

# **NAVIGATING CRISIS AND CONFLICT: A STUDY OF HUMANITARIAN AID IN ADDRESSING FOOD SECURITY IN YEMEN**

**A Thesis**

**Submitted to the Master's Study Program of Faculty of Economic and  
Business in partial fulfillment of the requirements for the degree of**

**Master of Arts (M.A. IN ECONIMICS)**



by:

**Fawaz Hamood Abdulaziz Abdo Ali**

**03212220002**

**UNIVERSITAS ISLAM INTERNASIONAL INDONESIA**

**DEPOK**

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عنوان الرسالة:

التعامل مع الأزمات والصراعات: دراسة حول دور المساعدات الإنسانية في

معالجة الأمن الغذائي في اليمن

تم تقديمه لتلبية متطلبات التخرج لدرجة الماجستير (ماجستير في الاقتصاد)

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## ABSTRACT

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This research examines the interconnected roles of international organizations and donors, humanitarian action, challenges of aid delivery, and their relationships with food security within crisis contexts. Using Yemen as the case study, this research will clarify how the mediating role of external assistance and gaps with logistics influence responses to food security in humanitarian emergencies. A quantitative approach was adopted, undertaking regression analysis to examine the direct and indirect relationships between a number of variables - international organizations and donors (RO); humanitarian action (HA); aid delivery (AD); and food security (FS). Ultimately, we concluded with mediation analysis to investigate the indirect effects of RO and HA on FS through HA and AD respectively. Data was collected from key stakeholders involved in humanitarian assistance using questionnaires which were then analyzed to tease out the findings related to our hypotheses. The findings evidence that donor role (RO) is a strong predictor of humanitarian action (HA), which is directly, positively associated with food security (FS). Moreover, aid delivery (AD) issues exhibit substantial predictive capacity regarding food security, thus accentuating the important role of logistics. Mediation analysis indicates that RO has an indirect effect on FS via HI, while HI has an indirect effect on FS via AD. In sum, the findings highlight the critical relationships between donor engagement, aid effectiveness, and logistics management in determining food security outcomes in emergencies. The study finds that achieving food security when humanitarian crises demand coordination means exerting donor engagement, aid effectiveness, and logistical capabilities into a joint effort. The impact of conflict-related challenges shows that overcoming logistical and operational challenges in aid distribution can maximize the positive advantage that interventions can do to positively address food security. The findings of this study have actionable implications for decision-makers, donors, and agencies to develop more integrated approaches even under conflict. The study offers future research options to examine these relationships in different contexts and suggest ways to overcome the limitations of the study.

*Keywords: Humanitarian interventions, food security, aid delivery, role of donors, humanitarian organizations, Yemen, crisis management, humanitarian aid logistics.*

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# CHAPTER I

## INTRODUCTION

### 1.1 Background

Yemen's persistent food security crisis is the result of a complicated interaction between protracted conflict, economic vulnerability, and long-standing structural flaws. Due to a lack of domestic production, a significant reliance on imports for more than 80% of staple foods, and pervasive poverty, the nation experienced ongoing food shortages even prior to the civil war (WFP, 2021; Djita & Hill, 2019). Following the Arab Spring in 2011, the conflict intensified, which led to a severe economic downturn, political instability, and disruption of essential supply routes (Penson et al., 2024; Khalil & Thompson, 2024). Due to this confluence of factors, food prices skyrocketed, making basic necessities unaffordable for millions of people. Food insecurity was exacerbated by the uprooting of rural communities, which further disrupted agricultural production (Sharp, 2019).

From a theoretical perspective, this study draws on Dependency Theory, which warns that prolonged reliance on external aid without parallel capacity-building risks undermining local resilience (Cuny, 1999), and Entitlement Theory, which emphasizes that food security depends not only on the physical availability of food but also on people's ability to access it through employment, trade, or welfare systems (Sen, 1982). In Yemen's context, these theories help explain why significant humanitarian inflows have not translated into sustainable improvements in food security structural barriers, conflict dynamics, and governance deficits persistently undermine aid effectiveness.

The protracted war has devastated Yemen's economy, destroying critical infrastructure and slashing oil production revenues (World Bank, 2021). Transportation networks have been damaged, further restricting market access. Agricultural production has been disrupted by the destruction of irrigation systems, loss of livestock, and displacement of farmers (FAO, 2023). Blockades on essential imports, imposed at various stages of the conflict, have exacerbated shortages of food, fuel, and medicine, pushing the country to the brink of famine (OCHA, 2023). According to the latest Integrated Food Security Phase Classification (IPC, 2024), approximately 17 million Yemenis face crisis (IPC Phase 3) or worse levels of food insecurity, with some areas at famine-like conditions.

For clarity, this study adopts the FAO's (2023) definition of food security as a condition in which all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for an active and healthy life. This definition rests on four interrelated pillars availability, access, utilization, and stability all of which are relevant to the Yemeni context. Humanitarian aid, in line with the Good Humanitarian Donorship principles, refers to impartial, neutral, and independent assistance provided to meet the immediate needs of populations affected by crises, without discrimination, and with the aim of preserving life, dignity, and basic welfare (Harmer & Macrae, 2004).

