were reflected as a percentage value from the total respondents as shown in the following table 4.14. The results show that the strongest factor is the Israeli policies in the West Bank with 91.1% of respondents who choose strongly agree or agree, and weakest factor was the lack of central body

integrating managerial and technical aspects with 15.9% of respondents who choose strongly disagree or disagree.

Table 4.14 Respondents' perception about Factors Affecting the Planning Process

	Factor	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
1	Appropriateness of humanitarian logistics planning for different types of disasters	23.4	66.4	4.7	4.7	0.9
2	Funding constraints	28	61.7	6.5	0.9	2.8
3	Lack of knowledge in humanitarian logistics sciences	13.1	65.4	12.1	8.4	0.9
4	Shortage in logistics experts	22.4	60.7	12.1	3.7	0.9
5	Risks facing employees working in humanitarian logistics	22.4	62.1	13.1	0.9	0.9
6	Unreliable supply chains	17.8	66.4	8.4	6.5	0.9
7	Large affected areas with huge operations	13.1	57.0	19.6	8.4	1.9
8	Difficulties in handling and maintaining robust equipment	16.8	63.6	8.4	9.3	1.9
9	Poor location for storage points of materials, equipment and services	15.9	64.5	12.1	6.5	0.9
10	Ineffective resources allocation (quantification and identification)	24.3	50.5	17.8	4.7	2.8
11	Differences in capacities of non-governmental organizations	15.9	57.9	19.6	4.7	1.9
12	Requirements of the victims which have to be provided at relief points	23.4	55.1	13.1	4.7	3.7
13	Lack of central body integrating managerial and technical aspects.	23.4	50.5	10.3	11.2	4.7
14	Absence of integration and optimization between all operational activities	26.2	51.4	10.3	9.3	2.8
15	Absence of disaster risk reduction strategies and its implementation tools in Palestine	15.9	54.2	17.8	11.2	.9
16	The lack of community awareness about disaster preparedness	24.3	55.1	8.4	8.4	3.7
17	Unplanned rapid urbanization	27.1	59.8	5.6	7.5	0.0
18	Israeli policies in the West Bank (disconnection between areas, closed areas, barriers, Crossing points, checkpoints, bureaucratic constraints..etc)	64	27.1	5.6	1.9	0.9

Second, the respondents' perception about the governmental, organizational and infrastructure factors affecting humanitarian logistics during the disaster preparedness phase are reflected as a percentage value from the total

respondents as shown in the following table 4.15. The result show that the strongest factor was the existence of multiple and inconsistent data sources hinder the organizing humanitarian logistics with 90.7% of respondents who choose strongly agree or agree, and weakest factor was the Absence of a governmental representative and central legal reference point hinders the organizing humanitarian logistics with 12.1% of respondents who choose strongly disagree or disagree.

Table 4.15 Respondents Perception about the Governmental, Organizational and Infrastructure Factors

Factors		Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
1	Regulations, legislations and Unclear NGO's legal mandates restrict organizing humanitarian logistics	22.4	62.6	8.4	5.6	0.9
2	The political situation, agreements and protocols signed restrict organizing humanitarian logistics in an institutional and systematic manner	18.7	64.5	13.1	2.8	0.9
3	Absence of a governmental representative and central legal reference point hinders the organizing humanitarian logistics	16.8	56.1	15.0	11.2	0.9
4	The existence of multiple and inconsistent data sources hinder the organizing humanitarian logistics	23.4	67.3	4.7	4.7	0.0

Factors		Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
5	Absence of professional coordination abilities within the sectors of risk management restrict organizing humanitarian logistics	19.6	67.3	6.5	6.5	0.0
6	Poor alert systems is one of the obstacles facing organizing humanitarian logistics	30.8	57.0	7.5	4.7	0.0

Third, the respondents perception about the effect of the technical operations factors on humanitarian logistics during the disaster preparedness phase are reflected as a percentage value from the total respondents as shown in the following table 4.16. The results show that there are two main factors that are the strongest factors: first, the Israeli policies hindering humanitarian logistics with 96.3%, and the second, the Israeli procedures at crossing points and barriers in addition to the need for permits for each operation hindering humanitarian logistics operations with 96.2% of respondents who choose strongly agree or agree, and also there are two main factors that are the weakest factors: first, the limited or restricted cooperation and integration between all parties including logistics service providers, second, poor procurement system both with 8.4% of respondents who choose strongly disagree or disagree.

Table 4.16 Respondents' Perception about the Technical Operations Factors

Factors		Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
1	Israeli policies hinder humanitarian logistics.	47.7	48.6	2.8	0.0	0.9
2	Absence of a reliable and effective supply chain	21.5	66.4	7.5	4.7	0.0
3	Weakness in technologies, communication, information management systems	22.4	59.8	11.2	3.7	2.8
4	Limited or restricted cooperation and integration between all parties including logistics service providers	18.7	63.6	9.3	8.4	0.0
5	Absence of agility and leanness concepts in humanitarian logistics operations	17.8	57.0	20.6	4.7	0.0
6	Working with a critical time frame	16.8	68.2	11.2	3.7	0.0
7	Poor procurement system	20.6	60.7	10.3	7.5	0.9
8	Poor location of warehouses and inefficient storage systems for relief materials	19.6	63.6	11.2	4.7	0.9
9	Israeli procedures at crossing points and barriers in addition to permit for each operation hinder humanitarian logistics operations.	52.3	43.9	2.8	0.9	0.0

4.3.1.11.2 Factors affecting Humanitarian Logistics (HL) Operations in the Response Phase

First, the respondents' perception about the factors affecting the activation of emergency systems during emergency situations were measured, and the responses are reflected as a percentage value from the total respondents as shown in the following table 4.17. The results show that the strongest factor is the unstable political situations affecting the process of responding to a disaster with 89.7% of respondents who choose strongly agree or agree, and weakest factor was the Emergency systems compatibility with type of disaster with 7.4% of respondents who choose strongly disagree or disagree.

Table 4.17 Respondents' Perception about Factors Affecting the Activation of Emergency Systems

Factors		Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
1	Emergency systems compatibility with type of disaster	28.0	59.8	4.7	6.5	0.9
2	Regulations and legislations restrict activating emergency systems.	14	63.6	15.9	4.7	1.9
3	Unstable political situations affect the process of responding to a disaster	28.0	61.7	6.5	2.8	0.9

Second, the respondents' perception about governmental, organizational and infrastructure factors affecting Humanitarian Logistics during the Response Phase were measured, and the responses are reflected as a percentage value

from the total respondents as shown in the following table 4.18. The results show that the strongest factor is the funding, donations and donors problems with 89.7% of respondents who choose strongly agree or agree, and there are two main factors that are considered the weakest factors: first, the absence of identified government representative and legal reference point that regulates the work and granting powers to respondent institutions, second, poor communication systems with multi-direction and levels lead to the distortion of information and both with 11.2% of respondents who choose strongly disagree or disagree.

Table 4.18 Respondents' Perception about Governmental, Organizational and Infrastructure Factors

Factors		Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
1	Funding, donations and donors problems	28.0	61.7	8.4	0.9	0.9
2	Inaccurate assessment of damages, losses and needs	16.8	67.3	10.3	5.6	0.0
3	absence of identified government representative and legal reference point that regulates the work and granting powers to respondent institutions	9.3	61.7	18.7	11.2	0.0
4	Poor communication systems with multi-direction and levels lead to the distortion of information.	16.8	66.4	5.6	11.2	0.0
5	Restricted cooperation between logistics organizations	11.2	67.3	17.8	3.7	0.0
6	Poor decision-making tools	18.7	69.2	9.3	2.8	0.0

7	The absence of central and professional coordination abilities.	21.5	64.5	10.3	2.8	0.9
8	Difficulties in reallocating general budget based on to new situation	20.6	66.4	10.3	2.8	0.0
9	Rescue tools and relief materials poor distribution systems and methods	21.5	58.9	15.0	3.7	0.9

Table 4.19 Respondents' Perception about Technical Operational Processes Factors

Factors		Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
1	Large staff (rescue, relief, firefighters, doctors, nurses, security, etc.) to be transferred to the affected area in a very short time.	38.3	46.7	6.5	4.7	3.7
2	Very huge operations of victim rescue, evacuation and responding to needs	29.0	58.9	6.5	2.8	2.8
3	Uncertain supplies with surge urgent demand	18.7	59.8	10.3	9.3	1.9
4	Lack of Integration between suppliers in manual supply chain management (unautomated)	15	68.2	12.1	3.7	0.9
5	The nature and type of rescue and relief materials (medicines, food, water, shelter, clothing, etc.)	14	65.4	12.1	7.5	0.9
6	Uncertain assessment of disaster results leads to inappropriate response	20.6	62.6	9.3	6.5	0.0
7	Closed roads, destroyed infrastructure and lack of fuel	30.8	56.1	9.3	3.7	0.0
8	unavailability of suitable vehicles in terms of size and capacity	21.5	61.7	9.3	4.7	2.8
9	Destroyed or looted facilities (municipal headquarters, civil defense, warehouses, health centers, etc.)	24.3	55.1	10.3	8.4	1.9
10	Speed of relief items delivery at critical times	18.7	68.2	8.4	2.8	1.9
11	Poor location of warehouses and inefficient inventory management	18.7	62.6	15.9	0.9	1.9
12	High level of risks for logistics providers	22.4	59.8	7.5	7.5	2.8
13	Poor technological and incompatible communication systems	16.8	57.9	13.1	11.2	0.9

14	Israeli procedures at crossing points and barriers in addition to permit for each operation hinder humanitarian logistics operations.	45.8	35.5	15.9	1.9	0.9

Third, the respondents' perception about Technical Operational Processes factors affecting Humanitarian Logistics during the Response Phase were measured, and the responses were reflected as a percentage value from the total respondents as shown in the following table 4.19. The results show that the strongest factor is the very huge operations of victim rescue, evacuation and responding to needs with 87.9% of respondents who choose strongly agree or agree, and weakest factor was the large staff (rescue, relief, firefighters, doctors, nurses, security, etc.), to be transferred to the affected area in a very short time 12.1% of respondents who choose strongly disagree or disagree.

4.3.1.11.3 Factors affecting Humanitarian Logistics (HL) Operations in Post-disaster Phase (The Reconstruction and Rehabilitation Phase

First, the respondents' perception on the factors affecting the Planning for Logistics Operations during the Phase of Reconstruction and Rehabilitation were measured, and the responses were reflected as a percentage value from the total respondents as shown in the following table 4.20. The results show that the strongest factor is the funding problems and donors constrains and requirements with 93.5% of respondents who choose strongly agree or agree, and weakest factor was the poor information management technologies with 8.4% of respondents who choose strongly disagree or disagree.

Table 4.20 Respondents' Perception about the Factors Affecting Logistics Planning

Factors		Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
1	Funding problems and donors constrains and requirements.	44.9	48.6	4.7	0.0	1.9
2	poor Information Management technologies	26.1	56.1	9.3	8.4	0.0
3	The political situation of the affected area	41.1	51.4	4.7	.9	1.9

Second, the respondents' perception about the governmental, organizational and infrastructure factors affecting Logistics Operations during the Phase of Reconstruction and Rehabilitation were measured, and the responses were reflected as a percentage value from the total respondents as shown in the following table 4.21. The results show that there are two main factors that are considered the strongest factors: first, funding problems 94.4%, unstable political situation in the West Bank 93.5% of respondents who choose strongly agree or agree, and weakest factor was the absence of a government representative and central legal coordination point with 7.5% of respondents who choose strongly disagree or disagree.

Table 4.21 Respondents' Perception about the Governmental, Organizational and Infrastructure Factors

Factors		Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
1	Funding problems	41.1	53.3	3.7	1.9	0.0
2	poor Information Management technologies	23.4	61.7	7.5	6.5	0.9
3	Absence of a government representative and central legal coordination point	21.5	58.9	12.1	7.5	0.0
4	Ineffective coordination	27.1	59.8	8.4	3.7	0.9
5	Unstable political situation at West Bank	42.1	51.4	6.5	0.0	0.0

Third, the respondents' perception about Technical Operational Processes factors affecting Humanitarian Logistics during the Phase of Reconstruction and Rehabilitation were measured, and the responses were reflected as a percentage value from the total respondents as shown in the following table 4.22. The results show that the strongest factor is the funding problems and donors constrains and requirements with 94.4% of respondents who choose strongly agree or agree, and weakest factor is the critical timeframe with 5.6% of respondents who choose strongly disagree or disagree.

Table 4.22 Respondents' Perception about Technical Operational Processes factors

Factors		Strongly Agree %	Agree %	Neutral %	Disa gree %	Strongly Disagree %
1	Funding problems	45.8	48.6	1.9	2.8	0.9
2	Ineffective supply chain with Manual(unautomated) management tools	15.9	71.0	10.3	1.9	0.9
3	The lack of effective collaboration between parties	15	70.1	12.1	1.9	0.9
4	Risks facing employees working in humanitarian logistics	28.0	59.8	9.3	2.8	0.0
5	Critical timeframe.	35.5	53.3	5.6	1.9	3.7

4.3.2 Assessment of Factors Affecting Humanitarian Logistics

To assess the validity of confined factors to the West Bank situation, the respondents were asked to rate each of the obstacles or factors affecting humanitarian logistics on a five-point scale, with "5" being applied to factor with a great effect and "1" for a factor with a weak effect, according to the degree of their agreement about each factor in the questionnaire. To identify the degree of strength each factor, the responses were classified into five degrees. The interval was calculated as follow:

Interval = (max. scale – min. scale) \ (number of scales)

Table 4.23 represents the scaling degrees and the intervals that were used.

Table 4.23 Scaling Degrees

Interval	Degree
1-1.8	Very Weak
>1.8-2.6	Weak
>2.6-3.4	Moderate
>3.4-4.2	Strong
>4.2-5	Very Strong

The factor related to the importance of humanitarian logistics in the West Bank of Palestine was analyzed using descriptive analysis. As shown in following tables, mean standard deviation are used to identify the rank of each factor at each phase and sub phase of disaster risk management processes.

4.3.2.1 The Ranking of Disaster Preparedness Phase Logistics Factors based on Mean Values:

First, Table 4.24 below represents the strength effect or importance of each factor in the planning processes for humanitarian logistics at the preparedness phase. The results show that the Israeli policies in the West Bank (disconnection between areas, closed areas, barriers, crossing points, checkpoints, bureaucratic constraints.. etc.) factor is the most ranked one with mean 4.52 and the least ranked factor is the large affected areas with huge operations with mean 3.71. The following table demonstrates the means in descending order.

Table 4.24 Ranking of Factors in the Planning Processes

Rank	Factor	Mea	Std. dev.	Degree
1	Israeli policies in the West Bank (disconnection between areas, closed areas, barriers, Crossing points, checkpoints, bureaucratic constraints..etc.)	4.52	0.769	Very Strong
2	Funding constraints	4.11	0.793	Strong
3	Inadequacy of humanitarian logistics planning for different types of disasters	4.07	0.743	Strong
4	Unplanned rapid urbanization	4.07	0.792	Strong
5	Risks facing employees working in humanitarian logistics	4.05	0.692	Strong
6	Shortage of logistics experts	4.00	0.765	Strong
7	Unreliable supply chains	3.93	0.78	Strong
8	Requirements of the victims which have to be provided at relief points	3.90	0.941	Strong
9	Ineffective resources allocation (quantification and identification)	3.89	0.925	Strong
10	Absence of integration and optimization between all operational activities	3.89	0.994	Strong
11	The lack of community awareness about disaster preparedness	3.88	0.997	Strong
12	Poor location for storage points of materials, equipment and services	3.88	0.786	Strong
13	Handling and maintaining robust equipment difficulties	3.84	0.881	Strong
14	Differences in capacities of non-governmental organizations	3.81	0.826	Strong
15	lack of knowledge in humanitarian logistics sciences	3.81	0.802	Strong
16	Lack of central body integrating managerial and Technical aspects.	3.77	1.078	Strong
17	Absence of disaster risk reduction strategies and Its implementation tools in Palestine	3.73	0.896	Strong

Rank	Factor	Mea	Std. dev.	Degree
18	Large affected areas with huge operations	3.71	0.869	Strong
Total		3.937	0.851	**Strong**

Second, table 4.25 below represents the strength or importance of each factor in governmental, organizational and infrastructure issues in humanitarian logistics at preparedness phase. The results show that the poor alert systems factor is the most ranked one with a mean of 4.14 and the least ranked factor is the absence of a governmental representative and central legal reference point with a mean of 3.77. The following table demonstrates the means in descending order.

Table 4.25 Factor Ranking of Governmental, Organizational and Infrastructure Issues in Humanitarian Logistics in the Preparedness Phase

Rank	Factor	Mean	Std. dev.	Degree
1	Poor alert systems is one of the obstacles facing organizing humanitarian logistics	4.14	0.75	Strong
2	The existence of multiple and inconsistent data sources hinder the organizing humanitarian logistics	4.09	0.68	Strong
3	Regulations, legislations and Unclear NGO's legal mandates restrict organizing humanitarian logistics	4	0.79	Strong
4	Absence of professional coordination abilities within the sectors of risk management restrict	4	0.73	Strong

	organizing humanitarian logistics			
5	The political situation, agreements and protocols signed restrict organizing humanitarian logistics in an institutional and systematic manner	3.97	0.72	Strong
6	Absence of a governmental representative and central legal reference point hinders the organizing humanitarian logistics	3.77	0.90	Strong
Total mean		3.995	0.762	**Strong**

Third, Table 4.26 represents the strength or importance of each factor of the technical operational processes in humanitarian logistics at preparedness phase.

The results show that the Israeli procedures at crossing points and barriers in addition to permit for each operation factor is the most ranked factor with a mean of 4.48 and the least ranked factor is the absence of agility and leanness concepts in humanitarian logistics operations with a mean of 3.88. The following table demonstrates the means in descending order.

Table 4.26 Technical Operational Processes Factors Ranking

Rank	Factor		Mean	Std. dev.	Degree
1	Israeli procedures at crossing points and barriers in addition to permit for each operation hinder humanitarian logistics operations		4.48	0.604	Very Strong
2	Israeli policies hinder humanitarian logistics		4.42	0.645	Very Strong
3	Absence of a reliable and effective supply chain		4.05	0.692	Strong
4	Working with a critical time frame		3.98	0.658	Strong
5	Poor location of warehouses and inefficient storage systems for relief materials		3.96	0.764	Strong

6	Weakness in technologies, communication, information management systems		3.95	0.862	Strong
7	Limited or restricted cooperation and integration between all parties including logistics service providers		3.93	0.785	Strong
8	Poor procurement system		3.93	0.832	Strong
9	Absence of agility and leanness concepts in humanitarian logistics operations		3.88	0.749	Strong
Total mean			4.064	0.732	**Strong**

Based on the results above, the total mean of the strength of the factors affecting on humanitarian logistics planning in preparedness phase is 3.937, the total mean of the strength of the governmental, organizational and infrastructure factors is 3.995, and the total mean of the strength of the technical operational processes is 4.064. Based on the classification criteria reflected in Table 4.23, the three sub phases have strong effect on humanitarian logistics. However, the technical operation factors are the strongest.

4.3.2.2 The Ranking of Disaster Response Phase Logistics factors based on Mean Values:

First, Table 4.27 represents the strength or importance of each factor in the activation of emergency systems process during emergency situations during the response phase. The results show that the unstable political situations factor is the most ranked one with mean 4.13 and the least ranked factor is the regulations and legislations restrict activating emergency systems with a mean of 3.83. The following table demonstrates the means in descending order (Table 4.27).

Table 4.27 Ranking of Factors in the Activation of Emergency Systems Process

Rank	Factor	Mean	Std. dev.	Degree
1	Unstable political situations affect the process of responding to a disaster	4.13	.821	Strong
2	Emergency systems compatibility with type of disaster	4.07	.728	Strong
3	Regulations and legislations restrict activating emergency systems.	3.83	.795	Strong
Total mean		4.01	0.7813	Strong

Second, Table 4.28 below represents the strength or importance of each factor in governmental, organizational and infrastructure issues in humanitarian logistics during the response phase. The results show that the funding, donations and donors problems factor is the most ranked one with a mean of 4.15 and the least ranked factor is the absence of identified government representative and legal reference point that regulates the work and granting powers to respondent institutions with a mean of 3.70.The following table demonstrates the means in descending order.

Table 4.28 Factor Ranking of Governmental, Organizational and Infrastructure Issues in Humanitarian Logistics during the Response Phase

Rank	Factor	Mean	Std. dev.	Degree
1	Funding, donations and donors problems	4.15	.684	Strong
2	Difficulties in reallocating general budget based on to new situation	4.05	0.65	Strong
3	Poor decision-making tools	4.04	0.628	Strong
4	The absence of central and professional coordination abilities.	4.03	0.72	Strong
5	Rescue tools and relief materials poor distribution Systems and methods	3.96	0.776	Strong
6	Inaccurate assessment of damages, losses and needs	3.95	.706	Strong
7	Poor communication systems with multi-direction and levels lead to the distortion of information.	3.89	0.816	Strong
8	Restricted cooperation between logistics organizations	3.86	0.651	Strong
9	absence of identified government representative and legal reference point that regulates the work and granting powers to respondent institutions	3.70	.780	Strong
Total mean		3.96	0.7123	Strong

Third, Table 4.29 below represents the strength or importance of each factor at technical operational processes in humanitarian logistics at response phase. The results show that the Israeli procedures at crossing points and barriers in addition to permit for each operation factor is the most ranked one with a mean of 4.23 and the least ranked factor is poor technological and

incompatible communication systems with a mean of 3.79. The following table demonstrates the means in descending order.

Table 4.29 the Ranking of Technical Operational Processes Factors

Rank	Factor	Mean	Std. dev.	Degree
1	Israeli procedures at crossing points and barriers in addition to permit for each operation hinder humanitarian logistics operations.	4.23	0.853	Strong
2	Closed roads, destroyed infrastructure and lack of fuel	4.14	0.733	Strong
3	Large staff (rescue, relief, firefighters, doctors, nurses, security, etc.) to be transferred to the affected area in a very short time.	4.11	0.984	Strong
4	Very huge operations of victim rescue, evacuation and responding to needs	4.08	0.848	Strong
5	Speed of relief items delivery at critical times	3.99	0.746	Strong
6	Poor location of warehouses and inefficient inventory management	3.95	0.745	Strong
7	Uncertain assessment of disaster results leads to inappropriate response	3.95	0.805	Strong
8	unavailability of suitable vehicles in terms of size and capacity	3.94	0.867	Strong
9	Lack of integration between suppliers in manual supply chain management (unautomated)	3.93	0.71	Strong
10	Destroyed or looted facilities (municipal headquarters, civil defense, warehouses, health centers, etc.)	3.92	0.923	Strong
11	High level of risks for logistics providers	3.92	0.923	Strong
12	Uncertain supplies with surge urgent demand	3.84	0.902	Strong
13	The nature and type of rescue and relief materials (medicines, food, water, shelter, clothing, etc.)	3.84	0.791	Strong
14	Poor technological and incompatible communication systems	3.79	0.89	Strong

Rank	Factor	Mean	Std. dev.	Degree
Total mean		3.97	0.837	Strong

Based on the results above, the total mean of strength of the factors affecting humanitarian logistics related to emergency systems activations in the response phase is 4.01, the total mean of the strength of the governmental, organizational and infrastructure factors is 3.96, and the total mean of the strength of the technical operational processes is 3.97. Based on the classification criteria shown in Table 4.23, the three sub-phases have strong effect on humanitarian logistics. However, the emergency systems activation factors are the strongest.

4.3.2.3 Ranking of factors affecting humanitarian Logistics Operations at the Post-disaster Phase:

First, Table 4.30 represents the strength or importance of each factor in the Planning for Logistics Operations during the Post-disaster Phase (Reconstruction and Rehabilitation) at response phase. The results show that the funding problems and donors constrains and requirements factor is the most ranked one with a mean of 4.35 and the least ranked factor is poor information management technologies with a mean of 4.00. The following table demonstrates the means in descending order.

Table 4.30 Ranking of Factors Affecting Planning for Logistics during Post-disaster Phase

Rank	Factor	Mean	Std. dev.	Degree
1	Funding problems and donors constrains and requirements	4.35	.741	Very Strong
2	The political situation of the affected area	4.29	.765	Very Strong
3	Poor Information Management technologies	4.00	.836	Strong
Total mean		4.21	0.780	Very Strong

Second, Table 4.31 below represents the strength or importance of each factor in governmental, organizational and infrastructure issues in humanitarian logistics during the post disaster phase. The results show that the funding problems factor is the most ranked one with mean 4.34 and the least ranked factor is the absence of a government representative and central legal coordination point with mean 3.94. The following table demonstrates the means in descending order.

Table 4.31 Ranking of Logistics Factors related to Governmental, Organizational and Infrastructure Issues during the post disaster phase

Rank	**Factor**	**Mean**	**Std. dev.**	**Degree**
1	Unstable political situation at West Bank	4.36	.643	Very Strong
2	Funding problems	4.34	.603	Very Strong
3	Ineffective coordination	4.08	.766	Strong
4	poor Information Management technologies	4.00	.813	Strong
5	Absence of a government representative and central legal coordination point	3.94	.799	Strong
Total mean		4.14	0.7248	Strong

Third, Table 4.32 represents the strength or importance of each factor of the technical operational processes in humanitarian logistics at post disaster phase. The results showed that the funding problems factor is the most ranked one with a mean of 4.36 and the least ranked factor is the lack of effective collaboration between parties with mean 3.96. The following table demonstrates the means in descending order.

Table 4.32 Factor Ranking of Technical Operational Processes in Humanitarian Logistics at Post Disaster Phase

Rank	Factor	Mean	Std. dev.	Degree
1	Funding problems	4.36	.743	Very Strong
2	Critical timeframe.	4.15	.899	Strong
3	Risks facing employees working in humanitarian logistics	4.13	.688	Strong
4	Ineffective supply chain with Manual(unautomated) management tools	3.99	.651	Strong
5	The lack of effective collaboration between parties	3.96	.658	Strong
Total mean		4.12	0.7278	Strong

Based on the results above, the total mean of the strength of the factors affecting humanitarian logistics planning in post disaster phase is 4.21, the total mean of the strength of the governmental, organizational and infrastructure factors is 4.14, and the total mean of the strength of the technical operational processes is 4.064. Based on classification criteria shown in Table 4.23, the planning process is a very strong factor while the factors of governmental, organizational, infrastructure and technical

operational processes are weaker than planning factors but they are still strong factors.

4.3.2.3 Overall Assessment of Factors Affecting Humanitarian Logistics

Table 4.33 summarizes the different factors in the different stages and phases which were previously mentioned in the tables labeled from 4.24 to 4.32 in order to provide an overall preview of the respondents' perception and to reflect the strength of factors impacting the efficiency of humanitarian logistics.

Table 4.33 Ranking Overview

Phase	Stage	No. of items	Mean of stage	Mean	Degree
Disaster Preparedness Phase	Planning for logistics	18	3.937	3.999	Strong
	Logistics governmental, organizational and Infrastructure issues	6	3.995		
	Logistics technical operations issues	9	4.064		
Disaster Response Phase	Activation of Emergency Systems	3	4.01	3.98	Strong
	Logistics governmental, organizational and Infrastructure issues	9	3.96		
	Logistics technical operations issues	14	3.97		
Post-disaster Phase (Reconstruction and Rehabilitation)	Planning for logistics	3	4.21	4.157	Strong
	Logistics governmental, organizational and Infrastructure issues	5	4.14		
	Logistics technical operations issues	5	4.12		
Total items		72			

As shown in table 4.33, the mean values indicate that the factors of post-disaster phase are strongest and the most affecting on the humanitarian logistics with a mean of 4.157. Then, the factors of preparedness phase became second affecting factors with a mean of 3.999 and the weakest factors are in the response phase with a mean of 3.98. As a result, descriptive analysis confirms that all humanitarian logistics factors at all stages of disaster risk management are valid in the case of the West Bank and have a direct and strong impact on the efficiency of logistics operation, thus, such factors need to be maintained in an efficient and integrated manner.

4.4 Normality Hypotheses Testing

- Before data processing normality test should be done. This test is to determine the distribution of the variables that will be studied (SPSSTests, 2016). Based on the sample size Kolmogorov-Smirnov (K-S) method was used (Shapiro, et al., 1968). SPSS software was used to conduct (K-S) test the three phases as shown below: Normality of variables in preparedness phase hypothesis:

H_o: variables in preparedness phase are distributed normally

H1: variables in preparedness are not distributed normally

- Normality of variables in response phase hypothesis:

H_o: variables in response phase are distributed normally

H1: variables in response are not distributed normally

- Normality of variables in post-disaster (recovery) phase hypothesis:

H_o: variables in post-disaster (recovery) phase are distributed normally

H1: variables in post-disaster (recovery) are not distributed normally

The results in Table 4.34 showed that significant for humanitarian logistics variables in preparedness phase was 0.0, for variables in response phase was 0.001, and for variables in post-disaster (recovery) phase was 0.012. Based on previous results all null hypotheses were rejected and alternative hypothesis were accepted. So, 'reject Normality' for all variables in all phases.

Table 4.34 Kolmogorov-Smirnov (K-S) test results

Variable / factor	**Kolmogorov-Smirnov Z**	**Asymp. Sig. (2-tailed)**
Factors of HL in preparedness phase	2.241	0
Factors of HL in the Response Phase	1.96	0.001
Factors of HL in the post-disaster Phase	1.6	0.012

Referring to Li, et al. (2012) and Ghasemi & Zahediasl (2012) the normality can be violated in case of sample size over 40 items. As a result, Pearson Correlation and linear regression are valid to test the research hypotheses which were represented in Chapter 1.

Table 4.35 shows the correlation coefficients between each component as an independent variable and the phase of disaster risk management as a dependent variable.

Table 4-35: Correlation Coefficients of the Components

HL Phase Dependent variable	Components Independent variables	Pearson's Coefficient	Sig.	Type of correlation
	Planning for logistics	.93	0	Positive
	Logistics governmental, organizational and Infrastructure issues	.795	0	Positive

HL Phase Dependent variable	Components Independent variables	Pearson's Coefficient	Sig.	Type of correlation
HL at Disaster Preparedness Phase	Logistics technical operations issues	.782	0	Positive
HL at Disaster Response Phase	Activation of Emergency Systems	.645	0	Positive
	Logistics governmental, organizational and Infrastructure issues	.825	0	Positive
	Logistics technical operations issues	.936	0	Positive
HL at Post-disaster Phase (Reconstruction and Rehabilitation)	Planning for logistics	.756	0	Positive
	Logistics governmental, organizational and Infrastructure issues	.904	0	Positive
	Logistics technical operations issues	.749	0	Positive

The results show that at preparedness phase the most significant independent variable is the planning for logistics factor and the least one is the logistics technical operations issues factor. At response phase, logistics technical operations issues factor is the most significant independent variable and the least one was the activation of emergency systems factor. At post-disaster phase, logistics governmental, organizational and infrastructure issues factor is the most significant independent variable and the least one is the logistics technical operations issues. Based on table 4-35 above, it is clear from the p-values that the correlations are positive and significant between the different phases and their components.

Moreover, the correlation between humanitarian logistics in the different phases of disaster risk management as independent variables were tested by Pearson correlation as shown in table 4-36. Table 4-36 shows the strength of the relationship between independent components or variables. At the given

significance level of 5%, the matrix of correlation shows that most of the factors are significantly correlated to each other. The correlation coefficients between the independent variables are less than 0.9; therefore, multicollinearity between data does not exist.

Table 4-36 the Correlation Coefficients between the Independent Variables

phase		HL's Factors in Preparedness		HL's Factors in Response Phase		HL's Factors in recovery Phase	
		Pearson Correlation	Sig.	Pearson Correlation	Sig.	Pearson Correlation	Sig.
HL's Factors in Preparedness				.763**	0	.478**	0
HL's Factors in Response Phase	Pearson Correlation	.763**	0			.670**	0
HL's Factors in recovery Phase	Pearson Correlation	.478**	0	.670**	0		

In case of depending on the Pearson correlation process only to test whether all the independent variables altogether predict the dependent variable, usually variance will be missing and some significant values of factors will be less than others when variables are combined in the analysis (Systems, 2016; Asuero, et al., 2006). Therefore, the use of linear regression preferred when there is one dependent variable such as humanitarian logistics efficiency and large number of independent variables (Abu-Shanab & Haider, 2015). Simple regression analysis was used as follows:

The simple regression model can be expressed in a simple linear regression equation as follows:

$y = a + bx$

Where, x : is the explanatory or independent variable

y: the dependent variable

b: The slope of the line, and

a: the intercept (the value of y when x = 0).

H1: Poor planning for humanitarian logistics in preparedness phase has a significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

Base on Tables 4.37 and 4.38, the simple regression analysis model shows that the planning factors for humanitarian logistics in the preparedness phase explain 86.4% of the variability in the efficiency of humanitarian logistics in this phase. Also, the correlation factor between planning for logistics in preparedness phase and the logistics efficiency equal 93.0%, this means that there is a very strong proportional correlation between planning factors and the efficiency of humanitarian logistics during the preparedness phase, as shown in the following regression equation:

Efficiency of HL= 0.678+0.839(HL planning factor at preparedness phase)

Table 4.37 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.930	.865	.864	.14135

Table 4.38 Coefficients of Equation

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	.678	.128	
	Planning Factors for HL in Preparedness Phase	.839	.032	.930

Analysis of Variance (ANOVA) was used to test the significance of the regression and the results were represented in Table 4.39. The ratio of the two mean squares (F) = 675.614 and sig. = 0.0. Since the significance level is less than 0.05, this means that there is a significant impact for planning factors on the efficiency of humanitarian logistics in the preparedness phase.

Table 4 .39 ANOVA Test

Source		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.498	1	13.498	675.614	.000
	Residual	2.098	105	.020		
	Total	15.596	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.40 below:

Table 4.40 Test of T-statistic

Term		t	Sig.
1	(Constant)	5.302	.000
	Planning Factors for HL in Preparedness Phase	25.993	.000

According to t-statistic test, it is clear that planning factors affecting humanitarian logistics in preparedness phase and this effect is driven by the regression equation shown above.

As a result, hypothesis H1 is accepted.

- **H2: Weak governmental, organizational and infrastructure factors in preparedness phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.**

Base on Tables 4.41 and 4.42, the simple regression analysis model shows that governmental, organizational, and infrastructure factors related to humanitarian logistics in preparedness phase explain 62.9% of the variability in humanitarian logistics efficiency at this phase. Also, the correlation factor between governmental, organizational, and infrastructure factors for logistics in preparedness phase and the logistics efficiency equals 79.5%, this means that there is strong a proportional correlation between governmental, organizational, and infrastructure factors on one hand and the efficiency of humanitarian logistics during the preparedness phase as shown in the following regression equation:

Efficiency of HL= 1.759+0.556(HL govern., organ., and infra. Factors)

Table 4.41 Model Summary:

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.795	.632	.629	.23373

Table 4.42 Coefficients of Equation:

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	1.759	.167	
	Governmental, Organizational and Infrastructure Factors	.556	.041	.795

ANOVA test was used in order to test the significance of the regression and the results were represented in Table 4.43. The ratio of the two mean squares (F) = 180.478 and sig. = 0.0. Since the significance level is less than 0.05, the planning factors affecting logistics in preparedness phase.

Table 4.43 ANOVA Test:

Source	Sum of Squares	Df	Mean Square	F	Sig.
Regression	9.859	1	9.859	180.478	.000
Residual	5.736	105	.055		
Total	15.596	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.44.

Table 4.44 Test of t-statistic

Term	t	Sig.
(Constant)	10.534	.000
Governmental, Organizational and Infrastructure Factors	13.434	.000

According to t-statistic test, it is clear that planning factors affecting logistics in the preparedness phase of disaster risk management and this effect is driven by the regression equation. As a result, hypothesis H2 is accepted.

- **H3: Poor technical operations in preparedness phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.**

Base on Tables 4.45 and 4.46 the simple regression analysis model shows that the technical operations factors of humanitarian logistics in the preparedness phase explains 60.7% from the variability in humanitarian logistics efficiency at this phase. Additionally, the correlation factor between technical operations factors of logistics in preparedness phase and the logistics efficiency equals 78.2%, this means that there is a strong proportional correlation between planning factors and efficiency of humanitarian at preparedness phase as it is shown in the following regression equation:

Efficiency of HL= 1.049+0.722(HL technical operations factors)

Table 4.45 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.782	.611	.607	.24035

Table 4.46 Coefficients of Equation

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	1.049	.229	
	Technical operations factors of HL in preparedness phase	.722	.056	.782

ANOVA test was used to test the significance of the regression and the results were represented in Table 4.47 below, the ratio of the two mean squares (F) = 164.967 and sig. = 0.0. Since the significance level is less than 0.05, the technical operations factors affects logistics in the preparedness phase.

Table 4.47 ANOVA Test

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	9.530	1	9.530	164.967	.000
Residual	6.066	105	.058		
Total	15.596	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.48:

According to t-statistic test, it is clear that the technical operations factors have an effect on logistic operations in the preparedness phase of disaster risk management and this effect driven by regression equation. As a result, hypothesis H3 is accepted.

H4: Poor efficiency of Humanitarian logistics in preparedness phase has significant and negative impact on humanitarian logistics efficiency in response phase in the West Bank of Palestine.

Base on Tables 4.49 and 4.50, the simple regression analysis model shows that logistics efficiency in the preparedness phase explains 57.8% of the variability in humanitarian logistics efficiency at response phase. Also, the correlation factor between efficiency of HL in preparedness phase and

Table 4.48 Test of t-statistic

	Term	T	Sig.
1	(Constant)	5.302	.000
	Technical operations factors for HL in preparedness Phase	25.993	.000

logistics efficiency of response phase equals 76.3%, this means that there is a strong proportional correlation between efficiency of HL in preparedness phase and efficiency of logistics at response phase as shown in the following regression equation:

Efficiency of HL at response = 0.686+0.826(efficiency of HL in preparedness phase)

Table 4.49 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763	.582	.578	.26977

Table 4.50 Coefficients of Equation

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	.686	.273		2.511
	efficiency of HL in preparedness phase	.826	.068	.763	12.085

Analysis of Variance (ANOVA) was used to test the significance of the regression and the results were represented in Table 4.51, the ratio of the two mean squares (F) = 146.045 and sig. = 0.0. Since the significance level is less than 0.05, the efficiency of HL in preparedness phase has an effect on logistics efficiency in the response phase.

Table 4.51 ANOVA Test

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	10.628	1	10.628	146.045	.000
Residual	7.641	105	.073		
Total	18.270	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.52:

Table 4.52Test of t-statistic

Term	t	Sig.
(Constant)	2.511	.000
efficiency of HL in preparedness phase	12.085	.000

According to t-statistic test, it is clear that factors of HL efficiency in the preparedness phase has an effect on logistic operations in the response phase of disaster risk management and this effect is driven by the regression equation.

As a result, hypothesis H4 is accepted.

H5: Poor procedure of emergency systems activations in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

Base on Tables 4.53 and 4.54, the simple regression analysis model shows that emergency systems activations factors for humanitarian logistics in the response phase explains 41.0% of the variability in humanitarian logistics efficiency at this phase. Also, the correlation factor between emergency systems activations factors in the response phase and the logistics efficiency equals 64.5%, this means that there is a moderate proportional correlation between emergency systems activations factors and efficiency of humanitarian at response phase as shown in the following regression equation:

Efficiency of HL= 2.214+0.438(HL Emergency systems activations factors)

Table 4.53 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.645	.416	.410	.31883

Table 4.54 Coefficients of Equation

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	2.214	.206	
	Emergency systems activations factors	.438	.051	.645

Analysis of Variance (ANOVA) was used to test the significance of the regression and the results were represented in Table 4.55. The ratio of the two mean squares (F) = 74.731 and sig. = 0.0. Since the significance level is less than 0.05, the emergency systems activations factors have an effect on logistics in response phase.