While humanitarian assistance delivered by agencies such as WFP, UNICEF, and various NGOs has been vital in mitigating immediate hunger, significant obstacles persist. Bureaucratic restrictions, active hostilities, and the politicization of aid impede access to affected populations (NRC, 2019; Maxwell & Fitzpatrick, 2019). The persistent gap in humanitarian funding is one of the most significant challenges facing financial governance in Yemen. The Office for the Coordination of Humanitarian Affairs (OCHA, 2023) indicated that the 2023 Humanitarian Response Plan (HRP) was only 40% funded, leaving many vital projects without sufficient resources. Furthermore, several reports have documented cases of aid diversion by armed actors, raising serious questions about transparency, accountability, and the equitable distribution of resources. Humanitarian experience indicates that the absence of fundamental reforms in funding management—such as ensuring clear resource allocation mechanisms, enhancing oversight, and reducing opportunities for corruption—significantly weakens the impact of aid on the ground (Maxwell & Fitzpatrick, 2019). Furthermore, continued reliance on food aid without integrating it with livelihood-enhancing programs leads to chronic dependency, a risk warned against by accreditation and entitlement frameworks. In contrast, some innovative tools, such as cash transfer and voucher programs, have shown positive results in Yemen by empowering beneficiaries and stimulating local markets. However, the success and expansion of these tools remain contingent on the existence of a favorable economic and regulatory environment, including active markets, stable supply chains, and effective financial oversight systems that ensure the sustainability and proper allocation of resources (Elayah et al., 2022; Peachey, 2023). In light of this, it can be argued that the main challenges facing humanitarian aid in Yemen are the lack of or delayed funding and the resulting gaps in response, in addition to the risks of aid diversion and logistical constraints that limit access, and the weak ability to transition from urgent relief to long-term resilience building. To address these challenges, effective coordination between donors, humanitarian

agencies, local authorities, and beneficiary communities is essential, linking emergency aid to plans for governance reform, infrastructure development, and economic support. From this perspective, an integrated approach is a strategic option to alleviate current suffering and prevent the recurrence of food insecurity crises, whether in Yemen or in similar conflict contexts.

## **1.2 Problem Statement**

Yemen is experiencing one of the most severe and protracted food security crises in the world, driven by years of armed conflict, economic collapse, and weak governance. As of early 2025, more than 17 million people are food insecure, including over one million children suffering from acute malnutrition, while the humanitarian response has received only 9% of the USD 2.5 billion required for the year (AP News, 2025). Between May and August 2025, an estimated 4.95 million people were classified in IPC Phase 3+ (Crisis or worse), including 1.5 million in IPC Phase 4 (Emergency). Projections indicate this number could rise to 5.38 million in the second half of 2025 if current funding shortages and operational constraints persist (Integrated Food Security Phase Classification [IPC], 2025; WFP, 2025).

Theoretical perspectives such as Dependency Theory caution that prolonged reliance on external aid may reinforce structural dependence and undermine local capacity (Harvey & Lind, 2005), while Entitlement Theory highlights that food insecurity often arises from lack of access and distributional inequities rather than absolute shortages (Sen, 1982; Barrett, 2010). However, most existing studies on Yemen have focused on operational and logistical challenges (Alqatabry & Butcher, 2020; Kimball & Jumaan, 2020) with limited integration of these theoretical frameworks or systematic analysis of financial governance factors, such as transparency in funding allocation, equitable distribution, and accountability mechanisms.

This gap is critical: without understanding how donor funding levels, governance structures, and delivery inefficiencies interact, humanitarian interventions risk remaining short-term fixes that fail to address the structural drivers of food insecurity. This study seeks to address this gap by examining the behavioral and financial dimensions of humanitarian aid in Yemen, with a focus on how donor roles, intervention strategies, and logistical constraints collectively influence food security outcomes in conflict-affected contexts.

### **1.3 Research Objectives and Questions**

#### **Research Objectives**

1. To quantify the impact of donor funding levels (RO) on food availability and access in Yemen using multiple regression analysis.
2. To evaluate how logistical inefficiencies (AD) including supply chain disruptions, access restrictions, and delivery delays mediate the relationship between humanitarian interventions (HI) and food stability.
3. To assess the effect of transparent and accountable funding allocation aligned with international financial governance standards and Islamic finance principles on the effectiveness and sustainability of humanitarian aid programs.
4. To identify key barriers to aid delivery, such as corruption, diversion of resources, political interference, and security constraints, and determine their impact on food security outcomes.

#### **Research Questions**

1. How do donor funding levels (RO) influence food availability and access in Yemen during the ongoing conflict?
2. To what extent do logistical inefficiencies (AD) mediate the effect of humanitarian interventions (HI) on food stability?
3. How does transparent funding allocation improve the effectiveness and sustainability of humanitarian aid in Yemen?
4. What are the primary barriers to aid delivery, and how do they impact food security outcomes in conflict-affected regions?

#### **Novel Contribution**

While prior research on Yemen's food security crisis has largely emphasized operational and logistical constraints (Alqatabry & Butcher, 2020; Kimball & Jumaan, 2020; WFP, 2021), this study offers three distinct contributions:

- **Integration of Financial Governance:** Examining transparency, accountability, and equitable resource allocation as determinants of aid effectiveness, a dimension often overlooked in Yemen-focused studies.
- **Theoretical Framing:** Linking findings to Dependency Theory and Entitlement Theory, enabling a deeper understanding of the structural and distributional drivers of food insecurity.

- Behavioral Lens: Assessing how donor and implementer behaviors influence aid delivery efficiency and long-term food security outcomes.

By addressing these dimensions, the research aims to generate actionable recommendations for policymakers, humanitarian actors, and funding agencies seeking to enhance aid effectiveness in protracted conflict settings.

#### **1.4 Significance of the Study**

Humanitarian assistance plays a critical role in mitigating the impacts of acute and protracted crises, particularly in contexts of severe food insecurity such as Yemen. Effective aid delivery not only addresses immediate survival needs but also reduces long-term vulnerabilities to famine and malnutrition. In Yemen, where prolonged conflict has disrupted food production, supply chains, and livelihoods, humanitarian assistance remains a lifeline for millions of people (WFP, 2023). Interventions such as food distributions, cash-based transfers, and nutritional support for vulnerable groups especially children and pregnant or lactating women have been shown to significantly reduce hunger-related mortality and improve nutritional outcomes (FAO et al., 2023).