Table 4.55 ANOVA Test

Source		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.596	1	7.596	74.731	.000
	Residual	10.673	105	.102		
	Total	18.270	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to

determine which of these coefficients equal zero. The results are shown in Table 4.56:

Table 4.56 Test of T-statistic

Term	t	Sig.
(Constant)	10.761	.000
Emergency Systems Activation Factors	8.645	.000

According to t-statistic test, it is clear that emergency systems activations factors have an effect on logistics in the response phase of disaster risk management and this effect is driven by regression equation.

As a result, hypothesis H5 is accepted.

H6: Weak governmental, organizational and infrastructure factors in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

Base on Tables 4.57 and 4.58, the simple regression analysis model shows that governmental, organizational and infrastructure factors for humanitarian logistics in response phase explains 67.8% from the variability in humanitarian logistics efficiency at this phase. Also, the correlation factor between governmental, organizational and infrastructure factors for logistics in response phase and the logistics efficiency equals 82.5%. This means that there is a strong proportional correlation between governmental, organizational and infrastructure factors on one hand and the efficiency of

humanitarian at response phase on the other. This is shown in the following regression equation:

Efficiency of HL= 0.623+0.864(HL gov., organ., and infra. factors at response phase)

Table 4.57 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.825	.681	.678	.23561

Table 4.58 Coefficients of Equation

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	.623	.225	
	gov., organ., and infra. factors at response phase	.846	.057	.825

Analysis of Variance (ANOVA) was used to test the significance of the regression and the results were represented in Table 4.59. The ratio of the two mean squares (F) = 224.105 and sig. = 0.0. Since the significance level is less than 0.05, the planning factors have an effect on logistic operations in the preparedness phase.

Table 4.59 ANOVA Test

Source		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.441	1	12.441	224.105	.000
	Residual	5.829	105	.056		
	Total	18.270	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.60:

Table 4.60 Test of T-statistic

Term	t	Sig.
(Constant)	2.770	.007
gov., organ., and infra. factors at response phase	14.970	.000

According to t-statistic test, it is clear that governmental, organizational and infrastructure factors have an effect on logistics in the response phase of disaster risk management and this effect driven by regression equation.

As a result, hypothesis H6 is accepted.

H7: Poor technical operations in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

Base on Tables 4.62 and 4.63, the simple regression analysis model shows that technical operations factors for humanitarian logistics in the response phase explains 87.4% of the variability in humanitarian logistics efficiency at this phase. Also, correlation factor between technical operations factors

for logistics in the response phase and the logistics efficiency equals 93.6%. This means that there is a very strong proportional correlation between technical operations factors and efficiency of humanitarian logistic operations at response phase as it is shown in the following regression equation:

Efficiency of HL= 0.911+0.770(technical operations factors at response phase)

Table 4.61 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.936	.876	.874	.14708

Table 4.62 Coefficients of Equation

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	.911	.113	
	technical operations factors at response phase	.770	.028	.936

Analysis of Variance (ANOVA) was used to test the significance of the regression and the results were represented in Table 4.63 below. The ratio of the two mean squares (F) = 739.589 and sig. = 0.0. Since the significance level is less than 0.05, the technical operations factors have an effect on logistic operations in the response phase factors.

Table 4.63 ANOVA Test

Source		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.999	1	15.999	739.589	.000
	Residual	2.271	105	.022		
	Total	18.270	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.64:

Table 4.64 Test of T-statistic

Term	t	Sig.
(Constant)	8.031	.000
technical operations factors at response phase	27.195	.000

According to t-statistic test, it is clear that technical operations factors at the response phase have an effect on logistics in response phase of disaster risk management and this effect driven by regression equation.

As a result, the hypothesis H7 is accepted.

H8: Poor efficiency of humanitarian logistics in response phase has significant and negative impact on humanitarian logistics efficiency in recovery phase in the West Bank of Palestine.

Base on Tables 4.65 and 4.66, the simple regression analysis model shows that the efficiency factors of HL in response phase explain 44.3% from the

variability in humanitarian logistics efficiency in the post-disaster phase. Also, the correlation factor between efficiency factors of HL in response phase and the logistics efficiency in post-disaster phase equals 67.0%. This means that there is a moderate proportional correlation between efficiency factors of HL in the response phase and efficiency of logistics in the post-disaster phase, as shown in the following regression equation:

Efficiency of HL= 1.238+0.733(efficiency of HL in response phase)

Table 4.65 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.670	.448	.443	.33919

Table 4.66 Coefficients of Equation

Model	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	1.238	.317	
efficiency of HL in response phase	.733	.079	.670

Analysis of Variance (ANOVA) was used to test the significance of the regression and the results were represented in table 4.68, the ratio of the two mean squares (F) = 85.354 and sig. = 0.0. Since the significance level is less than 0.05, the efficiency of HL in response phase has an effect on the efficiency of logistic operations in the post disaster phase.

Table 4.67 ANOVA Test

Source		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.820	1	9.820	85.354	.000
	Residual	12.080	105	.115		
	Total	21.900	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.68:

Table 4.68 Test of T-statistic

Term	t	Sig.
(Constant)	3.907	.000
efficiency of HL in response phase	9.239	.000

According to t-statistic test, it is clear that efficiency of HL in the response phase affecting the efficiency of logistics in post-disaster phase of disaster risk management and this effect is driven by regression equation.

As a result, hypothesis H8 is accepted.

H9: Poor planning in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine

Base on Tables 4.70 and 4.71, the simple regression analysis model shows that planning factors for humanitarian logistics in the post-disaster phase explain 56.8% of the variability in humanitarian logistics efficiency at this phase. Also, correlation factor between planning for logistics in post-disaster

phase and the logistics efficiency = 75.6%. This means that there is a strong proportional correlation between planning factors and efficiency of logistics at post disaster phase as it is shown in the following regression equation:

Efficiency of HL= 1.75+0.57(HL planning factor at post-disaster phase)

Table 4.69 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.756	0.572	0.568	.29885

Table 4.70 Coefficients of Equation

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	1.750	.205	
	planning factor at post-disaster phase	.570	.048	.756

ANOVA test was used to test the significance of the regression and the results were represented in Table 4.71 below. The ratio of the two mean squares (F) = 140.211 and sig. = 0.0. Since the significance level is less than 0.05, the planning factors does have an effect on logistics in post disaster phase.

Table 4.71 ANOVA Test

Source		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.522	1	12.522	140.211	.000b
	Residual	9.378	105	.089		
	Total	21.900	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.72:

Table 4.72 Test of T-statistic

Term	t	Sig.
(Constant)	8.545	.000
planning factor at post-disaster phase	11.841	.000

According to t-statistic test, it is clear that planning factors affecting on logistics in post-disaster phase of disaster risk management and this effect driven by regression equation. As a result, hypothesis H9 is accepted.

H10: Weak governmental, organizational and infrastructure factors in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine

Base on Tables 4.73 and 4.74, the simple regression analysis model shows that governmental, organizational and infrastructure factors for humanitarian logistics in the post-disaster phase explain 81.6% of the variability in humanitarian logistics efficiency at this phase. Also, the correlation factor between governmental, organizational and infrastructure factors related to logistics in post-disaster phase and the logistics efficiency equals 60.4%.

This means that there is a very strong proportional correlation between planning factors and efficiency of logistics at post-disaster phase as it is shown in the following regression equation:

Efficiency of HL= 0.818+0.804(HL planning factor at post-disaster phase)

Table 4.73 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.904	.817	.816	.19517

Table 4.74 Coefficients of Equation

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	.818	.155	
	governmental, organizational and infrastructure factors in post-disaster phase	.804	.037	.904

ANOVA test was used to test the significance of the regression and the results were represented in table 4.75, the ratio of the two mean squares (F) = 479.947 and sig. = 0.0. Since the significance level is less than 0.05, the planning factors have an effect on logistics in the response phase.

Table 4.75 ANOVA Test

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	17.900	1	17.900	469.947	.000
Residual	3.999	105	.038		
Total	21.900	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.76:

Table 4.76 Test of t-statistic

Term	t	Sig.
(Constant)	5.279	.000
Planning Factors at post-disaster phase	21.678	.000

According to t-statistic test, it is clear that the planning factors have an effect on logistic operations in the post-disaster phase of disaster risk management and this effect driven by regression equation.

As a result, hypothesis H10 is accepted.

H11: Poor technical operations in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

Base on Tables 4.77 and 4.78 the simple regression analysis model shows that technical operations factors for humanitarian logistics in post-disaster phase explain 55.7% of the variability in humanitarian logistics efficiency at this phase. Also, the correlation factor between panning for logistics in post-disaster phase and the logistics efficiency equals 74.9%. This means that there is a strong proportional correlation between technical operations factors and efficiency of humanitarian logistics at post-disaster phase as it is shown in the following regression equation:

Efficiency of HL= 1.32+0.6.88(HL technical operations factors at post-disaster phase)

Table 4.77 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.749	.561	.557	.30249

Table 4.78 Coefficients of Equation

Model	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	1.320	.246	
technical operations factors in post-disaster phase	.688	.059	.749

ANOVA was used to test the significance of the regression and the results were represented in table 4.79, the ratio of the two mean squares (F) = 134.348 and sig. = 0.0. Since the significance level is less than 0.05, the technical operations factors have an effect on logistic operations in post-disaster phase.

Table 4.79 ANOVA Test

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.293	1	12.293	134.348	.000
Residual	9.607	105	.091		
Total	21.900	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.80:

Table 4.80 Test of T-statistic

Term	t	Sig.
(Constant)	5.364	.000
Operations factors at post-disaster phase.	11.591	.000

According to t-statistic test, it is clear that planning factors affecting on logistics in post-disaster phase of disaster risk management and this effect driven by regression equation.

As a result, hypothesis H11 is accepted.

H12: Poor efficiency of humanitarian logistics operations in the preparedness phase has significant and negative impact on humanitarian logistics efficiency in recovery phase in the West Bank of Palestine.

Base on Tables 4.81 and 4.82, the simple regression analysis model shows that the efficiency of humanitarian logistics in preparedness phase explains 22.1% from the variability in humanitarian logistics efficiency at post-disaster phase. Also, the correlation factor between efficiency of humanitarian logistics in preparedness phase and the logistics efficiency in post disaster phase equals 47.8%. This means that there is a weak proportional correlation between the efficiency of humanitarian logistics in preparedness phase and efficiency of humanitarian logistics at post-disaster phase, as it is shown in the following regression equation:

Efficiency of HL= 1.895+0.567(efficiency of HL in preparedness phase)

Table 4.81 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.478	.229	.221	.40109

Table 4.82 Coefficients of equation

Model	Unstandardized Coefficients		Standardized Coefficients	t
	B	Std. Error	Beta	
(Constant)	1.895	.406		4.664
efficiency of HL in preparedness phase	.567	.102	.478	5.580

ANOVA test was used to test the significance of the regression and the results were represented in table 4.83, the ratio of the two mean squares (F) = 31.132 and sig. = 0.0. Since the significance level is less than 0.05, the efficiency of HL in preparedness phase has an effect on logistics efficiency in post-disaster phase.

Table 4.83 ANOVA Test

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.008	1	5.008	31.132	.000b
Residual	16.892	105	.161		
Total	21.900	106			

Based on ANOVA results, there is at least one of the regression coefficients that is significantly different from zero. Test of t-statistic was used to determine which of these coefficients equal zero. The results are shown in Table 4.84:

Table 4.84 Test of T-statistic

Term	t	Sig.
(Constant)	4.664	.000
Operations factors at post-disaster phase.	5.580	.000

According to t-statistic test, it is clear that the efficiency of HL in preparedness phase affecting on logistics efficiency in post-disaster phase of disaster risk management and this effect driven by regression equation.

As a result, hypothesis H12 is accepted

- **Summary of Hypotheses testing results**

Table 4.85 below provides a summary of research hypotheses testing results:

Table 4.85 Summary of Hypotheses Test Results:

Hypotheses		Result
H1	Poor planning for humanitarian logistics in preparedness phase has a significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.	Accepted
H2	Weak governmental, organizational and infrastructure factors in preparedness phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.	Accepted
H3	Poor technical operations factors in preparedness phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.	Accepted
H4	Poor efficiency of Humanitarian logistics in preparedness phase has significant and negative impact on humanitarian logistics efficiency in response phase in the West Bank of Palestine.	Accepted
H5	Poor procedure of emergency systems activations in response phase has significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.	Accepted

H6	Weak governmental, organizational and infrastructure factors in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.	Accepted
H7	Poor technical operations in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.	Accepted
H8	Poor efficiency of humanitarian logistics in response phase has significant and negative impact on humanitarian logistics efficiency in recovery phase in the West Bank of Palestine.	Accepted
H9	Poor planning in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine	Accepted
H10	Weak governmental, organizational and infrastructure factors in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine	Accepted
H11	Poor technical operations in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.	Accepted
H12	Poor efficiency of humanitarian logistics operations in the preparedness phase has significant and negative impact on humanitarian logistics efficiency in recovery phase in the West Bank of Palestine.	Accepted

This chapter has presented the results of the analysis of the qualitative and quantitative data. It has been found that, not only are all humanitarian factors at all phases valid, but also they are of strong effect and some of them were very strong. To summarize the results, this research has concluded that the humanitarian logistics factors in the preparedness phase have a direct effect on logistics in the response phase and post-disaster or recovery phase. Humanitarian logistics factors in the response phase also have an effect on logistics operations in the post-disaster or recovery phase. This means that the research has approved the existence of a positive relationship between the phases. Based on previous analysis, all hypothesis that were presented in the Introduction to this Research (Chapter 1) were proven and accepted.

Chapter Five

Discussion and Model Development

Chapter Five

Discussion and Model Development

5.1 Chapter Overview

In this chapter, the researcher will discuss the results and findings of the analysis for the data that was collected through the interviews and questionnaires. In the first section, descriptive statistics, hypotheses results, and interviews outputs are discussed. The second section discusses the model developed based on the results of the analysis.

The survey findings will be discussed by providing answers to the research questions. The results will be explained, compared and matched with the related literature and the findings of the interviews in order to provide a comprehensive review.

5.2 Discussion of the Findings of the Descriptive Statistics

The descriptive analysis was conducted to address the validity of the factors affecting the efficiency of humanitarian logistics operations in the West Bank of Palestine. The factors were ranked in a descending order to create a comprehensive overview of the strength of factors based on the respondents' perceptions**.**

5.2.1 Humanitarian Logistics Factors

The surveyed humanitarian logistics factors, along with their extent of importance and rank, were presented in Chapter 4. Besides the lists of humanitarian logistics factors introduced in the above-mentioned chapter, and for presenting the research objectives, the factors are elaborated by

revealing the thematic analysis of interviews and matching them with the related literature review concluded from Chapter 2 as follows:

The overall mean average of factors in each of the three phases of disaster risk management logistics operations reflects that the factors are categorized as strong factors. This indicates that humanitarian logistics did not get sufficient interest to be maintained or managed as a complete and integrated system. Not only have the interviewees confirmed that there is no scientific and systematic approach to manage and maintain those factors, but also any required logistics issues that will be addressed are maintained as a response to a specific momentary need and mostly in an unplanned manner. In other words, humanitarian logistics are not formally planned and integrated into the organizational business and were not adopted as the key to a successful response.

5.2.1.1 Preparedness Phase Factors

- Planning for Logistics Factors Discussion

- ***"Israeli policies in the West Bank (disconnection between areas, closed areas, barriers, crossing points, checkpoints, bureaucratic constraints... etc."*** based on the unanimous agreement between all respondents, this factor was labelled as a 'Very Strong' statement and ranked the first of all factors in terms of effect according to the survey respondents. The interviewees have indicated that the issues behind such assent is the absence of the Palestinian state institutions sovereignty over the land and the existence of numerous crossing points and barriers imposed by the Israeli forces over all the West Bank roads that connect Palestinian cities together,

in addition to the hard procedures at barriers and the fact that each logistics operation needs prior special permissions. In addition, the Apartheid Wall surrounding the West Bank results in a complete isolation of many Palestinian areas. The statement was phrased in such a way to be general enough to be able to touch and measure any Israeli activity that can hinder humanitarian logistics operation.

Hawajri (2016) has emphasized that the Israeli occupation and its policies are one of the main challenges facing disaster risk management activities generally and humanitarian logistics specifically, which directly affects the development of the disaster risk reduction plans and programs at all levels. This leaves humans highly vulnerable to the complex risks of humanitarian emergency situations. This is completely agreed and confirmed by interviewees. Many other scholars **(e.g. Levy 2016; Elagraa, et al, 2014)**, and international reports (e.g. OCHA 2010; USAID 2009; PSC, 2012) have criticized or at least explicitly indicated the Israeli bureaucratic constraints and restrictions imposed on Palestinians, which restricts their movement and diverts their attention to the management of their basic daily needs rather than disaster planning and addressing vulnerabilities, and as a result, humanitarian logistics are out of the priorities list.

As for the factor “Funding constraints”, there was a unanimous agreement between all respondents that this statement is considered as a ‘Strong’ statement and ranked the second of all factors in terms of effect according to the survey respondents. The interviewees agreed that this factor is very important, which attributed to the clear perception of the high cost of

humanitarian logistics under a very difficult and complex economic situation. This is referred to the fact that Palestinian sovereignty over resources is absent, and the uses of national wealth is restricted by protocols and agreements signed with the Israeli government. This makes the Palestinian economy mostly dependent on foreign aid that does not provide adequate support for humanitarian logistics activities because it is not one of their fields of interest. Many scholars discussed humanitarian logistics funding issues, which forms challenges facing logistic activities at the preparedness phase. All of these studies agreed with the West Bank case; Koseoglu & Yıldırımlı (2015) and Sienou & Karduck (2012) completely agreed that logistics is very expensive and 80% of relief expenses are payed for logistics. So, it is the most costly operation in any disaster risk management process. This completely agrees with the findings of Burkart, et al., 2016 who also emphasized that funding issues are the main problem facing humanitarian logistics, in addition to the fact that different goals of funders means different interests and motivations to fund logistics activities and this corresponds to the findings of studying the funding factor in the West Bank. Funding issues are as important as the Israeli occupational constraints in the preparedness for logistics.

- "***Absence of disaster risk reduction strategies and its implementation tools***" based on agreement between all participants, this factor was also labelled as a 'Strong' statement and ranked the factor before the last in terms of its effect according to the survey respondents. The interviewees confirmed that this factor is very critical and important, and that

there is an urgent need to adopt a national disaster risk reduction strategy. This factor was created as a result of the preoccupation of the Palestinian government with the resistance of political occupation and the management of the daily affairs of the citizens which are constantly hindered by the occupation. This factor was studied by researchers such as Hawajri (2016) and DANIN, et al. (2012). They said that the absence of disaster risk reduction strategies create a weakness in the overall disaster risk management system and on logistics operations specifically in a state such as occupied Palestine. This fact was emphasized and approved by the United Nations Disaster Assessment and Coordination UNDAC (2018), which pointed out that the national disaster risk reduction strategy is the umbrella for all disaster risk management activities and the first step towards organizing the work of the interested institution and their activities, especially logistics activities and providers.

"***Large affected areas with huge operations***" possessed mutual agreement between most of the survey respondents, and labelled as a 'Strong' statement and ranked the last of all according to the survey respondents. OCHA, 2017 and Jiang & Yuan (2019) have shown that the areas that will be damaged or collapsed in case of disaster attacks will be very large and need huge response operations, and this leads to numerous barriers and challenges facing humanitarian logistic and directly affecting the efficiency of logistics operations. This completely goes with respondents' perception and survey findings. Despite that, the interviewees did not consider this factor as an important factor, and this is not inconsistent with the results above, because

most of them believe that the Palestinian communities are relatively small, and there are many factors that need to be addressed before this factor.

Factor related to Governmental, Organizational and Infrastructure Issues Discussion

"Poor alert systems" possessed mutual agreement between most of the survey respondents, it was labelled as a 'Strong' statement and ranked the first of all factors according to the survey respondents. The respondents were fully aware of the importance of sufficient, efficient, and suitable early warning systems. This was very harmonious with Yadav & Barve (2018), who consider the existence of suitable alert systems as one of the main success factors of humanitarian supply chain generally and humanitarian logistics specifically and consist a one of humanitarian logistics factors. Moreover, Amadou & Karduck (2013) addressed the poor alert systems as one of the main challenges that face humanitarian logistics operations. In the opposite direction, the interviewees reflected that it was a real factor but also thought that the alert systems is not a main problem now, because it can be solved by direct cooperation between related institutions with the very close reginal parties, such as Jordanian institutions, and sometimes through indirect cooperation with Israeli parties through an international broker. Despite this belief, this does not negate the fact that poor early warning systems are an ongoing challenge to the effectiveness of humanitarian logistics.

"**The existence of multiple and inconsistent data sources hinders the organizing humanitarian logistics***"* factor possessed mutual agreement

between all participants, as it was labelled as a ‘Strong’ statement and ranked the second of all according to the survey respondents. It was also agreed upon by the interviewees, some of them said that there are difficulties caused by the usability of data such as during the processes of planning and organizing humanitarian logistics, which was the result of the absence of clear organizing structure with specific responsibilities. This result is in line with previous studies that addressed the reliability, usability, and consistency of the data received from different sources in case of disaster, those scholars like Amadou & Karduck (2013) and Hellingrath & Widera (2011), and later on Vega (2018) all seconded this opinion by explaining the reason behind it, which is the fact that the data collected or received can be passed from an organization to a program, an operation, or any other managerial or technical activities. As for the data collection and analysis process, the unique characteristics of humanitarian logistics encourages the interested individuals to use innovative techniques to overcome those problems. As a result, all respondents agreed that the existence of multiple and inconsistent data sources is a barrier and challenge that may destroy logistics activities.

The factor “***The political situation, agreements and protocols signed***” had a unanimous agreement between all respondents and was labelled as a ‘Strong’ statement and ranked the factor before the last amongst all factors of effect according to the survey respondents. The interviewees confirmed that this factor is very critical and important. One of the interviewees said that the signed agreements with Israel prevent the importing and use of some equipment and technologies, especially in the field of communications. Any

tools sent through foreign aids should pass through Israeli gates and need prior permits, the use of land is also controlled by Israeli institutions and it is very difficult to optimize the location of facilities and other important issues. Additionally, the approval of the Israeli side completely depends on the political situation. Moreover, the donation agreements are not fair and not suitable for Palestinian situation and place additional constrain the use of funds. This factor was studied and emphasized by many scholar such as Shafiq & Soratana (2019); Donadio (2018); L'Hermitte, et al. (2015). They all agreed that in order to be able to implement the agility and leanness concepts in humanitarian logistics operations, the political situation, the signed agreements and protocols all should be taken into consideration.

The factor ***"Absence of a governmental representative and central legal reference"*** possessed mutual agreement between most of the survey respondents. It was labelled as a 'Strong' statement and ranked the last of all according to the survey respondents. The interviewees agreed that this factor is very critical, more than one respondents assured that there is an urgent needs to address the reference legal points that coordinate and granting authorities to interested institutions and be the source of formal information and orders, and connect efficiently between technical level and decision-making level. This was confirmed by many researchers such as Shafiq & Soratana (2019) and Gavidia (2017), who consider governmental representative an important governmental issues facing humanitarian logistics activities, because it is the legal umbrella for all relief activities, the key for organizing all parties, and the source of power and authority that

granted to respondent institutions. An international report was released from the UN Disaster Assessment and Coordination **(UNDAC, 2018)**, emphasizing the same idea that can be summarized by the statement: a governmental representative and central legal reference point are an urgent requirement for organizing humanitarian logistics.

- **Factors of Logistics Technical Operations**

The factor ***"Israeli procedures at crossing points and barriers, in addition to the need of permits for each operation, all hinder humanitarian logistics operations"*** had a unanimous agreement between most of the survey respondents, and the factor was labelled as a 'Very Strong' statement and ranked the first factor in terms of effect in this sub phase according to the survey respondents. All of the interviewees agreed that this factor is the most critical factor, and the majority of them mentioned that the reason behind such consensus is Israeli aggressive procedures colliding with all their plans and activities on a daily basis and frustrates or hinders them in most cases. This also agrees with what was discussed by researchers Levy (2016), Hawajri (2016); and Elagraa, et al., 2014; also it was published in different institutional reports or in website articles such as Cluster (2016), PSC (2012), OCHA (2010), USAID (2009); all of which discussed the Israeli procedures at crossing points and barriers constraints and how they impede the movement of logistics, causing issues such as: lengthy Israeli security procedures, back to back charging system, unloading containers onto pallets, the separation barrier (wall), forcing Palestinians to use underpasses and secondary road with bad construction and infrastructure built by Israeli

authorities for Palestinians use only, in addition to the bureaucratic constraints and aggressive administrative procedures.

The factor ***"Israeli policies"*** appears again as a factor that is labelled as 'Very Strong' statement and ranked the second factor according to the survey respondents. The interviewees were in the same line with many scholars such as Hawajri (2016) and Levy (2016). In other words, they (interviewees and scholars) completely agreed that many of the barriers and challenges that affect the efficiency of humanitarian logistics operations in West Bank are produced as a result of the Israeli aggressive policies against Palestinians, such as: limited Palestinian sovereignty on the land, the prevalence of crossing points and barriers of Israeli forces over all the West Bank, difficult procedures at barriers, and each logistics operation needs prior special permission. In addition, the Apartheid Wall surrounds the West Bank and completely isolates some Palestinian areas.

The ***"Poor procurement system"*** factor had a unanimous agreement between all respondents, as it was labelled as a 'Strong' statement and ranked the factor before the last according to the survey. The interviewees confirmed that this factor is very critical and important. Some of the interviewees said traditional procurement systems consumed long time, leading to an inability to perform logistics operation on time due the delay in supplying the requirements, which had a negative impact on the efficiency of logistics operations. Donadio (2018) addressed the issue of procurement as one of the main activities of humanitarian logistics. Other researchers, such as Jahre & Jahre (2019) and Gavidia (2017), studied this critical issue based on time

importance and required information systems. Respondents, interviewees, and researchers all agreed that the procurement system is a corner stone in humanitarian logistics systems and needs to be carefully managed and maintained in order to improve the efficiency of humanitarian logistics operations.

"Agility and leanness concepts in humanitarian logistics operations" possessed mutual agreement between most of the survey respondents, it was labelled as a 'Strong' statement and ranked the last of all factors in terms of effect according to the survey respondents. Some interviewees agreed that this factor is very important to minimize the consumption of time and resources, thus saving more lives. This is in line with the findings of Merminod, et al. (2014), who mentioned that disaster context is very special and needs a very huge, powerful, and quick operations. Additionally, Donadio (2018) addressed the agility and leanness as complex challenge then Shafiq & Soratana (2019) proved this perception. Thus, there is a clear agreement between literatures, interviewees, and respondents about the importance of implementing agility and leanness concepts in humanitarian logistics operations.

5.2.1.2 Response Phase Factors Discussion

- **Factors related to Emergency Systems Activations**

The first factor to be discusses was the ***"Unstable political situations affect the process of responding to a disaster"***. The responses of the participants showed an agreement between most of the survey respondents, who labelled this statement as a 'Strong' statement and it ranked the first according to the

survey respondents at this sub phase. All of the interviewees shared the same idea about this factor and they believe that it is one of the most critical factors. The majority of the respondents refer the reason behind this consensus to the preoccupation of the Palestinian government in many hot political issues, which makes the issue of disaster risk management and its various fields outside the list of governmental priorities, especially as it needs to invest large sums of money, which is not available under the current political situation and the absence of sovereignty over different resources specially the financial ones. This leads to very poor and confusing response as a result of neglecting successful response elements such as effective planning, assessment tools, coordination and cooperation techniques, decision-making tools, clear responsibilities, etc. resulting in the creation of a very chaotic and risky environment. Moreover, the Palestinian - Israeli political conflict and poor commitment of the Israeli political leaders to the signed agreements, makes the prediction of how the Israeli forces will deal with Palestinian responders difficult and creates a dangerous challenge in the face of the efficiency of humanitarian logistics and safety of respondents. This agrees with what was previously discussed by scholars such Shafiq & Soratana (2019), Gavidia (2017), both of them argued that the political situation has a direct negative effect on the organizational issues of the humanitarian logistics system as well as confusing the whole disaster risk management system. Stabilizing political situation was strongly recommended in the handbook released by the office for the coordination of humanitarian affairs in the UN Disaster Assessment and Coordination

institution UNDAC (2018) to create a suitable context to provide sufficient and effective humanitarian logistics services. There is a consensus between literature, interviewees, and respondents about the role of the political situation on the efficiency of humanitarian logistics.

The responses to the statement "***Regulations and legislations restrict activating emergency systems***" possessed mutual agreement between most of the survey respondents; it was labelled as a 'Strong' statement and ranked the effect with the least effect according to the survey respondents. The interviewees were divided into two groups: members of the first group agreed that this factor is valid and very important, most of this group's interviewees worked in NGOs. Members of the second group thought that this factor is important but it should be dealt with in accordance to the applicable law and regulations. This issue was discussed by Farberman (2018), FEMA (2015), Apte (2009); who agreed that the activation of emergency systems in case of crises and disasters is the turning point from the preparedness phase to the response phase. Thus, it is important to identify in the competent laws and legislations the responsibilities of the involved persons who are responsible for declaring emergency situations and activating the emergency systems in any new situation. There is an agreement between the majority of the respondents, literatures, and some of interviewees in relation to this factor being a barrier that has negative affect on the efficiency of humanitarian logistics during this sub phase.

Factor related to Governmental, Organizational and Infrastructure Issues Discussion

Responses to the factor ***"Funding, donations, and donors problems"*** showed a unanimous agreement between most of the survey respondents; it was labelled as a 'Strong' statement and ranked the first one according to the survey respondents at this sub phase. All of the interviewees had the same idea about this factor and they believed that it is one of the most critical factors; because they have clear perception of the high cost of humanitarian logistics and based on their experiences, they identified some problems with donation materials, which sometimes not suitable to be used with Palestinian community for religious, traditional, or cultural reasons. Furthermore, conditional assistance with some constraints is forced by donors to get assistance. This agrees with Koseoglu & Yıldırımlı (2015) and Sienou & Karduck (2012), both of them said that logistics is very expensive and about 80% of relief expenses are paid for logistics. On the same direction, Aflaki & Pedraza-Martinez (2016) and Apte (2009) agreed that donors' roles and their donations, as they add challenges to humanitarian logistics because it is difficult to forecast type, quality, and suitability of donations; which completely agreed with the interviewees' perception and survey findings**.**

"Difficulties in reallocating general budget based on to new situation"

This factor was labelled as a 'Strong' statement and ranked the second factor according to the survey respondents. The interviewees did not discuss this factor, as none of them had the authority to reallocate the budget items and they did not need to do this until the date of the interviews. The survey findings were homogeneous with literature; Cevik & Huang (2018) and Biddison, et al. (2018) discussed this issue, and they both agreed that it is

reallocating contingency budget or its items is a real challenge and hinders the performance of logistics operations; this was a result of weak sectorial evaluation with bad data integration, using different approaches for evaluation producing different results in addition to legal constraints.

"Restricted cooperation between logistics organizations" possessed reciprocal agreement between most of the survey respondents; it was labelled as a 'Strong' statement and ranked the eighth of nine according to the survey respondents. All of the interviewees accepted this factor as a hard challenge facing humanitarian logistics; they identified many levels of cooperation: first, communication between an emergency room and technical operational staff. Second, coordination between partners. Third, coordination between local and international institutions; these types of coordination efforts require effective communication systems which were found to be insufficient up to the date of the interviews. This is compatible with the findings of Wisetjindawata, et al. (2014) Koseoglu & Yıldırımlı (2015), and Gavidia, (2017), they were harmonized with their ideas on cooperating challenges. They adopt the same idea that states that there is a large number of participants in disaster relief operations so coordination between a large number of aid agencies and other participants is a very hard and difficult challenge that requires some special professionalization, and is considered a very critical challenge.

"The absence of identified government representative and legal reference point that regulates the work and granting powers to respondent institutions" most of the survey respondents agreed that this statement

represents one of the humanitarian logistics factors; it was labelled as a ‘Strong’ statement and ranked the last according to the survey respondents. All of the interviewees accept this factor as a very critical and dangerous factor because they believe that this point is the source of power and legal orders, which keeps all logistic activities in a legal framework; and this concept was discussed by Shafiq & Soratana (2019), UNDAC (2018), and Gavidia (2017), who consider the existence of a specific governmental representative as the most important governmental issue, as it is considered as a legal umbrella for all relief activities, the tool for organizing all parties, and the source of power and authority granted to the respondents’ institutions. Thus, this legal reference point should be clearly identified. Respondents, interviewees, and literature all agreed that the government representative and legal reference point are one of the main challenges facing humanitarian logistics.

- **Factors of Logistics Technical Operations**

“Israeli procedures at crossing points and barriers, in addition, to permit for each operation hinder humanitarian logistics operations”; this factor has appeared before as one of the factors affecting the efficiency of logistics operations at technical operational sub phase in the preparedness phase. Again, this factor possessed reciprocal agreement between most of the survey respondents; it was labelled as a ‘Strong’ statement and ranked the first one according to the survey respondents in this sub phase. All of the interviewees agreed that this factor is the most critical factor, as seen before, the majority of the respondents see that the reason behind this consensus are

the aggressive procedures imposed by the Israeli authorities colliding with all Palestinian activities on a daily basis and frustrates or hinders them in most cases. This was worked in with Levy (2016), Hawajri (2016); and Elagraa, et al., 2014; and reports published by a different institution or their websites such as Cluster (2016), PSC (2012), OCHA (2010). All of these views discussed the Israeli procedures at crossing points and barriers constraints and how they impede the movement of logistics, such as lengthy Israeli security procedures, back to back charging system in boarder gates, unloading containers onto pallets, and other security checks and procedures. Respondents, interviewees, and literature all agreed that the Israeli barriers, which spread over all the West Bank and the permit for each operation humanitarian logistics operations are challenges facing humanitarian logistics.

The factor ***"Closed roads, destroyed infrastructure, and lack of fuel" possessed*** reciprocal agreement between most of the survey respondents; it was labelled as a 'Strong' statement and ranked the second factor in this sub filed according to the survey respondents. All of the interviewees agreed that this factor is among the critical factors and confirmed that they can feel the effect of this factor during the events of resisting the occupation from 2000 to 2008 the year (the second Intifada). The whole West Bank area was declared a closed military zone by Israeli forces, and the cities were isolated from each other, military barriers and check points were spread all over the West Bank, and there were tough restrictions on issuing permits granted to Palestinians to move between cities and to transport their goods.

Additionally, the construction of the separation barrier (wall) was initiated by the Israeli authorities. All of those conditions forced Palestinians to use underpasses and secondary road with bad construction and infrastructure some of them were built by Israeli authorities for the use of Palestinians only; this also lead to a shortage in fuel as a result of the high level of demand due to the long abnormal distance of travelling between cities. This issue was discussed and described by many scholars such as Abdelhamid (2018), IRU (2017), Habermann & Hedel (2018), and Thiruchelvam, et al. (2018), all of whom shared the same point of view in relation to the fact that in case of a disaster in developing countries, humanitarian relief operations are handled with poor logistic support, due to the weak transportation infrastructure, the lack of facilities and fuels, and the narrow or closed roads. Respondents, interviewees, and literature all agreed that the closed roads, destroyed infrastructure, and lack of fuel are barriers facing humanitarian logistics.

"The nature and type of rescue and relief materials (medicines, food, water, shelter, clothing, etc.)" possessed reciprocal agreement between most of the survey respondents; it was labelled as a 'Strong' statement and ranked the thirteenth of fourteen factors according to the survey respondents at this sub phase. All of the interviewees agreed that this factor is an important factor; all interviewees noted that this factor was cleared in case of relief remote villages, which were attacked by the Israeli military; villagers required different kinds of assistance, including shelters, clothes, food, human and veterinary medicines. Such rescue and relief materials needed to be transferred using different methods, which are suitable for the nature of

each material, some of those materials are transferred in normal conditions, others need to be covered from sunlight or heat, and others need to be refrigerated or frozen, especially in cases of food and medicine. This factor was also discussed by Donadio (2018) and Koseoglu & Yıldırımlı (2015), who confirmed that the efficiency of humanitarian aid operations depends on the handling of materials and services, on time and in suitable conditions. Respondents, interviewees, and literature all agreed that they are one of factors affecting the efficiency of humanitarian logistics.

As for the factor ***"Poor technological and incompatible communication systems"***, the majority of the survey respondents agreed that this statement represents one of humanitarian logistics efficiency factors; it was labelled as a 'Strong' statement and ranked the last one according to the survey respondents. All of the interviewees accept this factor as a very critical and dangerous factor because they believe that technology and communication are effective tools in managing logistics operations. L'Hermitte, et al. (2015) and Donadio (2018) discussed this factor and they came to the conclusion that technology and communication are main parts of humanitarian logistics. Therefore, without suitable technologies and communication systems, logistics operation cannot be managed efficiently. Respondents, interviewees, and previous literature all agree on considering this factor a factor of effect in relief logistics operations.

5.2.1.3 Post-disaster (recovery) Phase Factors Discussion

After the disaster, the main goal will be to get out of the bottleneck situation by creating the circumstances that leads the community to gradually return

to their normal daily activities; this is known as the community rehabilitation process. Then, the city reconstruction processes will be initiated. Rehabilitation and reconstruction processes are very costly, and long-term processes and logistics plays main role at these stages.

- Planning for logistics Factors Discussion

For the second time, ***"Funding constraints"*** had a unanimous agreement between all respondents, it was labelled as a 'Very Strong' statement and ranked the first of three according to the survey results. The interviewees agreed that this factor is extremely important, which was attributed to the clear perception of the important planning activities for logistics to enhance the efficiency of humanitarian logistics under the pressure of bad economic situation and critical time framework, planning is to try optimizing the logistics operations and indicating the needs, valid resources, and predicting barriers and dealing with them. This completely goes with Khan, et al. (2019) and Burkart, et al. (2016) who emphasized that the funding issues are the main problem facing humanitarian logistics in all humanitarian logistics phases. Respondents, interviewees, and literature were agreed that funding constraints factor affecting relief logistics.

"***Poor Information Management technologies***" had a reciprocal agreement between all respondents; it was labelled as a 'Strong' statement and ranked the last one according to the survey respondents. All of the interviewees accept this factor as an important factor because information is the base for any planning or decision-making processes. Information management tools represents a compass that directs all logistics planning activities in this sub

phase, and supporting events tracking approach as they said. Donadio (2018) has discussed the issue of humanitarian logistics information management and ensured that there is a clear conflict in information related to problems of compatibility and the capacity of information management technologies, which support humanitarian logistics and this creates a hard challenge. This was emphasized by Wilson, et al. (2018). Respondents, interviewees, and literature all completely agreed that information management technologies affect the efficiency of logistics operations.

- **Factor related to Governmental, Organizational, and Infrastructure Issues Discussion**

For the third time, "Funding problems" appear as the most affecting factor and had a reciprocal agreement between all respondents. It was labelled as a 'Very Strong' statement and ranked the first of five according to the survey respondents. The interviewees emphasized that this factor is extremely important and can hinder any proposed activities that aimed at organizing humanitarian logistics or improving the managerial and legal structure of interested institutions and their activities. This result was supported by Sienou & Karduck (2012) and Burkart, et al. (2016), who emphasized that funding problems always exist especially in developing countries and strongly affect humanitarian logistics in all of humanitarian logistics phases and sub phases. Respondents, interviewees, and literature all agreed that funding problems always affect the efficiency of humanitarian logistics.