Beyond its immediate relief function, humanitarian assistance can strengthen community resilience by enhancing local food systems, supporting agricultural recovery, and improving coping strategies for future shocks (Elayah, Gaber, & Fentiman, 2022). However, the effectiveness of such interventions is influenced not only by logistical capacity but also by donor behavior, funding governance, and the transparency of resource allocation. In this regard, incorporating a behavioral and financial governance perspective is crucial, as it addresses how donor priorities, funding cycles, and accountability mechanisms affect the scale, quality, and sustainability of aid delivery (Makara, 2023; OCHA, 2023).

This research is significant for three reasons. First, it offers empirical insights into the relationship between humanitarian aid and food security within one of the most complex and protracted crises of the 21st century. Second, it goes beyond operational assessments to analyze behavioral and governance-related factors that influence aid effectiveness an area underrepresented in existing literature on Yemen. Third, by drawing on Yemen's experience, the findings provide lessons for other conflict-affected countries facing similar

humanitarian and food security challenges, such as South Sudan and Somalia, where issues of access, funding shortfalls, and aid diversion also undermine relief efforts (IPC, 2022).

By bridging operational, behavioral, and governance dimensions, this study contributes to both academic literature and policy-making, offering actionable recommendations for improving the efficiency, transparency, and impact of humanitarian interventions in fragile and conflict-affected settings.

## **1.5 Research Outline**

### **Chapter 1: Introduction**

This thesis begins by establishing the context of Yemen's deep-rooted humanitarian crisis, which has escalated dramatically from the Arab Spring uprisings to a devastating civil war. The introduction details Yemen's historical, socio-political, and economic background, emphasizing how these factors combined with prolonged conflict have led to significant infrastructural and economic breakdowns, critically impacting food security. The importance of this study is highlighted by discussing the urgency and relevance of evaluating the effectiveness of humanitarian aid in such complex crisis scenarios, setting the stage for a comprehensive exploration of aid dynamics in Yemen.

### **Chapter 2: Literature Review**

The second chapter conducts a thorough review of the existing literature on the relationship between humanitarian aid and food security. Theoretical frameworks like Food Security Theory, Dependency Theory, and Sustainable Development Theory are discussed to anchor the study in established research paradigms. This review critically examines previous research focused on the effectiveness of humanitarian interventions in conflict zones, particularly in Yemen. By identifying gaps in the literature, this chapter not only frames the research questions that guide the study but also outlines the contribution this research aims to make in understanding the long-term impacts of aid on food security.

### **Chapter 3: Research Methodology**

In the third chapter, the methodology underlying the research is articulated, detailing a mixed-method approach that integrates both qualitative and quantitative data to capture the multifaceted nature of humanitarian aid's impact on food security. The chapter explains the research design, data collection methods, and analytical techniques used to

assess the data collected. Ethical considerations relevant to conducting research in conflict-affected areas are also thoroughly addressed, ensuring that the study adheres to the highest ethical standards.

#### **Chapter 4: Data Analysis and Results**

Chapter Four presents the analysis of the data and results collected during the research phases, applying statistical analysis to measure the effectiveness of humanitarian aid in improving the four dimensions of food security: availability, access, utilization, and stability.

#### **Chapter 5: Conclusion and Recommendations**

Chapter Five highlights the key findings from the analysis and provides a summary of the study's findings by connecting them to the research questions and objectives. Additionally, the chapter offers useful suggestions that might help improve Yemen's food security and the efficacy of humanitarian interventions. The research limitations that might have impacted the findings are also explained in this chapter, including limitations pertaining to the field environment, sample size, or logistical difficulties. This will help direct future studies to address these issues and finish the gaps left by this work.

## CHAPTER II

### LITERATURE REVIEW

#### Introduction

This chapter describes the literature on humanitarian assistance and food security in Yemen, providing relevant theoretical frameworks, providing an overview of empirical research, and defining research gaps to situate the current study. This chapter contributes to understanding how aid affects food security outcomes in conflict-affected and economically vulnerable countries, particularly Yemen, where the war since 2015 has led to economic collapse, disruption of agriculture, destruction of infrastructure, and the imposition of a blockade. Therefore, the theories and variables of this research and their relationship to each other are discussed.

#### 2.1. Theoretical Framework

The theoretical framework offers guidance in analyzing the enlistment nature of humanitarian assistance and food sufficiency particularly in countries experiencing conflict like Yemen. Several theories on which aid is given, food is accessed, and the durability of the given aid has been incorporated in this context. This part presents the relevant theories underpinning the present study and the frameworks that link aid provision to food security

Dependency Theory takes a critical look at the long-lasting effects of foreign aid on countries that receive it. It points out that, over time, these countries might actually lose their ability to develop independently and rely on local resources (Chambers and Conway, 1992). For example, in conflict-ridden areas like Yemen, while humanitarian aid is crucial, it can sometimes stifle local resources. Humanitarian assistance is most effective when paired with a sustainability plan that helps communities figure out how to thrive within their existing circumstances (FAO, 2021). Therefore, the World Food Programme should not only provide food but also works to break the cycle of food dependency. Therefore, any interventions should focus on building up local resources to help reduce this long-term dependency issue (Elayah et al., 2022).

## **2.2. Humanitarian Aid Interventions**

### **2.2.1 Overview of the Concept of Humanitarian Aid and Its Objectives**

Humanitarian assistance refers to the organized and planned provision of life-saving services and resources, and relief to affected populations, such as victims of armed conflict, natural disasters and epidemics, with a focus on reducing human suffering and protecting life. Preserving human dignity and ensuring basic needs such as food, shelter, and health care (Harmer & Macrae, 2004). The delivery of humanitarian assistance is based on the principles of impartiality, neutrality, and independence, and humanity as set out in the Good Humanitarian Charter Framework. These principles ensure that help is provided to those in need, regardless of which side one takes in a conflict or crisis, thus maintaining trust and reaching out to affected populations (Sphere Association, 2018)

In general, the main objectives of humanitarian assistance are divided into three phases: emergency relief, recovery, and development. The first phase of a crisis focuses on providing emergency assistance such as food, water, shelter, and life-saving medical care, to meet urgent needs. Humanitarian actors are directing recovery efforts, which will restore well-being, rebuilding infrastructure and strengthen community resiliency. The next step is to provide development assistance. This includes interventions aimed at long-term objectives that reduce risk rather than crisis, and promote self-reliance (Harvey, 2013)

But in long-lasting conflicts like Yemen which the war lasted for many years. Humanitarian aid and development often come together by chance. Therefore, creating a big obstacle for various organizations. To change from short term to long term by being able to help the market and It is supposed to be able to feed the hungry (Tasci, 2020). However, the politicization of relief supplies and lack of access due to conflict makes it difficult to implement these interventions. Therefore, it requires a pragmatic strategy that guarantees the delivery of assistance to those in need without existing problems (Makara, 2023).

### **1. Historical Context of Humanitarian Aid in Crisis Settings**

Since founding International Committee of the Red Cross (ICRC) in 1863, the ICRC has been the starting point of modern humanitarian aid by providing medical care and demanding humane treatment for prisoners of war (Salim, 2015). As global conditions evolved, the scope of humanitarian work expanded to include rebuilding economies after major wars, as occurred in Europe following World War II through the Marshall Plan, which marked a transition from emergency aid to development aid (Akhmetova, 2022). It

also contributed to the establishment of pivotal international institutions such as the United Nations, the World Bank, and the International Monetary Fund. In the twentieth century, aid was no longer limited to armed conflicts, but also included famines and natural disasters. The global response to the 1984 Ethiopian famine was a prominent example of international solidarity (de Waal, 1997), while major disasters such as the 2004 Indian Ocean tsunami and the 2010 Haiti earthquake highlighted the importance of rapid intervention and coordination with local actors (Maxwell, 2016). As conflicts escalated in regions such as Yemen, South Sudan, and Syria, the need for humanitarian interventions increased, addressing not only food and shelter shortages but also mental health issues, gender-based violence, and displacement (Kimball and Goman, 2020). In the case of Yemen specifically, the outbreak of conflict since 2015 has led to economic collapse, depriving millions of people of food and healthcare. In addition to disrupting agriculture, rising prices, and import restrictions, humanitarian aid has become a vital lifeline for millions of Yemenis (World Food Programme, 2022).

## **2. Challenges and Adaptations in Contemporary Humanitarian Aid**

One of the most notable characteristics of humanitarian assistance today is its place in global politics. When it comes to Yemen, the involvement of external countries such as Saudi Arabia, the UAE, and Iran has complicated matters. More humanitarian assistance is often used for political and military purposes that exceed the intended goals (Sowers & Weinthal, 2021). This affects the timelines of reaching the victims in need of help and even raises concerns on how the help is distributed and utilized. It is said that both the Houthi forces and the internationally recognized government have restricted aid in order to consolidate power, which has deepened the humanitarian crisis (Makara, 2023).

The onset of the COVID-19 pandemic created additional challenges as regards the delivery of supplies to populations, as well as the mobility of aid workers within Yemen. Evidence reveals that limitations of food supply that existed previously were exacerbated by the pandemic due to rising food prices and constraints in accessing services, for example, health (Rahmat et al., 2022). This prompted relief agencies to adapt their approaches to assistance and implement more remote tracking systems and novel methods of assistance such as mobile money transfers (Rahmat et al., 2022).

Experience has shown that providing cash assistance has become a more practical option than traditional food aid, as it gives beneficiaries the freedom to purchase what they actually need, enhancing their sense of dignity and reducing the misuse of aid programs (Tasci, 2020). However, achieving sustainable food security in Yemen requires more than

immediate relief; it requires rebuilding infrastructure, creating jobs, and strengthening the foundations for peace (FAO, 2021).

### **2.2.2 Types of Humanitarian Aid**

Humanitarian action includes a variety of interventions all aimed at minimizing the suffering of individuals, protecting life and preserving human dignity during conflict and other crises. In Yemen, a conflict-ridden nation, there is the distribution of food, provision of cash transfers, supply of medical care, and logistics all in the name of humanitarian assistance. Such interventions meet different needs of the people who are affected, both immediately and in the long term. This segment discusses the types of humanitarian interventions in detail and points out their importance in overcoming food security issues in Yemen amongst others.