For the second time, the ***"Absence of a government representative and central legal coordination point"*** appears as the most affecting factor and

had a reciprocal agreement between all respondents. Most of the survey respondents agreed that this statement represents one of the main humanitarian logistics factors; it was labelled as a ‘Strong’ statement and ranked the last one of five according to the survey respondents. All of the interviewees accept this factor as a very critical and dangerous factor because they believe that this point is the source of power and legal orders, which keeps all logistics activities in a legal framework. Shafiq & Soratana (2019), UNDAC (2018), and Gavidia (2017) all discussed this factor, and they consider the creation of coordination point as one of the most important governmental issues because it forms the legal umbrella for all relief activities, the tool of organizing all parties, and the source of power and authority granted to respondents’ institutions. So, this legal reference point should be identified. Respondents, interviewees, and literature all agreed that the government representative and legal reference point are one of the main barriers facing humanitarian logistics.

- **Logistics Technical Operations Factors Discussion**

For the fourth time, ***“funding problems”*** appears as the most affecting factor with the unanimous agreement between all respondents. It was labelled as a ‘Very Strong’ statement and ranked the first of five factors according to the survey respondents. The interviewees emphasized that this factor is extremely important and can hinder any logistics operations during the recovery and rehabilitation processes. This was mentioned by Sienou & Karduck (2012) and Burkart, et al. (2016) who emphasized that funding problems always exist especially in developing countries, causing strong

hindering to the humanitarian logistics operations in all of humanitarian logistics phases and sub phases. Respondents, interviewees, and previous literature all agreed that funding problems always affect the efficiency of humanitarian logistics.

"The lack of effective collaboration between parties" appears the least affecting factor and with a reciprocal agreement between all respondents. This factor was labelled as a 'Strong' and ranked the last of five according to the survey respondents. The majority of the interviewees consider the effective, sufficient, and integration collaboration between parties as one of the keys of successful logistics operations. Apte (2009) classified the collaboration between partners in humanitarian logistics as a challenge directly affecting the efficiency of logistics operation. In the same manner, Gavidia, (2017) addressed collaboration between parties as a hot topic in humanitarian logistics field and claims that it creates a real challenge because it is the integrated logistics labors and activities. Respondents, interviewees, and literature all agreed that effective collaboration between parties affects the efficiency of humanitarian logistics.

- Overall Assessment of Factors Affecting Humanitarian Logistics

In a general and comprehensive view, the results of the survey and the interviews showed that all factors at all sub phases in all phases were at least factors of strong effect. During the preparedness phase, the most general ranked sub phase was the technical operations issues. This explains that technical operation issues are the tools that transfers plans from paper to executive procedures, and we can physically touch its impacts and other

managerial issues, in addition to its ability to measure the performance of planning and organizational issues through their impact on technical operations.

In the disaster response phase, the top ranked factor was the activation of emergency systems. This reflects the impact of preparedness phase on the response phase, if the planning which occurs during the preparedness phase is sufficient, legislations and regulation are better prepared and respected, and the technical operations all worked properly, then the results will be speedy responses with clear responsibilities for each competent party. This leads to a consistency in the response based on orders coming from a person or an institution who has the full authority as identified by law. The starting point is critical to ensure consistent response for deferent respondents.

In the post disaster phase, planning for logistics was top ranked. This means that the planning at this phase forms an opportunity to start planning for resilient community and reconstruct a new resilient city taking logistics activities into considerations.

In the case of comparing the mean ranked values of each phase as shown in Table 4.33 in Chapter 4, results show that the phases were ranked sequentially: post disaster phase, preparedness phase, response phase.

It was noted that the mean ranking results showed that the post-disaster or recovery phase is the strongest phase. Based on the rule stating that sustainability and disaster risk management are counterparts, (Mochizuki & Naqv, 2019), this means that the disaster risk management process is a continuous process. So, the ranking results provide an indicator that the

preparedness phase should start at an early period in the recovery phase. In other words, the community should be reorganized and the city should reconstructed based on disaster resilient rule.

Finally, all factors were at least strong and none of those factors can be neglected because it has clear impact on the efficiency of performance of humanitarian logistics in the West Bank.

5.2.2 Discussion of Hypotheses Results

The results of the inferential statistic approach are shown with respect to their related hypotheses below:

H1: Poor planning for humanitarian logistics in preparedness phase has a significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

In this study, planning factors have been identified as having a negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.839$, $t = 5.302$, $p = 0.000$). This result is consistent with previous studies such as lexicon (2018) and Koseoglu & Yıldırımlı (2015) who explained the negative impacts of planning factors on the performance of logistics operations, and they have also linked the factors of the planning process with the humanitarian logistics efficiency. Results have shown that planning for logistics is the main part of efficient disaster risk management and every relief operation needs to be planned based on possible scenarios which depend on the type of disaster. Koseoglu & Yıldırımlı (2015) presented that logistics planning efficiency is affected by the political situation, funds and the donors' constraints, coordination,

warehouse allocation, necessary information, etc; which completely existed and are valid in the case of the West Bank of Palestine. However, and with respect to the mentioned scholarly papers, this result was very expected. The negative impact of planning process factors can be proved, subsequently, poor humanitarian logistics planning processes lead to inefficient relief logistics operation performance. The majority of interviewees confirmed that efficient preparedness phase is driven by a well-managed logistics planning processes. The results have also emphasized the importance of good planning for humanitarian logistics and managing the planning factors and its complexity, interventions, and interaction which assure the need to adopt the concepts of disaster risk reduction. Planning processes should be adopted for different scopes and fields, with taking into consideration integrate national planning processes in different fields to achieve efficient preparedness phase generally and humanitarian logistics specifically

- ***H2: Weak governmental, organizational and infrastructure factors in preparedness phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.***

In this study, governmental, organizational and infrastructure factors have been identified as factors with negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.556$, $t = 10.534$, $p = 0.000$). This result is consistent with previous studies such as Shafiq & Soratana, (2019); Gavidia (2017); and UNDAC, (2018) report which discussed the negative impact of governmental, organizational and infrastructure factors on the performance of logistics operations, and it was

also linked the factors of governmental, organizational and infrastructure issues with humanitarian logistics efficiency. Shafiq & Soratana (2019) said that humanitarian services (including logistics) were strongly linked to the political situation; and explain that the effective humanitarian logistics operations need governmental support, strong parties coordination, clusters cooperation, good infrastructure, and well organised systems. Gavidia (2017) explained that there are many diverse organizations involved in the relief operations and each organization has its own policies and goals, this creates difficulties in collaboration especially in case of not clear legal mandates. Additionally, coordination challenges such as unwillingness to share information, information flows, unreachable information, inconsistent data and information formats, media storage misalignment, unreliability, and insufficient communication systems all have an impact on the efficiency of humanitarian logistic operations. In addition to factors mentioned above by Soratana, (2019); Gavidia (2017), which were also emphasized by UNDAC, (2018).

The UNDAC, (2018) report added a new factor which had an affect on the efficiency of the humanitarian logistics operations. This factor was the parties involved in humanitarian logistics, especially the government reprehensive with main responsibility of ensuring that coordination mechanisms are established and properly supported. All previous factors were valid in the West Bank of Palestine.

However, and with respect to the mentioned report and papers, this result was very clearly expected. The negative impact of items or factors of

governmental, organizational and infrastructure issues can be proved, subsequently, neglecting governmental, organizational and infrastructure issues processing and improvement lead to very weak efficiency of relief logistics operation performance. The majority of interviewees confirmed that governmental, organizational and infrastructure issues control the efficiency of logistics in the preparedness phase. The majority of interviewees confirmed that governmental, organizational and infrastructure issues control the efficiency of logistics in the preparedness phase.

The respondents and interviewees have also stressed the importance of good processing and managing the governmental, organizational and infrastructure issues to treat the interventions and overlap between the responsibilities and authorities of the related institutions; and producing a suitable national legal and organizational infrastructure.

H3: Poor technical operations in preparedness phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

Likewise, technical operations factors have been identified as factors with negative impact on the performance of humanitarian logistics, and hence on the efficiency of logistics operations ($\beta = 0.722$, $t = 5.302$, $p = 0.000$). This result is consistent with previous studies such as Wilson et al. (2018) who emphasized that the governmental policies have a large influence on the humanitarian logistics operations. In addition to, many technical factors that needs to be planned efficiently such as effective supply chain, required technologies, parties integration through cooperation, fast agile operations,

procurement systems, and storage locations. L'Hermitte et al. (2015) has identified a number of strategic planning factors related to the technical aspects of humanitarian logistics which are considered as barriers, such as coordination plans, reliable communication networks, and the effective and integration relationships with suppliers. Arguing the effectiveness of humanitarian supply chain performance depends on many factors that include information sharing techniques, rapid responsiveness with critical time frame, and flexibility in procurement systems. Furthermore, the agility concept was strongly identified as technical humanitarian logistics affecting negatively on the efficiency of logistics operations.

Swanson & Smith 2013, which explained that the political situation hinders the coordination efforts between the different related parties. Also mentioned that locating, allocating, coordinating, and managing available resources are real challenge. This point completely agrees with the output of research for the case of the West Bank of Palestine. Thus, the negative impact of technical operations factors on the performance of logistics operations was linked to the efficiency of humanitarian logistics. However, and with respect to the mentioned articles, this result was clearly predicted. The negative impact of technical operations factors can be proven, subsequently, the insufficient processing of humanitarian logistics technical operations factors lead to poor humanitarian logistics performance in the preparedness phase. Most interviewees agreed that technical operations factors stand behind the effectiveness of the preparedness phase.

The respondents and interviewees have also agreed on the importance of technical operations factors of humanitarian logistics and managing and integrating technical factors, in addition to asserting the need to processing and treating technical factors complexity especially immediate interaction with surrounding circumstance.

H4: Poor efficiency of Humanitarian logistics in preparedness phase has significant and negative impact on humanitarian logistics efficiency in response phase in the West Bank of Palestine.

The factors of humanitarian logistics in the preparedness phase have been identified as factors with negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.526$, $t = 12.085$, $p = 0.000$). This result is consistent with the previous studies. Koseoglu & Yıldırımlı (2015), Baird (2010), and NEHRP (2009) completely agreed about one idea, which is the fact that the preparedness stage is the most crucial and critical part of humanitarian logistics because a poor preparedness state could increase the potential complexity in the response phase. They explained that the aim of the preparedness phase is to be ready to respond to a disaster quickly and efficiently, this means that a poor response is the result of poor preparedness phase. This was also consistent with the case of the West Bank of Palestine.

Moreover, based on the acceptance of previous hypotheses, it has become clear that there are negative impacts of humanitarian logistics factors in the preparedness phase on the efficiency of logistics operations performance in the response phase. The negative impact of humanitarian logistics factors in

the preparedness phase on the efficiency of response logistics can be approved.

Afterwards, the poor processing of humanitarian logistics in the preparedness phase surely lead to the poor efficiency of relief logistics operation performance in the response phase. The majority of interviewees confirmed that efficient response is strongly linked to the efficient preparedness phase. The respondents and interviewees have also emphasized on the importance of preparing well for humanitarian logistics to get a rapid and suitable response.

H5: Poor procedure of Emergency systems activations in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

In this study, emergency systems activations factors have been identified as a negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.438$, $t = 10.761$, $p = 0.000$). This result is consistent with the previous studies such as UNDAC (2018) report which identified leadership and management responsibilities as unique challenges and this was created as a result of poor national legislation and unstable political situation.

Apte (2009) pointed out that humanitarian logistics operation can be complex and hindered because of the interactions between various parties in a politicized environment and this creates a challenge facing activation of the emergency systems beside the challenge of emergency systems compatibility with type of disaster. FEMA (2015) said that unified leadership

is an urgent requirement for large-scale disaster operations, and this needs a suitable political situation and clear regulations. All previous articles and reports discussed the negative impacts of emergency systems activations factors which were also valid in the West Bank of Palestine. Factors related to emergency systems activations were strongly linked to the efficiency of humanitarian logistics. However, and with respect to the mentioned report and articles, this result was very clearly predicted. The negative impact of items or factors of emergency systems activations factors can be proved.

The majority of interviewees confirmed that emergency systems activations factors play an important role in suitable and rapid logistics operations in the phase. The respondents and interviewees have also agreed on the importance of preparing sufficient and clear enough regulation organizing the responsibilities of emergency systems activation, using compatible systems, and suitable political situation to improve the efficiency of humanitarian logistic.

H6: Weak governmental, organizational and infrastructure factors in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

In this study, governmental, organizational and infrastructure factors have been identified as factors of negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.846$, $t = 2.77$, $p = 0.000$). This result is consistent with the previous studies such as Shafiq & Soratana (2019) who studied the humanitarian logistics as a component of humanitarian supply chain. They came to the conclusion that

humanitarian logistics faced many barriers like finding and donors constrains, donations kind, professional staff, tools and relief materials, distribution systems and methods. Jiang & Yuan (2019) detected many barriers facing humanitarian logistics such as shortage in resources especially funds, reallocating resources especially budget items, a significant part of useless offered donations which creates a major challenge for the disaster response logistics, damage or losses and needs assessment, communications systems, decision-making tools and structure, and distribution of rescue tools and relief materials systems and methods. In addition to the factors previously enumerated and approved by UNDAC (2018), the UNDAC (2018) report add more some critical factors, that affecting negatively on the efficiency of humanitarian logistics like absence of identified government representative, legal reference point that regulates the work and granting powers to respondent institutions, and absence of central and professional coordination abilities. All previous factors were found to be strong factors affecting humanitarian logistics in the West Bank of Palestine.

However, and with respect to the mentioned report and papers, this result was very clearly in prospect. The negative impact of items or factors of governmental, organizational and infrastructure issues can be proved, subsequently, any dereliction in governmental, organizational and infrastructure issues processing lead to poor efficiency in relief logistics operation performance. The majority of the interviewees confirmed that governmental, organizational and infrastructure issues strongly supporting

the efficiency of logistics in the response phase. The respondents and interviewees have also agreed on the importance of good processing and managing the governmental, organizational and infrastructure issues to treat many challenges such as reference legal central point, governmental representative to make critical discussions, responsibilities and authorities of respondents, and more.

H7: Poor Technical operations in response phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine..

Likewise, technical operations factors in the response phase have been identified as a negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.770$, $t = 8.031$, $p = 0.000$). This result agrees with the results of previous studies such as Donadio (2018), which mentioned that there are numerous technical challenges facing humanitarian logistics in the response phase. These challenges include closed roads, destroyed distribution centers, disabled communications and information, and critically needed items that need to be shipped thousands of miles, in addition to the need for accurate data to conduct demand analysis, warehouse and inventory locations and management system, supply chain management systems, and integration between relief providers who can combine the most probable scenarios. In the same way, Thiruchelvam, et al. (2018) emphasized that humanitarian logistics efficiency is directly affected by a relief supply chain which tends to be unstable, unpredictable and unresponsive to the needs of disaster

victims with lack or poor of coordination between the relief supply chain parties that hinders the effective supply of aid and relief operations, blocked roads which limits access to evacuation centers and hindering the delivery of emergency relief needs under the pressure of critical time. Furthermore, many other factors were detected, which include large affected areas with huge operations and high level of risks facing logistics providers (Jiang & Yuan, 2019), unavailability of suitable vehicles in terms of size and capacity (Koseoglu & Yıldırımlı, 2015), and destroyed or looted facilities (Hawajri, 2016). All of those factors were identified clearly in the West Bank of Palestine. In addition to a unique and strong factor, which is the harsh Israeli procedures imposed on crossing points and barriers in addition to the need for a permit for each operation, which hinders humanitarian logistics operations (Levy, 2016; Hawajri, 2016).

All previous articles in this field discussed the negative impacts of technical operations factors on the performance of humanitarian logistics operations, and linked the technical operations factors with the humanitarian logistics efficiency. However, and with respect to the mentioned scholar papers, this result was clearly predicted. The negative impact of technical operations factors can be proved, subsequently, humanitarian logistics technical operations factors poor processing lead to poor efficiency of humanitarian logistics performance in the response phase, this will make the response to disasters or crisis most difficult and complex.

Most of the interviewees agreed that processing technical operations factors standing strongly behind the effective response phase. The respondents and

interviewees have also had the same perception about the importance of technical operations factors, and that humanitarian logistics factors should be managed and integrated together to ensure minimizing and stopping early as possible the deterioration of a situation, in addition to asserting the need for a serious treatment process for technical factors complexity, especially the chaotic circumstances variation.

H8: Poor efficiency of humanitarian logistics in response phase has significant and negative impact on humanitarian logistics efficiency in recovery phase in the West Bank of Palestine.

Furthermore, humanitarian logistics in response phase factors have been identified as a negative impact on the humanitarian logistics performance and so on the efficiency of logistics operations ($\beta = 0.733$, $t = 3.907$, $p = 0.000$). This result is consistent with the previous studies such as Benjamin, et al. (2017) who emphasized the idea that organized response phase is the best support for an efficient transition from emergency response phase to recovery phase and speeds up the recovery processes. In other words, response and recovery phases often merge together. This was also agreed with Koseoglu & Yıldırımlı (2015), who said that the phases of disaster risk management are closely linked. Successful logistics operations in the response phase mean fewer losses, more saving of lives, stopping or minimizing deterioration, and then, starting rapid and speed recovery as both articles said. In other words, if the response was inefficient then, the recovery will be delayed to started, and the severity from barriers will be increased.

As a result, the factors of response phase have a direct effect on the efficiency of the recovery phase. Moreover, based on the acceptance of previous hypotheses related to the response phase, it has become clear that negative impacts of humanitarian logistics factors in the response phase on the performance of logistics operations in the recovery phase. The negative impact of humanitarian logistics factors in the response phase on the efficiency of recovery logistics can be approved.

Afterwards, poor efficiency of humanitarian logistics in the response phase surely leads to poor efficiency of relief logistics operation performance in the recovery phase. The majority of interviewees confirmed that the efficiency of the recovery phase is linked to the efficiency of the response phase. The respondents and interviewees have also emphasized on the importance of processing response phase factors for getting a well humanitarian logistics in the recovery phase.

H9: Poor planning in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

In this research, planning factors have been identified as negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.570$, $t = 11.841$, $p = 0.000$). This result is consistent with the previous studies such as Burkart, et al. (2016) who found that there are funding barriers facing humanitarian logistics activities in all phases of disaster risk management. L'Hermitte, et al. (2015) and Donadio (2018) both agreed that there are challenges facing the planning for the humanitarian logistics related to weakness in information management technologies.

Gavidia (2017), Hawajri (2016), Levy (2016), and OCHA (2010) strongly agreed that the political situation is one of the main factors in hindering the planning for the humanitarian logistics. Each article or report focused on and explained the negative impact of one planning factor or more on the performance of logistics operations, and it was also linked to the factors of planning process with the humanitarian logistics efficiency in recovery. However, and with respect to the mentioned scholarly papers, this result was very expected. The negative impact of items or factors of planning process can be proved, subsequently, poor humanitarian logistics planning processes factors lead to poor efficiency of relief logistics operation performance.

The majority of the interviewees confirmed that efficient recovery phase is driven by well logistics planning processes. The respondents and interviewees have also emphasized the importance of good planning for humanitarian logistics and processing the planning factors and its complexity, interventions, and interaction, which asserts the need a scientific approach to reconstruct resilient urban area based on hazard and risk assessment criteria.