- 1) Food Aid:** Assistance in the form of provision of food is one of the most important aspects of humanitarian assistance, especially where conflicts or natural catastrophes disrupt anthropogenic food production and distribution systems. Food aid according to the World Food Program (WFP) comprises in-kind or cash assistance measures addressed to individuals, who are actively suffering from hunger and/or malnutrition. (WFP, 2022). Dependence on imported food and difficulties in local agriculture in Yemen have intensified the threat of hunger making it inevitable to seek help in the form of food assistance. Agencies such as the WFP provide minimum food commodities like wheat and rice as well as pulses to at-risk populations. Targeted groups, mostly children under five and pregnant or lactating women, receive excessive nutrition focused programming to avert the risk of acute malnutrition as general food distribution is underway (FAO, 2021). Food assistance brings immediate, life-sustaining relief but also comes with functional and moral impediments. More often than not, the provision of aid relief becomes encumbered by already existing logistical challenges such as raids and security threats. Additionally, the reliance on the aid for accessing food for extended periods of time raises issues such as disruption and even dependency and reduces frictions to local food market recovery (Makara, 2023). These problems are often addressed with the increase in usage of cash-based interventions (CBIs) by humanitarian agencies to replace food aid programs so often employed in the society.
- 2) Financial Assistance and Cash-Based Interventions:** Assistance in funds has become important as a flexible form of assistance, especially in war-torn countries like Yemen, where it is not always possible to provide normal food aid due to access or

market barriers. Cash-based interventions (CBIs) enhance the recipient's dignity and self-sufficiency because they provide the recipients with the resources that they need (Elayah et al., 2022). Such programs aim to boost local economic development by promoting utilization of local suppliers among the beneficiaries in order to redress the local markets. In Yemen, when inflation and currency devaluation have hampered individual purchasing ability, cash transfers have been effective in combating food insecurity. Elayah et al. (2021) revealed that cash transfer programming or cash-based aid in Yemen enables the targeted beneficiaries to procure various food products depending on their preferences leading to better health results. Cash-based interventions help alleviate the logistical burden on humanitarian organizations, eliminating the need to transport large quantities of food across conflict zones. Humanitarian agencies also have a responsibility to prevent the misappropriation or misuse of this aid by warring factions (Makara, 2023). Nevertheless, financial support remains an important component of humanitarian response, especially when combined with other tools such as food vouchers and livelihood support.

- 3) **Healthcare and Medical Aid:** Healthcare is one of the most important forms of humanitarian support, particularly in refugee settings and conflict-affected areas where medical facilities are destroyed or completely absent. In Yemen, for example, the deterioration of the health system due to repeated attacks on hospitals and shortages of medicines and supplies has led to serious health crises, including cholera outbreaks and famine (Kimball & Jumaan, 2020). Non-governmental agencies, such as Médecins Sans Frontières (MSF) and the International Red Cross undertake provision of emergency intervention services that consist of primary health care, vaccination and psychosocial support services as well. Targeted programs have been designed for women and children, who are the most affected populations in the times of war and scarcity. Food and feeding programs for malnourished children are even being followed. Malnutrition remains a daunting challenge for children in Yemen in particular (UNICEF, 2022). In spite of the importance of providing health care assistance for the refugees, a number of factors contribute to difficulties in its implementation. These include, security concerns, geographical limitations and inadequate number of skilled workers. It is common that such facilities become one of the targets or are within the fighting line, creating additional barriers in provision of care. Actors in humanitarian relief operations have employed the use of mobile clinics and telemedicine for patients as a temporary measure. Unfortunately, these solutions

are not able to address the healthcare needs of the population most of the time (Sowers & Weinthal, 2021).

- 4) Logistical Support and Supply Chain Management:** Humanitarian organizations use airlifts, sea transport, and ground vehicles to supply various materials within the country. Moreover, it is necessary to coordinate the efforts of the foreign and local groups of actors in order to bypass the access limitations and deliver the assistance to the target groups (OCHA, 2023). The role of supply chain management in humanitarian logistics has taken on a greater significance with organizations using advanced forms of technology to assess and control the movement of aid. As an illustration, the WFP employs online systems in order to oversee the food assistance program's distribution practices and safeguarding its operations (WFP, 2022; Khalil & Thompson, 2024). Nevertheless, some of these systems in place have advanced risk mitigation strategies, aid delivery in Yemen is still prone to interference, especially within the jurisdictions of political militias. The logistical assistance also incorporates the improvement of facilities, i.e.: construction of new/modernized roads and expansion of ports which are important for the success of long-term relief activities. However, these activities need huge funding and expose operational delays mostly due to the security situation and political issues (Makara, 2023).
- 5) Shelter and Water, Sanitation, and Hygiene (WASH) Aid:** Shelter and WASH services represent further vital aspect of humanitarian assistance particularly to refugees and internally displaced persons. In Yemen, war has caused the internal movement of over several million people, many residing in congested refugee camps or informal settlements. Under shelter aid includes distribution of tents, blankets, and other household items, and even support to the rehabilitation of destroyed structures (UNHCR, 2021). WASH program interventions seek to prevent disease outbreaks by controlling access to safe water, sanitation facilities, and hygiene products. Most of the water infrastructure in Yemen has been destroyed enabling diseases associated with poor hygiene, such as cholera, to thrive. Many of these humanitarian agencies, including UNICEF and the International Red Cross, provide a range of water purification systems, hygiene kits, and rehabilitation of sanitation facilities for the displaced People (Kimball & Jumaan, 2020). The provision of shelter and WASH services has a number of challenges including lack of enough funds, transport issues, and security in access. In addition, the high population concentration within the displacement camps makes it difficult to even keep the most basic sanitation conditions, thus exposing the population to the risk of disease. Humanitarian actors in

this regard always have to bear in mind the need for changes in their approaches, as their services are aimed at people facing conflicts and displacement.

### **2.2.3 Effectiveness of Humanitarian Aid Programs**

This part of the paper reviews some of the available research on the efficiency of different types of humanitarian aid interventions provision and includes examples of both successful and failed attempts to reach similar goals in Yemen and Other War-Torn Areas.

#### **1. Review of Literature on the Effectiveness of Humanitarian Aid**

The success of humanitarian action is usually evaluated in terms of how far the interventions meet the pressing constraints, build coping strategies, and enhance the rehabilitation phase in the long term. However, it is quite difficult to achieve this task of delivering aid especially in combat zones because, in most instances, there are factors such as logistics, politics, and operations that make it difficult to deliver interventions on aid (Brett, 2020). In prolonged situations such as Yemen, the humanitarian assistance program is effective only if it is flexible enough to respond to different challenges such as food insecurity, poor health care systems, and infrastructural deficits.

Emergency food assistance is primarily effective when it comes to preventing hunger and malnutrition, however, when administered for a long period of time without back-up development activities, it raises concerns on the clients' dependency syndrome (Alsamawi & Partridge, 2017). Concerning cash-based interventions (CBIs), their flexibility notwithstanding, they need consistent markets and safe channels for distribution for them to be able to work. Evidence published regarding Yemen shows that while CBIs enhance food access and benefit the users, their effectiveness is often curtailed by prevailing hostile conditions that inhibit the markets (Elayah et al., 2022).

The provision of medical care within the framework of humanitarian assistance is of central importance to the saving of lives and averting the spread of diseases, especially in situations of prolonged violence such as in Yemen where the breakdown of the public health system has left millions exposed to a wide range of health risks (Rahmat et al., 2022). Health crises have also been managed, for example, by vaccination campaigns, nutritional support, and mobile medical services. On the other hand, these services can also be hampered due to other reasons such as conflict in access to the North, which makes it difficult dealing with the conflict zones. In Yemen, for instance, access to health care in supportive interventions has been hampered as a consequence of siege conditions and

aggressions towards health care providers, hence, decreasing the effectiveness of health interventions as a whole (Kimball & Jumaan, 2020).

From the perspective of logistical support, literature makes clear the need for swift and effective actions. Humanitarian logistics is designed to facilitate the movement of foods, non-food items, and services to the affected population. Nevertheless, investigations show that presenting operational bottlenecks, bureaucratic barriers, and lack of effective international and domestic actors coordination lead to problems in delivery of assistance as it is the case with Yemen (OCHA, 2023).

The provision of Aid services discusses conflict resolution processes as well and gets external complicating factors such as interference with aid by non-state actors in the country and political manipulation of the aid process for instance using the aid for conflict settlement (Makara, 2023). In spite of all these factors, well-established attention programs have a good level of the stakeholder's coordination, follow the humanitarian principles and have strategies for managing changing situations.

## **2. Case Studies of Successful and Unsuccessful Aid Interventions**

### **1) Successful Interventions**

- a) **Cash-Based Assistance Programs in Yemen:** The introduction of Cash-Based Interventions (CBIs) to Yemen could be regarded as a significant achievement in innovation within humanitarian assistance. They have been implemented among other organizations by the World Food Programme WFP and allow beneficiaries to buy essential commodities of their choice from functioning local shops. A research paper by Elayah et al (2022) sought to examine the impact of cash-based interventions in Yemen and noted that such interventions improved food availability and stimulated economic growth by allowing beneficiaries to purchase food as they wished. Such programs also reduced the operational cost on aid organizations, hence increasing the speed of delivering the aid... The social environment also determined that cash transfers in the CBI programme enhanced the local economies even with the security situation in the country being volatile. Using mobile phones as money enabled organizations to avoid delivery problems and worked even in areas where people were inaccessible (Elayah et al, 2022). On the contrary, the efficacy of cash-based interventions is contingent on well-developed local markets and financial systems, which are often compromised in conflict zones.

b) **Nutrition and Health Programs:** Also in Yemen, there were successful interventions which integrated emergency services and nutritional programs. For example, in Yemen, the application of UNICEF's integrated approach that provides malnourished children with nutritious food as well as health care has successfully brought down child mortality rates (UNICEF, 2022). To this end, mobile clinics run by operational branch, Médecins Sans Frontières (MSF) brought healthcare services to both curative and preventive care in even the furthest and violent hotspots (MSF, 2021). The necessity of incorporation of the short-term emergency relief and health improvements with the longer-term developed interventions to improve the health conditions of the community is also emphasized by these programs. In spite of the security concerns posed by such populations, mobile units have helped to overcome health inequities in Yemen which is an indication of the possibilities of delivering healthcare in crises responsive models.

## 2) Unsuccessful Interventions

a) **a) Blockade and Interruption of Aid Delivery:** The blockade imposed on Yemen has been a major obstacle to aid delivery. The Saudi-led coalition, acting on UN Security Council resolutions, has imposed a blockade on the port of Hodeidah, creating an artificial food scarcity at uncontrollable prices (Sawyers and Weinthal, 2021). This disruption illustrates the political and military dimensions that tend to defeat the purpose of humanitarian assistance and cause hunger even as relief aid becomes available. The blockade has once again raised the issue of food being used as a weapon in food aid programs, casting doubt on the integrity of humanitarian aid in situations of civil conflict. Even in cases where aid supplies have reached Yemeni ports, bureaucratic inefficiencies and factions involved in the war have often delayed distribution, leaving many in need of much-needed support (Macara, 2023).

b) **Aid diversion and misuse:** One other major aspect of the crisis in Yemen includes the diversion and abuse of aid. Aid deliveries have been reported by Shipley (2019) to have been taken over by militia groups in order to bolster their fighting capacity or to use the population by providing them with the aid on their terms. As a result of such incidents, the humanitarian aspect has been less effective leading to suspicion of the community by the aid organizations. Therefore, in order to overcome such problems, the aid agencies have attempted to introduce more severe measures concerning conduct and supervision of activities. However, the extent to

which flows of aid can be monitored in times of war is very minimal, thus making it impossible to confirm if assistance is directed to the right target. This case points to the need for improved coordination and supervision to be able to curb abuse of aid in conflict prone areas.