H10: Weak governmental, organizational and infrastructure factors in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine

Governmental, organizational and infrastructure factors have been identified as a negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.804$, $t = 5.279$, $p = 0.000$). This result is consistent with the findings of previous studies such as Shafiq &

Soratana (2019) and Jiang & Yuan (2019), who concluded that there are many barriers or factors that negatively affect governmental, organizational and infrastructure issues and impede the efficiency of humanitarian logistics operations, such as funding, information technology systems, and effective coordination. Additionally, the UNDAC (2018) report add some critical factors of negative affect on the efficiency of humanitarian logistics, such as the absence of identified government representative as a legal reference point that regulates the work, and absence of effective central coordination abilities. As mentioned before, Gavidia (2017), Hawajri (2016), Levy (2016), and OCHA (2010) strongly agreed that the political situation is one of the main factors hindering the efficiency of the humanitarian logistics. All previous factors were valid and strong factors affecting humanitarian logistics in the West Bank of Palestine.

The previous studies and reports argued the negative impacts of governmental, organizational and infrastructure factors on the efficiency of logistics operations in the recovery phase and they linked the factors of governmental, organizational and infrastructure with humanitarian logistics efficiency in the recovery phase.

However, and with respect to the mentioned report and articles, this result was very clearly in prospect. The negative impact of items or factors of governmental, organizational and infrastructure issues on the logistics efficiency can be proved,

subsequently, not only the poor processing governmental, organizational and infrastructure without a clear scientific approach can lose the opportunity

reconstructing the urban areas and rehabilitate community in more resilient situation supporting humanitarian logistics It can even increase the complexity of problems and challenges. This leads to the understanding that governmental, organizational and infrastructure factors affecting strongly on the efficiency of relief logistics operation performance in the recovery phase. The majority of interviewees confirmed that governmental, organizational and infrastructure issues are strongly affecting the efficiency of logistics in all phases including the recovery phase. The respondents and interviewees have also agreed on the importance of good processing and managing the governmental, organizational and infrastructure issues to treat many challenges, such as funding problems, the unstable political situation in the West Bank, coordination, information management technologies, and more.

H11: Poor Technical operations in recovery phase have significant and negative impact on humanitarian logistics efficiency in the West Bank of Palestine.

Likewise, technical operations factors in the recovery phase have been identified as a negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations ($\beta = 0.688$, $t = 5.364$, $p = 0.000$). This result agrees with previous studies such as Gavidia (2017) and Burkart, et al. (2016) in respect to funding, which is a real very strong factor affecting the technical aspects of logistics operations. Shafiq & Soratana (2019) studied the humanitarian logistics as a part of the humanitarian supply chain and they found that the efficiency of logistics operation is strongly linked to the efficiency of the supply chain. Additionally, Koseoglu &

Yıldırımlı (2015) and Gavidia (2017) considered the lack of effective collaboration between parties as the most affecting factors on the efficiency of humanitarian logistics. A very crucial an critical factor was added by Jiang & Yuan (2019) and logistics Cluster report (2016) which is high level of risks for logistics institutions providers and their employees. Another factor has already been agreed upon Jiang & Yuan (2019) and Gavidia (2017) which is that the critical time frame to be worked in can produce enough pressure to affect in negative manner on the efficiency of logistics operations. All previous factors were valid and strong factors affecting humanitarian logistics in the West Bank of Palestine.

All previous scientific papers and reports were linked the technical operations factors with the humanitarian logistics efficiency. However, and with respect to the mentioned scholar papers, this result was clearly predicted. The negative impact of technical operations factors can be proved, subsequently, humanitarian logistics technical operations factors weak processing lead to poor efficiency of humanitarian logistics performance in the recovery phase.

Most of the interviewees agreed that processing technical operations factors raising effectiveness of the recovery phase. The respondents and interviewees also had the same idea about the importance of technical operations factors, that of humanitarian logistics factors should be managed and integrated together to ensure minimizing the recovery time, and then starting the comprehensive developing, in addition, to ascertain the need to

a serious treatment process for the critical technical factors at this phase and its complexity especially the chaotic circumstances variation.

H12: Poor efficiency of humanitarian logistics operations in the preparedness phase has significant and negative impact on humanitarian logistics efficiency in recovery phase in the West Bank of Palestine.

Furthermore, the factors of humanitarian logistics in preparedness phase have been identified as negative impact on the humanitarian logistics performance and hence on the efficiency of logistics operations $\beta = 0.567$, $t = 4664$, $p = 0.000$). This result is consistent with previous studies such as Benjamin, et al. (2017), who emphasized the fact that well prepared preparedness phase will play an active role in supporting an efficient recovery phase and will speed up the recovery processes. This was also agreed by Koseoglu & Yıldırımlı (2015), who said that the phases of disaster risk management are closely linked and there is a direct impact of preparedness phase and recovery phase as seen in planning activities that should include some plans for recovery logistics activities in addition to processing some governmental and organizational issues that support recovery logistics. Also, Baird (2010), and NEHRP (2009) discussed the indirect effect of preparedness phase on recove1ry logistics. Afterwards, poor efficiency of humanitarian logistics in preparedness phase surly lead to poor efficiency of recovery logistics operation performance.

The majority of the interviewees confirmed that efficient preparedness has a strong effect the efficiency of recovery phase. The respondents and interviewees have also emphasized the importance of the proper preparation

for humanitarian logistics in the recovery phase to get a rapid reconstruction and rehabilitation processes.

As a result of this study, the research has proved that the efficiency of the humanitarian logistics can significantly improve if all sub factors in all sub phases were managed and maintained in an integrated approach, starting from the national level then going down to the lowest level of activities.

Based on all above, the main three-research hypotheses are accepted:

- Poor Humanitarian logistics factors in the preparedness phase have a negative effect on the efficiency of humanitarian logistics.
- Poor Humanitarian logistics factors in the response phase have a negative effect on the efficiency of humanitarian logistics.
- Poor Humanitarian logistics factors in the post-disaster phase have a negative effect on the efficiency of humanitarian logistics.

5.3 Model Development

The creation of a research managerial model is one of the main objectives of this research. The model was developed after undergoing a process of abstraction for the entire individual sub-phases and findings of the research, each stage has added a contribution that lead to the current form of this model. Nevertheless, the framework was also subject to validation by three field experts (refer to appendix C) as it was amended based on the request of the Palestinian institutions interested in disaster risk management in the West Bank, so that it is in line with the related requirements and guidelines. The feedback provided by the experts was useful and they suggested indicating the parties of each sub-phase generated beyond the main phase.

Their valuable comments were taking into consideration in the shaping of the final form of the managerial model.

Disaster risk management was defined by the Red Cross and Red Crescent National Societies as “the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response, and recovery in order to reduce the impact of disasters” (IFRC, 2011). Furthermore, Koseoglu & Yıldırımlı, (2015) recommended conducting an evaluation of the potential negative impact of the disaster based on the input of the preparedness phase, the response phase, the reconstruction phase, the rehabilitation phase, and the recovery phase. The mentioned definition highlights and indicated that the base of disaster impact assessment is based on three main stages of disaster risk management (preparedness, response, and recovery). The model presented in Figure 5.1 was built based on those three main phases.

The managerial model was developed based on these study findings and the interviews thematic analysis, which have a clear effect on the introduced model.

This model is to be used by planners, decision makers, and officers in GOs, NGOs, and other related private sector organizations, to assist them in improve logistics operational processes in the field of humanitarian relief. This managerial model consists of two main parts:

- First, the three main phases, and sub phases diagram as shown in Figure 5-1:

A. Efficiency of logistics in the preparedness phase which consists of three main sub phases: planning for logistics sub phase, processing of governmental, organizational and infrastructure issues sub phase, and processing technical operations issues sub phase.

B. Efficiency of logistics in the response phase which consists of three main sub phases: emergency systems activation sup phase, processing of governmental sub phase, organizational and infrastructure issues sub phase, and processing technical operations issues.

C. The efficiency of logistics in the post-disaster or recovery phase, which consists also of three main sub phases: planning for logistics sub phase, processing of governmental, organizational and Infrastructure issues sub phase, and processing technical operations issues.

- Second, a list of humanitarian logistics partners at each sub phase, who need to work together in scientific, systematic, regulated, and integrated manner to produce the most efficient logistics operations, as shown in table 5.1.

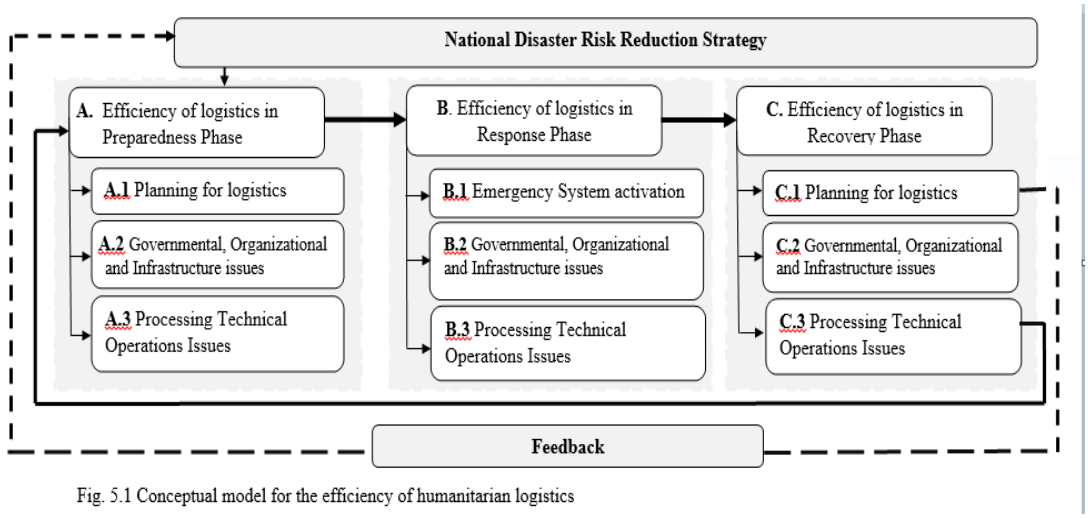

Fig. 5.1 Conceptual model for the efficiency of humanitarian logistics

Table 5.1 Parties of Improving Humanitarian Logistics Efficiency

Phase	Sub-phase	Responsible parties
Phase A : Efficiency of logistics in Preparedness	**A1**	Prime minister office, the national disaster risk management platform, Ministry of Interior, Ministry of health, Ministry of finance, Ministry of Economy, Ministry of local government, Ministry of Public Works, Ministry of communications, Ministry of Transportation, Ministry of Social Affairs, Ministry of Planning, Governorates Local and international NGOs, Central Statistical Office, Academic persons, Ministry of Information
	A2	President office, the national disaster risk management platform, Prime minister office, Parliament, Ministry of Exterior, Ministry of communications, Ministry of Interior, Governorates
	A3	Ministry of health, Ministry of local government, Ministry of Public Works, Governorates, Ministry of communications, Local and international NGOs, Ministry of transportation, Ministry of Information, Ministry of Exterior
Phase B: Efficiency of logistics in Response	**B1**	President office, the national disaster risk management platform, Prime minister office
	B2	President office, the national disaster risk management platform, Prime minister office, Ministry of Interior, Ministry of Exterior, Parliament, Governorates
	B3	Ministry of health, Ministry of communications, Ministry of Interior, Governorates, Local and international NGOs, Ministry of Public Works, Ministry of Information
Phase C: Efficiency of logistics in Recovery	**C1**	Prime minister office, the national disaster risk management platform, Ministry of Interior, Ministry of health, Ministry of finance, Ministry of Economy, Ministry of local government, Ministry of Public Works, Ministry of communications, Ministry of Transportation, Ministry of Social Affairs, Ministry of Planning, Governorates Local and international NGOs, Central Statistical Office, Academic persons, Ministry of Information
	C2	President office, the national disaster risk management platform, Prime minister office, Ministry of Interior, Ministry of Exterior, Parliament
	C3	Ministry of health, Ministry of Public Works, Ministry of Interior, Governorates, Local and international NGOs, Ministry of communications, Ministry of Information

A method or a plan was chosen to achieve the desired future, such as the achievement of a certain goal or provide a solution to a problem, by using the art and science of planning and marshalling resources for their most efficient and effective use. So, the national disaster risk strategy is the national plan to prevent or mitigate the impact of disaster and it is a continuous process. The national disaster risk strategy plan is a multisector collaboration including logistics sectors**.**

5.3.1 The Efficiency of Humanitarian logistics in the preparedness phase

In the preparedness phase, there are many activities that need to take place in order to prevent new risks, mitigate the existing disaster risk, and manage the residual disaster risk, to achieve the main objective which is simply be ready to respond to a disaster quickly and efficiently. This phase was divided into three sub phases based on the efficiency factors of humanitarian logistics as below:

- ***Planning for logistics***: at this sub phase, planning should be done based on the type of disaster. Different types of disaster need different type of logistic activities or at least different considerations in common logistics activities. Issues of planning for logistics may contain (but are not limited to): supply chains, victims expected, resource allocation, activities integration, location of storage point, prediction of losses and affected area, etc. In the same way, parties involved in the planning process are also different based on the type of disaster, the key players in logistics operations are the Prime Minister’s office for legal support and critical decision making purposes, national disaster risk management platform for ensuring

integration malty sectorial fields activities and coordination purpose, Ministry of Interior for security issues, ministry of finance for funding activities, the Central Bureau of Statistics and the ministry of information for providing the needs information and data processing techniques, governorates for legal issues and areas leadership, and ministry of health for medical relief purposes. There are other parties who can participate in the planning processes based on the type of disaster, such as the Ministry of Economy, Ministry of Local Governance, Ministry of Public Works, Ministry of Telecommunications, Ministry of Transportation, Ministry of Social Affairs, local and international NGOs, and academic individuals.

- ***Governmental, Organizational and Infrastructure issues :*** at this sub phase, there are many issues that are organized by the government in order to avoid institutional confusion in case a disaster takes place, for example (without being limited to) emergency regulations, structure of legal central point in times of crisis, central coordination structure or emergency room parties and their responsibilities, resources management authorities to ensure the stability for different resources, collaboration between stockholders instruction, humanitarian logistics structure and institutional mandate, unifying concepts and vocabularies between policy makers and logistics officer, training and educating staffs, donations and donors issues, information management, etc.

Furthermore, there are many parties that work together in order to regulate and organize humanitarian logistics operations in the preparedness phase and beyond this phase to establish suitable physical and legal infrastructure to

facilitate responses and to recover logistics and improve the efficiency of logistics operations. Main players in logistics at this sub phase are : the President's office for granting authorities and approving legislation and make strategic decisions purposes, the national disaster risk management platform for ensuring integration malty sectorial fields activities and coordination purpose, Prime Minister's office for leadership, granting of authorities, and distribution of responsibilities, the Parliament for approving regulation and legislations, making strategic policies and decisions, monitoring, and accountability purposes, the Ministry of Foreign Affairs for coordination with reginal and international parties, the Ministry of Telecommunication and Information Technology for technology regulation instructions purposes, the Ministry of Interior for security issues purposes, Governorates for ensuring executing regulation, field leadership, and coordination between local parties.

- ***Processing technical operational issues:*** the aim of this phase is to process the technical factors that affect logistic operations during the preparedness phase, taking into consideration that all logistics activities in this phase should lead to facilitating field operations of the next phases and improve the efficiency of logistics operations. The main technical issues that need to be processed in the preparedness phase were Israeli policies and procedures at crossing points and permit for each logistic operation which needs to be processed by Ministry of Foreign Affairs, supply chain and procurement system can be maintained by financial ministry mainly and others related to the type of supplies, location of warehouses mainly

Ministry of local government with related institutions (Ministry of Health in case of medical centres) storage systems of relief materials depends on the type of materials (Ministry of Health in case of nutrition or drugs, Ministry of Public Works in case of housing materials or shelters), technologies, communication, information management systems processed by Ministry of Telecommunications, cooperation techniques and integration between all parties including logistics service providers, agility and leanness humanitarian logistics operations which common responsibility between Ministry of Public Works, Governorates, Ministry of Transportation, Ministry of Information .

5.3.2 Efficiency of Humanitarian logistics in the response phase

In the response phase, urgent and immediate activities need to be implemented, most activities used in this phase are logistics activities. Responding to an emergency by a trained personnel, apparatus and equipment, high efficient resource allocation, etc. all aim at delivering the relief material to the victims, to minimize loss, save human lives, and provide rescue and relief operations. This phase is divided into three sub phases based on the efficiency factors of humanitarian logistics as below:

- ***Emergency system activation:*** At this critical moment and based on the type of disaster, suitable emergency systems should be activated as quickly as possible declaring an emergency situation. The President or his representative under the legislation usually does this. Political situations influence the process of responding to a disaster because of the complete Israeli conflict and its control over all the West Bank areas. The Prime

Minister and his office staff proceed with these issues. Afterwards, the national disaster risk management platform starts managing the emergency situation by calling all parties, creating an emergency room, and restoring the humanitarian logistics system in case any system defect occurs as a result of the disaster.

- ***Governmental, Organizational and Infrastructure issues***: in this sub phase, there are many issues that should be organized in order to avoid institutional confusion because of dynamic chaotic variations in disaster circumstances, such as (without being limited to) funding, donations and donors problems which is a common responsibly between the President, Prime minister, Ministry of foreign Affairs, and Parliament. Government representative and legal reference point which processed by Prime minister and his office staff. Instructions of Coordination and cooperation between parties, it is a responsibility for the national disaster risk management platform. The Ministry of Interior processes the risk and security issues that may threaten the respondents or logistics operations. The rescue tools and relief materials distribution systems and methods are directed by the governorates as a local leadership.

- ***Processing technical operational issues:*** this sub phase is very critical and important because it works under high pressure of victim rescue and needs, critical time, funds, and many other factors. Technical operational issues need to be processed to achieve suitable and accepted logistics efficiency such as (without being limited to) Israeli procedures at crossing points and barriers, in addition to the need for a permit for each operation,

which can be processed by the Ministry of Interior, closed roads, destroyed infrastructure can dealt with by the Ministry of Public Works. Transforming large numbers of staff and equipment (rescue, relief, firefighters, doctors, nurses, security, etc.) can be done based on specialty of the staff. For example, the transport doctors, nurses and medical materials and equipment is responsibility of the Ministry of Health, rescue, security, firefighters staff and equipment transforming is a responsibility of the Ministry of Interior. Fulfilling the needs of victims is mainly done by local and international NGOs under the supervision of the governorates. Risks facing logistics providers should be dealt with by the Ministry of Interior. Information technological techniques and communication systems are the responsibility of the Ministry of Information and Communication.

5.3.3 Efficiency of Humanitarian logistics in the recovery or post-disaster phase

In the recovery phase, huge logistics operations will be carried out in a very short timeframe. Community rehabilitation process will start and the reconstruction of urban areas will begin. Rehabilitation and reconstruction processes should be based on preventing new risks and managing the residual disaster risk. This phase is divided into three sub phases based on the efficiency factors of humanitarian logistics as below:

- ***Planning for logistics:*** to ensure the efficiency of humanitarian logistics in the response phase there are at least three main issues that need to be deal with. First, funding issues and donors constrains and requirements, this is a common responsibility between many integrated parties, such as the

Prime Minister for dealing with political issues with donors, Ministry of Health for dealing with the effect of donations on public health, the national disaster risk management platform to assess the effect of donations on disaster risk reduction activities to mitigate the impact of another type of disasters, Ministry of Planning to assess the effect of donations and donors constrains on the state future plans. Second, the political situation of the affected area and this mainly depends on the Prime Minister and the Ministry of Interior. Third, information sources and its management technologies, the sources of information are different based on the type of data and information; data source can be, for example, national disaster risk management platform, Ministry of Interior, Ministry of Health, Ministry of Finance, Ministry of Economy, Ministry of Local Governance, Ministry of Public Works, Ministry of Telecommunications, Ministry of Transportation, Ministry of Social Affairs, Ministry of Planning, Governorates Local and international NGOs, and Central Statistical Office. Each of previous institutions are parties of planning for logistics presses.