- c) Lessons learned from interventions in other conflict areas:** Adopting practices of provision of humanitarian aid in Yemen basing on interventions in covered projects in other conflict zones is more likely to yield positive results. For instance, the famine that affected Somalia in 2011, as chronicled by Maxwell (2016), showed the critical need for local partners and swiftness in actions in relation to difficulties in access. However, there are examples where the opposite happened such as in the case of the Haiti earthquake in 2010 whereby delays in responses and large unmanageable volumes of aid created difficulties in their effective distribution (Brett, 2020). Such cases demonstrate why it is necessary to swiftly and effectively intervene in order to make use of the local assets and capabilities. In Yemen, the planning and implementation of relief operations could be entrusted to local players, so that foreign aid would be more effective and long-lasting. Nevertheless, as the Somalia case shows, the humanitarian actors should also be cautious that their actions do not lead to dependency or market distortions as a result of overzealousness in planning assistances.

### **2.3. The Role of Donors and International Organizations**

Donors and international organizations are critical pillars in addressing food insecurity in crisis-affected countries, such as Yemen, where prolonged conflict has devastated agricultural production, disrupted supply chains, and deepened reliance on humanitarian assistance. Their multifaceted roles encompass providing financial resources, mobilizing emergency food aid, and fostering long-term resilience strategies that mitigate the adverse effects of conflict on food systems.

The humanitarian crisis in Yemen has also gained the attention and efforts of several international organizations and donor agencies. As a result, the United Nations and other humanitarian groups are launching enormous relief operations that offer food, medical assistance, and finances to the stricken populations. One of the focused activities and services provided by WFP as the largest agency in charge of food assistance in the country of Yemen is the food distribution where tens of millions of people are reached by

emergency food distribution and cash transfers (WFP, 2022). In the same way, child related nutrition and health services are the main area of intervention for UNICEF (2022) whereas the challenges including outbreaks of cholera and malnutrition are the responsibility of the World Health Organization (WHO).

Various global non-profit organizations, including Médecins Sans Frontières (MSF) and International Red Cross, mainly engage in the provision of medical care in different conflict zones. These organizations have set up mobile health clinics and provide essential health services in especially isolated regions where the country's health care system, especially in Yemen has crumbled (MSF, 2021). Besides humanitarian organizations, certain significant financiers, for example, the European Union (EU), America's USAID, and countries in the Gulf spend a lot of money in relation to the humanitarian efforts in Yemen. Still, it is not enough considering the ever-increasing demands of the people. As of 2023, for instance, United Nations Office for the Coordination of Humanitarian Affairs CIA (OCHA) stated that the Yemen Humanitarian Response Plan was only 40% funded, thus leaving important projects underfunded and at risk (OCHA, 2023).

In Yemen, aid provision encounters various obstacles, even with the participation of global players. The active conflict tends to instrumentalize relief efforts; security, and terrorism, and access to target areas are very often obstacles to the humanitarian efforts. International agencies, national non-governmental organizations (NGOs), and the Yemeni government should work together to mitigate such problems and allow aid to be delivered to the populations in need the most (Kozielec et al., 2024).

International donors have provided significant funding to sustain humanitarian operations in Yemen. Organizations such as the United States Agency for International Development (USAID), the European Union, and the Gulf Cooperation Council countries have contributed billions of dollars to address the country's food crisis. When combined with Dependency Theory and Entitlement Theory, this perspective enables a holistic understanding of Yemen's food security crisis: dependency dynamics reveal structural vulnerabilities to external aid, entitlement perspectives emphasize the distributional aspects of access to food, and financial governance highlights accountability, transparency, and funding sustainability.

## **2.4. Food Security**

### **3.4.1 Definition and Importance of Food Security**

Definitions of Food Security and Its Significance: Food Security is a broad perspective and the Food and Agriculture Organization (FAO) defines it as “a situation in which all, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Atmani & De Cordier, 2021; FAO, 2015). This definition captures four critical dimensions: availability, access, utilization and stability, each of which plays a role in determining the effectiveness of relief works in particular regions as in the case of Yemen where such humanitarian efforts are mostly required during conflicts. Food security is not only concerned with the supply of food but also whether people can obtain and use that food in adequate amounts, to meet their dietary needs, on a continual basis. Why such things are needed in such places is because every aspect of carrying capacity and population is war-ed upon. In regions affected by conflict for example, where people do not farm, where products do not work, and where distribution networks are obliterated, lack of food security would erode the health of the people and the economy. The World Food Program (WFP) states that food security should be a concern not only during emergencies, but also in the context of development strategies aimed at promoting peace and protecting the standard of living (WFP, 2021).

### **2.4.2 Significance of Food Security in Humanitarian Contexts**

- 1) Reducing Hunger and Preventing Malnutrition:** Food security is essential for the survival and health of the population, especially children, the elderly, and pregnant women. Data from the Integrated Food Security Phase Classification (IPC, 2022) indicate that large areas of Yemen have been experiencing emergency levels of food insecurity for years, with millions of people facing the risk of famine. Hunger exacerbates weakened immune systems, making populations more vulnerable to epidemics such as cholera, which has swept through the country during the current war. While food assistance is a necessary response to alleviate immediate suffering, achieving sustainable food security requires deeper consideration of other factors, such as improving income, ensuring access to markets, and strengthening agriculture (Freddy and Gupta, 2018). The Yemeni experience demonstrates that relying solely on food assistance can lead to

continued dependency, calling for the integration of relief and livelihood development programs to ensure a more effective and sustainable response.