Governmental, Organizational and Infrastructure issues: at this sub phase, there are many issues that are organized by the government to avoid institutional confusion in the response phase, such as regulating and organizing fund sources and managing the donations and this is usually controlled by Prime Minister's office, the Ministry of Interior, and the Parliament. Dealing with the political situation and this responsibility of the President's Office, Prime Minister's Office, and the Ministry of foreign Affairs. Coordination activities and it is regulate by the national disaster risk

management platform. Government representatives and central legal coordination points are the responsibility of the Prime minister office.

- ***Processing technical operational issues:*** to enhance the efficiency of humanitarian logistics in the recovery phase, the technical operational issues need to be processed such as (without being limited to) funding problems which are the responsibility of Prime Minister Office and the Ministry of Finance. Risks facing humanitarian logistics suppliers is the responsibility of the Ministry of Interior. Managing different supply chains, the responsibility of managing supply mainly depends on the material or service that need to be supplied. For example, the Ministry of Public Works is responsible for the management of the construction supply chain, and the Ministry of Health is responsible to manage the medicine supply chain, in addition, to a participation from local and international NGOs in this process through managing their own supply chain. The coordination and regulation of the collaboration between parties is one of the responsibilities of the competent governorate offices on the level of regions and national disaster risk management platform at the national level.

Chapter Six

Conclusions & Recommendations

Chapter Six

Conclusions & Recommendations

6.1 Chapter Overview

This chapter introduces the research results through providing conclusions conclusions and contributions that the research made in the field, in addition to the barriers and limitations faced by the researcher. Finally, the chapter ends with the recommendations and suggestions for future studies.

6.2 Conclusions

The objective of this research is to assess the validity and the effect of the factors affecting the efficiency of humanitarian logistics in the West Bank area of Palestine. This was don e by, first, observing the different factors affecting the efficiency of humanitarian logistics all over the world, then looking for valid factors in developing countries in general and then the factors that are applicable to the Palestinian case only, and to check if any of those factors was observed in any previous studies. No previous studies discussing the humanitarian logistics factors in the West Bank of Palestine were found, however, there are many research that studied commercial logistics factors. Based on the fact that humanitarian logistics are difficult and more complex than commercial logistics**(Howden, 2011; Koseoglu & Yıldırımlı, 2015).**, those factors were added to the study to assess its validity in case of disasters in West Bank of Palestine.

The second method of assessment was the use of the mean ranking method to test the strength of the factors' effect on the efficiency of humanitarian logistics in order to assess the validity of factors.

Third, was explaining the correlation between the factors at each sub phase and its phase and finding the factors that need to be maintained in order to enhance the efficiency of humanitarian logistics.

To conclude the findings, it has been found that most of the observed factors have a strong effect on the efficiency of humanitarian logistics in the West Bank of Palestine, and some others have a very strong effect. The factors which had the strongest effect on the efficiency of humanitarian logistics were in the post disaster or recovery phase, the next group of factors was in the preparedness phase, and the last one was in the response phase.

The results show that there is a positive correlation between each of the sub phases' factors and its main phase, and also between the factors of the preparedness phase and both the efficiency of humanitarian logistics operations in response phase and the efficiency of humanitarian logistics in the post disaster or recovery phase. Additionally, there is a positive correlation between logistics factors in the response phase and the efficiency of humanitarian logistics in the recovery phase. The most influential factors are sequentially ordered as follows:

- Efficiency in the preparedness phase:

  The most influential factors are the factors related to the planning for logistics operations, followed by factors related to logistics, governmental, organizational and infrastructure issues, and the least

influential factors were the factors related to logistics technical operations issues.

- Efficiency in the response phase:

  The most influential factors are the factors related to the logistics technical operations issues, followed by the logistics, governmental, organizational and infrastructure issues factor, and the least influential factors were the activation of emergency systems factors.

- Efficiency in post disaster or recovery phase

  The most influential factor are the factors related to the logistics, governmental, organizational and infrastructure issues, followed by the planning for logistics factors, and the least influential factors were logistics technical operations issues.

- Over all, the research findings showed that the most influential factors were in the preparedness phase, those factors have the strongest effect on the efficiency of logistics operations in the response phase more than their effect on the efficiency of logistics operations in the recovery phase. Additionally, factors of the response phase were clearly influential on the efficiency of logistics operations in the post disaster phase.

- The strongest influence was for logistics factors in the preparedness phase on the efficiency of logistics in response phase, and the weakest influence was for the same factors on efficiency of logistics in the recovery phase.

6.3 Research Contribution

This study contributes to the literature related to this subject matter by observing and discussing factors affecting humanitarian logistics operations in the West Bank of Palestine. The research result assess the validity of factors hindering the efficiency of logistics operations during the different phases of disaster risk management; the preparedness and mitigation phase, the response phase, and the recovery phase. The aim of this research is to clarify the factors affecting logistics for planners, decision makers and officers in GOs, NGOs, and other related private sector organizations.

This study is the first study that investigates and focuses on identifying and measuring the validity of the factors affecting humanitarian logistics operations at each phase of the disaster risk management process, and the effect of each sub phases on the efficiency of the main phase, in addition to proving the effects of phases on each other. This investigation was conducted through testing a model, which represents the effect that each sub phase has on its phase and the effect that the phases have on each other.

The study provides a conceptual humanitarian logistics efficiency model that explains the factors at each sub phase that should be managed and maintained to about the implementation of best practices improve the efficiency of humanitarian logistics performance.

Moreover, this research contributed theoretically through highlighting the main factors that hider logistics operation in relief operations and forms a challenge in the face of disaster risk management labors in the West Bank of Palestine. The findings of this research can be applicable to other developing

countries with exclusion of some invalid factors in other countries, such as the barriers caused by the occupation. The findings of this research will also lead to the modification of logistics operational processes in order to increase the effectiveness and efficiency of the relief processes in the future.

6.4 Recommendations

The findings of this research have shown that all observed humanitarian logistics factors are valid in the case of the West Bank of Palestine, and that they have significant effect on the efficiency of humanitarian logistics operations. Interested institutions operating in the field of disaster risk management in the West Bank can benefit from this research by using the observed logistics factors and its represented model to rank their topics priorities, in order to have them managed and maintained in an efficient and integrated approach that ultimately leads to speeding the response time and to achieve suitable response that helps in minimizing losses in humans and property. Thus, the study proposes a set of recommendations to the organizations interested in the field of disaster risk management in the West Bank area in order to improve their logistics operations performance:

- Develop a national disaster risk management strategy; to provide a national legitimacy umbrella for all disaster risk management efforts and to consider the disaster risk management a national priority.
- Establish a central disaster risk management institution to engage in multiple fields of sciences and knowledge. This institution should be close to the point of decision-making in the state, and should have a clear and specific authority and responsibility matrices that supports its efforts

in intervening to stop any activity that may lead to increased vulnerability, and to lead the country in case of disaster.

- Developing suitable and efficient legislations and regulations to regulate the work of all parties involved in the different phases of disaster risk management.
- Providing sufficient fund for disaster risk management activities, especially for logistic operations, as an investment to ensure the sustainability for all developing programs against disasters.
- Increase the awareness about the importance of humanitarian logistics and focus on it at all stages of disaster risk management.
- Improving the resilience of the state's infrastructure: roads, power networks, telecommunication networks, and water supply network.
- Optimizing the locations of material relief warehouses.
- Develop a sustainable supply chain that can function under the pressure of disasters.
- Encourage the private sector to participate in the disaster risk management activities, especially logistics activities, through a national system of incentives and a legislative cover.
- Building the capacity of response institutions by conducting training courses and providing them with suitable equipment, especially multipurpose vehicles.
- Building up early warning systems.
- Establishing efficient and resilient coordination systems.

- Encourage the organized cooperation between the different parties based on the used integration concept and used rules especially logistics procedure.
- Finally, we recommend the adoption and application of the conceptual model for the efficiency of the humanitarian logistics by all institutions in the field of disaster risk management and those interested in humanitarian logistics.

6.5 Limitations

Limitations are faced during any research, which applies to this research as well. The main limitations faced by the researcher were the lack of literature of humanitarian logistics in the West Bank of Palestine, the poor interest of private sector in humanitarian logistics, the different perception of logistics in disaster risk management operations, the lack of cooperation, the limitation of time, and the inability to explore the validity of the studied factors in Gaza Strip.

6.6 Future Research

According to Apte (2009) and Wassenhove (2006), analytical skills need to be developed and used in order to manage complex and chaotic problems to get successful humanitarian logistics. Due to the scarcity of research that addresses the topic of disaster risk management in the West Bank of Palestine, and due to the absence of research in the field of humanitarian logistic, more research is needed to investigate the shape relations between factors.

Future research needs to work on improving the impacts of factors and how they can be transformed from barriers into elements of success that will help

achieve sustainable development whenever possible, through continuously adding and modifying factors, based on the feedback obtained from experts and testing various samples.

This study opens up new research pathway in the West Bank of Palestine by showing the importance of humanitarian logistics factors in disaster risk management operations and linking these factors to the efficiency of humanitarian logistics operations. Moreover, future empirical studies can use and test the presented humanitarian logistics models to justify the unaccepted level of logistics efficiency.

The research results represent in this research provide a brief 'snapshot' about the situation of efficiency factors of humanitarian logistics in the West Bank of Palestine or on other words, the success factors of relief logistics. Based on the findings of this research, some of research opportunities that will improve the efficiency of humanitarian logistics operations are listed below:

- Cooperation between institutions working in the same or in different fields;
- Information management including mainly supply chain information flow from source to the consumption points in addition to a common database for all humanitarian institutions;
- Humanitarian supply chain effects on saving life by rapid response to emergency situations and development sustainability;
- Human flow in the supply chain like evacuation, parties of respondents, and capacity of the local community;

- The flow of material in a humanitarian supply chain and the affecting factors, such as stochastic demand, uncertainty in scale and scope, a complexity which results from multiple resources from mixed sources as stand by suppliers, difficulties of last mile distribution;
- Humanitarian supply chain quality, such as visibility, speed, supply chain complexity, distribution, disruption vulnerability, process timeframe, etc.;
- Facilities location optimizations;
- Developing easy-to-use models for inventory management to ensure a speedy distribution;
- Definition and establishment of key performance indicators.

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Appendix

Appendix (A)

Data Collection Questionnaire

Dear Sir/Madam,

The researcher is preparing a study titled "Exploring Factors Influencing Humanitarian Logistics Operations in the West Bank of Palestine" which aims at investigating the factors affecting humanitarian logistics in the West Bank – Palestine, as part of the requirements for obtaining a Master's Degree in the field of Master of Disaster risk management. This questionnaire is a tool of data collection in this study. We are looking for your kind cooperation through indicating your appropriate opinion against each of the following statements in an objective manner, in order to get credible and acceptable results to be used in improving the quality of the humanitarian logistics operations. Based on the results of the data collected through this questioner and the related Thesis, a managerial model will be developed to help all institutions in the field of humanitarian logistics in the West Bank, which will assist them in improving the effectiveness of logistics operations.

All data will be used for the sole purpose of scientific research, and will be treated with confidentiality. The expected time required to complete this questionnaire is 15 minutes.

Thank you for your cooperation.

Researcher:

Rafat Kettaneh
Master of Disaster risk management Program
Mobile: 0568100013

E-mail: kittaneh@najah.edu

- **Section 1 : Demographic information.**

1. **Gender:** ( ) Male ( ) Female
2. **Age:**
( ) less than 30 ( ) 30-39 ( ) 40 -49 ( ) 50-59 ( ) 60 and above

3. **Academic Qualifications:**
( ) Diploma ( ) bachelor ( ) master ( ) doctorate
( ) Other, please specify:
_____

4. **Name of Organization:** _____

5. **Job Title:**
( ) Technical ( ) Officer ( ) head of department
( ) manager ( ) director ( ) other

6. **Field of Work:** (you can select one or more than one choice)
( ) Logistics planning ( ) administrative tasks ( ) Coordination tasks
( ) rescue equipment handling ( ) staff transfer
( ) victim transfer ( ) food and drug handling ( ) housing apparatus handling

7. Years of experience in the field of humanitarian logistics:
( ) less than 5 ( ) 5-9 ( ) 10- 20 ( ) 21- 30 ( ) 31-40 ( ) more than 40

8. Working Area Governorate: _
( ) Hebron ( ) Bethlehem ( ) Jerusalem ( ) Ramallah
( ) Salfit ( ) Nablus ( ) Qalqilia ( ) Jenin
( ) Tulkarem ( ) Jericho ( ) Tubas

9. **Number of years of institutional experience in the field of humanitarian logistics**:
( ) less than 5 ( ) 5-9 ( ) 10-20

( ) 21- 30 ( ) 31-40 ( ) more than 40

10. **Legal situation**

( ) Governmental ( ) Non-governmental ( ) Private Sector

11. **Type of Institution:**

( ) Local ( ) Regional

( ) International

Section 2:

Obstacles Facing Humanitarian Logistics (HL) during the Disaster Preparedness Phase

1- Obstacles faced during the planning Process of Humanitarian Logistics:

#Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Type of disaster affecting the planning for humanitarian logistics					
2	funding constraints					
3	lack of knowledge in the science of humanitarian logistics					
4	Shortage in logistics experts					
5	Risks facing employees working in humanitarian logistics					
6	Unreliable supply chains					
7	Large affected areas with huge operations					
8	Difficulties of Handling and maintaining robust equipment					
9	Poor location for storage points of materials, equipment and services					
10	Ineffective resources allocation (quantification and identification)					
11	Differences in capacities of non-governmental organizations					
12	Requirements of the victims which have to be provided at relief points					
13	Lack of a central body integrating managerial and technical aspects.					
14	Absence of integration and optimization between all operational activities					
15	Absence of disaster risk reduction strategies and its implementation tools in Palestine					

#Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
16	The lack of community awareness about disaster preparedness					
17	Unplanned rapid urbanization					
18	Israeli policies in the West Bank (disconnection between areas, closed areas, barriers, Crossing points, checkpoints, bureaucratic constraints..etc.)					

- *Please rate each of the following statements based on the adjacent scale*

2- Governmental, Organizational and Infrastructure Obstacles Facing Humanitarian Logistics during the Disaster Preparedness Phase:

Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Regulations, legislations and unclear NGO's legal mandates restrict organizing humanitarian logistics					
2	The political situation, agreements and protocols signed restrict organizing humanitarian logistics in an institutional and systematic manner					
3	Absence of a governmental representative and central legal reference point hinders the organizing humanitarian logistics					
4	The existence of multiple and inconsistent data sources hinders the organizing humanitarian logistics					
5	Absence of professional coordination abilities					

	within the sectors of risk management restricts organizing humanitarian logistics					
6	Poor alert systems is one of the obstacles facing organizing humanitarian logistics					

3- Obstacles Facing Technical Operations of Humanitarian Logistics during the Preparedness Phase:

Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Israeli policies hinder humanitarian logistics					
2	Absence of a reliable and effective supply chain					
3	Week technologies, communication, and information management systems					
4	Limited or restricted cooperation and integration between all parties including logistics service providers					
5	Absence of agility and leanness concepts in humanitarian logistics operations					
6	Working with a critical time frame					
7	Poor procurement system					
8	Poor location of warehouses and inefficient storage systems for relief materials					
9	Israeli procedures at crossing points and barriers in addition to permit for each operation hinder humanitarian logistics operations.					

Section 3:

Obstacles and Challenges of Logistics Operations in the Response Phase

1- Obstacles and Challenges Facing the Activation of Emergency Systems during Emergency Situation and their Effect on Humanitarian Logistics:

•*Please rate each of the following statements based on the adjacent scale*

Ii Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The compatibility of the used systems to the type of disaster					
2	Regulations and legislations restrict activating emergency systems.					
3	Unstable political situations affect the process of responding to a disaster					

2- Governmental, Organizational and infrastructure Obstacles and Challenges to Humanitarian Logistics during the Response Phase

Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Funding, donations and donors problems					
2	Inaccurate assessment of damages, losses and needs					
3	Absence of an identified government representative and legal reference point that regulates the work and grants powers to respondent institutions					
4	Poor communication systems with multi-direction and levels lead to the distortion of information, in					

	addition to Incompatible technology systems					
5	Restricted cooperation between logistics organizations					
6	Poor decision-making tools					
7	The absence of central and professional coordination abilities.					
8	Difficulties in reallocating general budget based on to new situation					
9	Rescue tools and relief materials distribution Systems and methods					

3-Obstacles and Challenges Facing Technical Operational Processes of Humanitarian Logistics during the Response Phase:

Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Large staff (rescue, relief, firefighters, doctors, nurses, security, etc.) to be transferred to the affected area in a very short time.					
2	Very huge operations of victim rescue, evacuation and responding to needs					
3	Uncertain supplies with surge urgent demand					
4	Lack of integration between suppliers in manual supply chain					

	management (unautomated)					
5	The nature and type of rescue and relief materials (medicines, food, water, shelter, clothing, etc.)					
6	Uncertain assessment of disaster results leads to inappropriate response					
7	Closed roads, destroyed infrastructure and lack of fuel					
8	Unavailability of suitable vehicles in terms of size and capacity					
9	Destroyed or looted facilities (municipal headquarters, civil defense, warehouses, health centers, etc.)					
10	Speed of relief items delivery at critical times					
11	Poor location of warehouses and inefficient inventory management					
12	High level of risks for logistics providers					
13	Poor technological and incompatible communication systems					
14	Israeli procedures at crossing points and barriers in addition to the need for permits for each operation, which hinders humanitarian logistics operations.					

Section 4:

Obstacles and Challenges Facing Logistics Operations Post-disaster Phase (The Reconstruction and Rehabilitation Phase)

1-Obstacles of Planning for Logistics Operations during the Phase of Reconstruction and Rehabilitation:

Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Funding problems and donors constrains and requirements.					
2	Poor Information Management technologies					
3	The political situation of the affected area					

2- Governmental, Organizational and infrastructure Obstacles and of Humanitarian Logistics during the Reconstruction and Rehabitation Phase

Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Funding problems					
2	Poor Information Management technologies					
3	Absence of a government representative and central legal coordination point					
4	Ineffective coordination					
5	Unstable political situation in the West Bank					

2- Obstacles and Challenges Facing Technical Operations of Logistics during the Reconstruction Phase

Challenge\ Obstacle		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Funding problems					
2	Ineffective supply chain with manual (unautomated) management tools					

3	The lack of effective collaboration between parties					
4	Risks facing employees working in humanitarian logistics					
5	Critical timeframe.					

In case you would like to share any more information about factors affecting HL in Palestine, please use the box below:

Thank you for your effort and time in filling out the questionnaire.

Appendix (B)

استبانة جمع بيانات

تحية طيبة وبعد،،،،،

يقوم الباحث بإعداد دراسة حول " **استكشاف العوامل المؤثرة على اللوجستيات الإنسانية في الضفة الغربية في فلسطين Investigating Factors Affecting Humanitarian Logistics in the West Bank – Palestine**"

،وذلك استكمالا لمتطلبات الحصول على درجة الماجستير في ادارة مخاطر الكوارث، حيث تهتم هذه الدراسة في تحديد العوامل المؤثرة على العمليات اللوجستية في جميع مراحل ادارة مخاطر الكوارث في الضفة الغربية بهدف حصرها وتحديد الاكثر اهمية والاكثر تأثيرا من بينها لوضع التوصيات للمؤسسات المعنية لادراجها على أولويات خططها لضمان عمليات لوجستية فعالة، الاستبانة التي بين يديك هي أداة جمع البيانات في هذه الدراسة. نرجو تعاونكم مشكورين في تعبئة هذه الاستبانة بموضوعية تامة، والتي ستنعكس إيجابياً على مصداقية النتائج ومدى قبول توصيات الباحث بهدف تطبيقها. إن الوقت الذي ستستثمره في تعبئة هذه الاستبانة سيكون له أثر واضح في تطوير نموذج إداري يساعد جميع المؤسسات العاملة في مجال اللوجستيات الإنسانية في الضفة الغربية على تطوير عملياتها بشكل أكثر فعالية.

كافة البيانات ستستخدم لغرض البحث العلمي فقط ولن يطلع عليها غير الباحث.تحتاج هذه الاستبانه الى 25 دقيقة على الاكثر لاستكمالها. وتتكون هذه الاستبانه من الاجزاء التالية:

1- جزء جمع المعلومات العامه: وهو يختص بجمع معلومات حول مستخدمإة الاستبيانه بالاضافة الى المؤسسة التي ينتمى لها المستخدمإة
2- جزء جمع المعلومات حول العوامل والمعوقات أو التحديات التي تواجه العمليات اللوجستية في مرحلة الاستعداد او ما قبل الكارثة في نشاطاتها المختلة.
3- جزء جمع المعلومات حول العوامل والمعوقات أو التحديات التي تواجه العمليات اللوجستية في مرحلة الاستجابه للكارثة في نشاطاتها المختلة.
4- جزء جمع المعلومات حول العوامل والمعوقات أو التحديات التي تواجه العمليات اللوجستية في مرحلة اعادة الاعمار والاستشفاء من نتائج الكارثة في نشاطاتها المختلة.
5- جزء مخصص للمستخدمإة اذا رغب باضافة اي معلومه جديدة مرتبطة بموضوع الاستبانه وهو جزء اختياري.

الباحث

م.

رأفت كتانه

هاتف 13 1000 0568

الجزء الاول: معلومات عامة:

الجنس: ( ) ذكر ( ) أنثى

1- 2-العمر: ( ) أقل من 30 ( ) 30-39 ( ) 40-49 ( )50-59 ( ) 60 فاكثر

2- المؤهل العلمي :

( )دبلوم ( )بكالوريوس ( )ماجستير ( )دكتوراه ( )غير ذلك :__

3- اسم المؤسسة التي تعمل بها:_____

4- المسمى الوظيفي:

( )فني ( )اداري ( )رئيس فسم ( )مدير دائرة ( )مدير عام ( )غير ذلك

5- مجال العمل: (يمكن اختيار واحد او اكثر من الخيارات التالية)

( ) التخطيط للعمليات اللوجستية ( ) أمور اداريه ( ) منسق عمليات لوجستية

( ) نقل معدات وادوات انقاذ ( ) نقل طواقم بشرية ( )نقل ضحايا

( ) نقل ادوية ومواد غذائية ( ) نقل أدوات ومواد ايواء المشردين

6- عدد سنوات الخبرة في مجال اللوجستيات الانسانية:

( ) اقل من 5 ( )5-9 ( )10-20 ( )21-30 ( ) 31-40

( ) أكثر من 40

7- مكان عمل المؤسسة (محافظات الضفة الغربية)

( )الخليل ( )بيت لحم ( )القدس ( )رام الله ( )سلفيت ( )نابلس

( ) قلقيله ( )جنين ( )طولكرم ( )اريحا ( )طوباس

8- عدد سنوات خبرة المؤسسة في اعمال اللوجستيات الانسانية:

( ) اقل من 5 ( )5-9 ( )10-20 ( )21-30 ( ) 31-40

( ) أكثر من 40

9- الوضع القانوني للمؤسسه

( ) مؤسسة حكومية ( ) مؤسسة غير حكومية وغير ربحية ( ) مؤسسة ربحية (قطاع خاص)

10- مستوى عمل المؤسسة:

( ) محلي أو وطني ( ) اقليمي ( ) دولي

الجزء الثاني: (المعيقات التي تواجه اللوجستيات الإنسانية في مرحلة الاستعداد لمواجهة الكارثة في الضفة الغربية)

❖ **أولاً: المعيقات التي تواجه عملية التخطيط للوجستيات الإنسانية في الضفة الغربية في فلسطين**

	المعيق	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
1	التخطيط للوجستيات الانسانية لانواع مختلفة من الكوارث					
2	نقص التمويل المالي للنشاطات اللوجستية					
3	نقص في المعرفة في العلوم المتعلقة باللوجستيات الانسانية					
4	نقص في الخبراء اللوجستيون في المجال الانساني					
5	المخاطر التي يواجهها العاملون في اللوجستيات الانسانية					
6	توفير سلسلة امداد موثوقة وفعالة					
7	عمليات لوجستية ضخمه في مساحة شاسعه متضررة					
8	صعوبه توفير معدات ضخمه وسهلة التفكيك والنقل والتركيب وتستخدم لاغراض مختلفه					
9	المواقع السيئه لمراكز تخزين المواد والمعدات والخدمات الضرورية					
10	التوظيف الغير الفعال للموارد (كماً ونوعاً)					

11	اختلاف االقدرات والامكانيات بين المؤسسات الغير حكومية المساعدة					
12	احتياجات الضحايا والمتضررين التي يجب توفيرها في نقاط الاغاثه.					
13	غياب جسم مركزي قادر ادارة الشؤون الادارية والفنية بشكل تكاملي					
14	عدم تكامل العمليات الميدانية وادائها بشكل مثالي.					
15	غياب استراتيجيات الحد من مخاطر الكوارث وادوات تنفيذها في فلسطين					
16	ضعف الوعي المجتمعي اتجاه الاستعداد للكوارث					
17	التوسع الحضري العشوائي في التجمعات السكانية					
18	السياسات الاسرائيلية في الضفة الغربية (فصل المناطق عن بعضها، اغلاقها، الحواجز العسكرية، نقاط العبور والتفتيش، والاجراءات الاحتلالية التعسفية)					

❖ **ثانياً: المعوقات الحكومية والتنظيمية والبنية التحتية التي تواجه اللوجستيات الإنسانية في الضفة الغربية**

خلال مرحلة التأهب للكوارث:

	المعيق	**أوافق بشدة**	**أوافق**	**محايد**	**أعارض**	**أعارض بشدة**
1	الانظمة والقوانين والتخويلات الغير واضحة والممنوحة للمؤسسات الغير حكومية NGOs					
2	االوضع السياسي والاتفاقيات والبروتوكولات الدولية تعيق عملية تنظيم العمليات اللوجستية					

	بشكل مؤسسي وممنهج في مرحلة الاستعداد للكارثة					
3	غياب ممثل عن الحكومه وكذلك مرجعية قانونية مركزية يعيق تنظيم العمليات اللوجستية.					
4	المصادر المعلومات المختلفة والغير متناسقة ومتضاربة احيانا تعيق تنظيم العمليات اللوجستيات					
6	غياب امكانيات التنسيق الاحترافي الفعال بين قطاعات ادارة مخاطر الكوارث يشكل عائقا أمام عملية تنظيم العمليات اللوجستيه .					
9	ضعف أنظمه وآليات الانذار المبكر أو عدم فعاليتها قبل الكارثة يعد معيقا لعملية تنظيم العمليات اللوجستيات.					

❖ ثالثاً: المعيقات التي تواجه العمليات التنفيذية للوجستيات الإنسانية في مرحلة الاستعداد للكارثة في الضفة الغربية

	المعيق	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
1	السياسات الاسرائيلية تعيق بشكل مباشر العمليات اللوجستية					
2	غياب سلسلة الامداد الفعالة والموثوقة					
3	ضعف التكنولوجيا ووسائل الاتصالات وانظمه ادارة المعلومات المستخدمة					
4	التعاون المحدود والمقيد بين الاطراف المقدمه للخدمات اللوجستية.					
5	غياب مفاهيم وفعالية ورشاقة agility and leanness العمليات في النشاطات اللوجستية					
6	العمل ضمن جدول زمني ضيق وحرج جدا.					
7	ضعف انظمة المشتريات المستخدمه العمليات اللوجستيات					

8	ومواقع المخازن الغير مناسبه وكذلك أنظمة تخزين مواد الاغاثة.					
9	السيطرة والاجراءات الاسرائيلية على الحواجز والمنافذ الحدودية واستخراج التصرايح المسبقة لاي عملية يعيق العمليات اللوجستيه					

الجزء الثالث: (المعيقات التي تواجه العمليات اللوجستية في مرحلة الإستجابة للكارثة في الضفة الغربية)

❖ **أولاً: المعيقات التي تواجه تفعيل أنظمة الطوارئ المرتبطة باللوجستيات الإنسانية**

	المعيق	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
1	ضعف توافق الاجهزة والانظمة المعمول بها في عمليات الاستجابة للكارثة					
2	عدم وضوح اللوائح والتعليمات والانظمة والقوانين المعمول بها في الضفه الغربية في هذا المجال					
3	الواقع السياسي يؤثر على عملية تفعيل وتشغيل القوانين والانظمة والمنظومات المرتبطة بالاستجابة للكارثة.					

❖ **ثانياً: المعوقات الحكومية والتنظيمية والبنية التحتية التي تواجه اللوجستيات الإنسانية خلال مرحلة التأهب للكوارث:**

	المعيق	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
1	التمويل المالي وطبيعة التبرعات وشروط الجهات المانحة					
2	التقييم الغير دقيق للاضرار والخسائر والاحتياجات.					
3	غياب ممثل عن الحكومه في المنطقة المصابة وكذلك مرجعية قانونية واضحة					

	ينظم ويمنح الشرعية والصلاحيات للمؤسسات المستجيبه.					
4	ضعف أنظمة الاتصالات في الاتجاهات والمستويات المتعددة، بالإضافة إلى عدم توافق أنظمة تكنولوجيا المعلومات					
5	تعاون مقيد بين المؤسسات المزودة للخدمات اللوجستية.					
6	ضعف الادوات المساعدة في عملية صنع القرار.					
7	غياب مراكز التنسيق الجيد والمحترف بين المؤسسات اللوجستية					
8	صعوبات اعادة توزيع الموازنه العامه وتسكين بنودها بطريقة تتناسب مع الوضع القائم نتيجة الكارثة.					
9	أنظمة وطرق توزيع ادوات لانقاذ ومواد الاغاثة					

❖ **ثالثاً: المعيقات التي تواجه العمليات التنفيذية للوجستيات الإنسانية في مرحلة الاستجابة**

	البند	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
1	نقل العدد الكبير من الطواقم وافرادها (انقاذ، اسعاف، اطفاء، اطباء، تمريض، امن...الخ) الى المنطقة المصابة خلال وقت حرج وفي زمن قياسي					
2	ضخامه العمليات (انقاذ، اخلاء ، توفير احتياجات للمتضررين)					
3	عدم قدرة سلاسل الامداد العمل بكفاءه تحت ضغط الطلب المرتفع والطارئ					
4	غياب التكامل بين الموردين من خلال سلسلة توريد تدار باستخدام وادوات يدوية (غير آلية)					
5	طبيعه مواد الاغاثة والانقاذ المراد نقلها					

6	التقييم الغير صحيح لنتائج الكارثة يؤدي الى استجابة غير مناسبة وبناء خطط سريعه لا تتناسب مع الواقع.					
7	الطرق المغلقة والبنية التحتية المدمرة، ونقص الوقود.					
8	عدم توفر المركبات المناسبة من حيث الحجم والقدرة					
9	المرافق المدمرة أوالمعطلة (مقار البلديات، الدفاع المدني، المخازن، المراكز الصحية،.... الخ)					
10	سرعه التوريد الى نقاط التوزيع وسرعه التوزيع في وقت حرج					
11	التوزيع الجغرافي الغير مناسب للمخازن وضعف كفاءه عملية ادارة المخزون					
12	مستوى المخاطر التي يواجها العاملين في مجال الخدمات اللوجستية					
13	استخدام تكنولوجيا ضعيفة وانظمة اتصالات غير متوافقة					
14	السيطرة والاجراءات الاسرائيلية على الحواجز والمنافذ الحدودية واستخراج التصرايح المسبقة للعمليات الانسانية المختلفة					

الجزء الرابع: (المعيقات التي تواجه العمليات اللوجستية في مرحلة إعادة الإعمار والتأهيل بعد وقوع الكارثة)

❖ أولاً: المعيقات التي تواجه عملية التخطيط للعمليات اللوجستية في مرحلة التخطيط لإعادة الإعمار

	المعيق	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
1	التمويل المالي وطبيعة التبرعات وشروط الجهات المانحة					
2	ضعف تكنولوجيا ادارة المعلومات					

3	الوضع السياسي للمنطقة المصابة ومحيطها					

❖ **ثانيا:المعوقات الحكومية والتنظيمية والبنية التحتية التي تواجه اللوجستيات الإنسانية في مرحلة إعادة الإعمار والتأهيل**

البند		أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
1	صعوبات التمويل المالي					
2	ضعف تكنولوجيا ادارة المعلومات					
3	غياب ممثل عن الحكومة وكذلك غياب مرجعية قانونية وجهة تنسيق مركزية					
4	ضعف التنسيق الفعال					
5	الوضع السياسي الغير مستقر في الضفة الغربية					

❖ **ثالثاً: المعيقات التي تواجه العمليات التنفيذية للوجستيات في مرحلة إعادة الإعمار**

البند		أوافق بشدة	أوافق	محايد	أعارض	أعار ض بشدة
1	صعوبات التمويل المالي					
2	سلاسل امداد غير فعالة تدار يدويا (غير آليه)					
3	ضعف التعاون الفعال بين الجهات العاملة					
4	مستوى المخاطر التي يواجها العاملون في مجال الخدمات اللوجستية يعد احد التحديات المعقدة التي تواجه العمليات اللوجستية					
5	تنفيذ المهام في وقتها المحدد يعد من اكبر التحديات التي تواجة العمليات اللوجستية (جدول زمني حرج)					

في حال كنت ترغب في مشاركتنا أية معلومات إضافية حول العوامل التي تؤثر على اللوجستيات الانسانية في فلسطين ، يرجى استخدام المربع أدناه:

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_____
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شكرا لجهدكم ووقتكم

Appendix (C)

Table 1: Experts and Arbitrators who reviewed the Questionnaire

No.	Position
1	Associate Prof. in Industrial Engineering, a faculty member at An-Najah University
2	Prof. Director of Urban Planning and Disaster Risk Reduction Center the Urban Planning and Disaster Risk Reduction Center and Civil Engineering, a Faculty Member at An-Najah University
3	Dr. Senior Lecturer in Healthcare Management and member of the Editorial Team of the Int. Journal of Disaster Resilience in the Built Environment (IJDRBE)
4	Associate Prof. Director of the Middle East Technical University, Disaster risk management Implementation and Research Center, Ankara, Turkey.
5	Assistant Prof. (Physical Risk Engineer) at Global earthquake model foundation, Pavia, Italy

Table 2: Experts and Arbitrators who reviewed the Model

No.	Position
1	Associate Prof. in Industrial Engineering, a faculty member at An-Najah University
2	Prof. Director of Urban Planning and Disaster Risk Reduction Center the Urban Planning and Disaster Risk Reduction Center and Civil Engineering, a Faculty Member at An-Najah University
3	Head of North West Bank Field Coordination Unit, Nablus | United Nations Office for the Coordination of Humanitarian Affairs (OCHA)

Appendix (D)

Results of the Pilot Study

Table: Sample of pilot study

No.	Position	No. of participants
1	Director of Palestinian Shippers Council	1
2	Head of North of the West Bank Branch in the Palestinian Red Crescent Society (PRCS).	1
3	Logistics expert in the Palestinian Red Crescent Society (PRCS).	1
4	Coordinator at the United Nations Relief and Works Agency for Palestine Refugees (UNRWA)	1
5	Program Coordinator at the World Food Program (WFP)	1
6	A Director in the Palestinian Medical Relief Society (PMRS)	1
7	Emergency Team Leader in the Military Medical Services	1
8	Director of Disaster risk management Department in the Palestinian Civil Defense	1
9	Coordinator at International Committee of the Red Cross	1
10	Head of Emergency Department in the Palestinian Ministry of Heath	1
Total		10

جامعة النجاح الوطنية

كلية الدراســـات العليا

استكشاف العوامل المؤثرة على اللوجستيات الانسانية في الضفة الغربية في فلسطين

إعداد

رافت محمود كتانه

إشراف

د. أيهم جعرون

قدمت هذه الأطروحة استكمالا لمتطلبات الحصول على درجة الماجستير في ادارة مخاطر الكوارث بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.

2019

استكشاف العوامل المؤثرة على اللوجستيات الانسانية في الضفة الغربية في فلسطين

إعداد

رافت محمود كتانه

إشراف

د. أيهم جعرون

الملخص

خلال العشرين عامًا الماضية ، ازداد الاهتمام العالمي بالمسائل المتعلقة باللوجستيات الإنسانية بشكل كبير ، خاصة بعد أن طورت الأطراف المعنية بعمليات إدارة الكوارث وعيًا ومعرفة وقناعة كافية بأن المفهوم الأساسي لإدارة مخاطر الكوارث ينطوي على الاستجابة السريعة من خلال تطوير منظومة عمليات لوجستية ممنهجة قادره على الاستجابة السريعة للأحداث الغير متوقعة. يمثل بناء منظومة الوجستيات الإنسانية الخطوة الأولى في عملية التخطيط للاستجابة السريعة في حالة وقوع كارثة. ومن الجدير الذكر أن عمليات الاستجابة و وانشطة الإغاثة مرتبطة بشكل كبير جدا مع الخدمات اللوجستية و التي تشكل شريان الحياة لجهود إدارة مخاطر الكوارث وقلب عمليات الاستجابة.

العمليات اللوجستية هي العنصر الأكثر أهمية في عمليات الاستجابة للكوارث، حيث ان العمليات اللوجستية الناجحة والفعالة تؤدي الى التقليل والحد من الخسائر وإنقاذ مزيد من الأرواح، وكذلك وقف التدهور أو الحد منه، والانتقال السريع الى مرحلة التعافي واعادة التاهيل.

لذلك ، يجب العمل على استكشاف السياق اللوجستي الإنساني وعوامله ومعيقاته وتحدياته في الضفة الغربية لفلسطين، حيث تهدف هذه الدراسة الى استكشاف العوامل التي تؤثر على اللوجستيات الإنسانية وتؤدي إلى خلق تحديات ومعيقات كبيرة وحرجة بما فيها زيادة الطلب، و ضعف الإمدادات، والوقت الضيق والحرج، والبنية التحتية الضعيفة، ومجال العمليات الواسع، وحجمها الضخم في ظل ظروف معقدة ، وعشوائية ، بالاضافة الى العقبات والتحديات التي يخلقها الاحتلال الإسرائيلي للاراضي الفلسطينية.

يستخدم البحث الاستكشافي البحثي باستخدام استبيانات منظمة مع مقابلات شبه منظمة. يناقش هذا البحث العوامل والحواجز والتحديات التي تؤثر على كفاءة الخدمات اللوجستية الإنسانية في الضفة

الغربية لفلسطين بناءً على نتائج مراجعة الأدبيات ، وأحد عشر مقابلة، والاستبيانات المقدمة إلى 108 مشاركًا من أكثر من 92 مؤسسة مختلفة و موزعة جغرافيا على الضفة الغربية ، وبصلاحيات قانونية مختلفة.

تتناول هذه الدراسة دور العوامل اللوجستية الإنسانية في مختلف مراحل عملية إدارة الكوارث (قبل الكارثة وأثناءها وبعدها) وتأثيرها على كفاءة الخدمات اللوجستية الإنسانية. وتظهر نتيجة هذا البحث أن جميع العوامل المدروسة كانت متوفرة وقوية في الضفة الغربية وقد خلقت تحدٍ يؤثر بشكل مباشر على كفاءة الخدمات اللوجستية الإنسانية.

تظهر نتائج اختبارات الفرضيات وجود علاقة ذات دلالة إحصائية بين العوامل اللوجستية الإنسانية وكفاءتها. علاوة على ذلك ، تقدم الدراسة نموذجًا يمثل الأطراف المهتمة التي تحتاج إلى العمل معًا لمعالجة العوامل اللوجستية الإنسانية ووضع حلول لتحدياتها ومعيقاتها بهدف تحسين كفاءتها في كل مرحلة من مراحل إدارة الكوارث.

أخيرًا ، من المتوقع أن توفر الدراسة معلومات مفيدة لتوجيه البحوث المستقبلية استنادًا إلى نتائج هذا البحث.