- 2) **Food Insecurity as an Ingredient of Insecurity:** One of the least obvious factors in conflict areas is food security; when people cannot meet their basic needs, tensions between social and ethnic groups increase and conflict over resources is exacerbated (Upton et al., 2016). This is exemplified by the recent food crisis in Yemen, where the threats of economic decline and the loss of personal data are linked to food security and the significance of addressing peace opportunities head-on. In addition to guaranteeing food availability, food security entails helping people and communities overcome numerous obstacles and rebuild their means of subsistence. Consequently, investment in energy-efficient vegetables can start swiftly and gradually, and agricultural production is starting to replenish in large quantities very quickly (Rehman et al., 2022).
- 3) **The Economic Dimensions of Food Security and Poverty:** Food security is a driver of economic growth, particularly in agricultural economies, where food production and trade are a major source of income (FAO, 2019). In Yemen, conflict has displaced farmers, killed livestock, and destroyed irrigation systems, deepening the cycle of poverty and hunger. Sustainable recovery requires investment in infrastructure and markets, along with support programs that provide financing, equipment, and training, enabling communities to earn income and reduce their dependence on aid.
- 4) **Food Security and Health:** Adequate nutrition is a foundation for health care, especially in crises where access to medical services is limited. In Yemen, widespread malnutrition among children has caused serious growth problems and increased the risk of death from preventable diseases (Hezam, 2023). Malnutrition also makes individuals more vulnerable to infection and increases pressure on health facilities, while food insecurity is often linked to poor access to clean water and sanitation, increasing the likelihood of epidemics. The paper is quoting the World Health Organization which pointed that in emergencies children are at high risk of malnutrition and infections; thus, effective programming would require the two to be addressed simultaneously (WHO, 2022). Holistic approaches to food and hygiene constraints have been practiced in Yemen by mixing WASH interventions and food aid.
- 5) **The Political Implications of Food Security:** In most cases of humanitarian assistance, food security becomes a political issue, where the fighting sides resort

to using food as weapon against the other by restricting supplies or altering the direction of relief assistance. UN Office for the Coordination of Humanitarian Affairs (OCHA) indicates that in the Yemen conflict, both of the belligerent parties have impeded the supply of food to the other, making the situation worse (OCHA, 2023). Food aid for political purposes complicates humanitarian assistance and when combined with other factors repeatedly leads to prolonged inter-group conflicts as it breeds bitterness and suspicion in the targeted people. It is important to separate the food insecurity alleviating programs from any political machinations in order to achieve the objective of restoring and maintaining the humanitarian principles. Political environments have to be managed by humanitarian actors in such a way that aid reaches the intended beneficiaries and does not become a tool in the hands of the fighting sides (Makara, 2023).

- 6) **Long-term Consequences of Food Insecurity:** The long-term consequences of food insecurity are not limited to the satisfaction of hunger alone. Chronic food insecurity stifles economic progress, lowers educational levels and ensures the continuation of poverty (Gallegos et al., 2023). When Children are malnourished, their academic performance is likely to be poor, and their chances of getting better-paying jobs are reduced. In Yemen, where the conflict has led to malnutrition, this has resulted in loss of productive years. This became very damaging to the country in terms of national building as it becomes highly impossible to rejuvenate the economy. Otherwise known as food security, it has to be learnt or practiced the other way; meaning that the ‘Bandaid’ approach of relief or immediate hunger alleviation, should be abandoned, and food security brought about in a sustainable manner. This considers a holistic approach where there is focus for example to education, health, agricultural systems in order to support the people live independently without any outside help.

### **2.4.3 The FAO Framework for Food Security**

The Food and Agriculture Organization (FAO) defines and describes various aspects of food security in such a way as to appreciate and provide sustainable access to food. Due to this reason, such a framework is embraced by most actors dealing with nutrition policies in crisis situations including humanitarian actors or agencies, policymakers, and even development agencies. The FAO acknowledges that food security consists of four dependent dimensions—availability, access, utilization, and stability—which determine whether or not individuals and societies are food secure (FAO, 2015). These dimensions

are strikingly conspicuous in places like Yemen that emphasize on Conflict where it is easy for the failure of one dimension to lead to a food crisis encompassing the entire country.

- 1) **Availability:** Availability refers to the presence of sufficient quantities of food, produced domestically or imported, to meet the needs of a population. It encompasses food production, trade, and stock levels, ensuring that enough food is physically present in markets or storage facilities (Burchi & De Muro, 2016). In Yemen, domestic food production has declined sharply due to the destruction of agricultural infrastructure, displacement of farmers, and lack of inputs such as seeds, fertilizers, and water. Yemen's reliance on food imports for approximately 90% of its staple food has further exacerbated the crisis, particularly during the blockade of major ports such as Hodeidah. Import disruptions, compounded by currency depreciation, have limited food availability in local markets, increasing prices and reducing affordability for many households (Favari et al., 2021). Thus, ensuring availability in Yemen requires not only food production initiatives but also mechanisms to facilitate the continuous flow of imports, even during conflict. International efforts to restore food availability in Yemen include programs such as the World Food Program's large-scale distribution of essential food commodities. However, sustaining these efforts requires robust logistical operations, coordination with local actors, and overcoming obstacles such as blockades, which have severely limited access to food supplies (Holleman et al., 2017).
- 2) **Access:** In most cases, access to food does not depend on its availability alone. It also depends on the ability of individuals and households to obtain food. There are various economic and physical factors that determine access such as income, employment, market prices, and means of transportation (Pinstrup-Andersen, 2009). Despite the fact that some markets in Yemen have foodstuff, owing to the hyperinflation and unemployment brought about by the interminable conflict, many families are unable to afford it. This scenario is in line with what Amartya Sen's Entitlement Theory states that an individual can be food insecure and even famished in the absence of scarcity of food, simply because the individual lacks the funds needed to purchase the food (Sen, 1982). In Yemen, cash-based assistance programs have been introduced to facilitate access by allowing beneficiaries to buy food and other basic items from the local market (McCormack et al., 2018). In contrast, these programs become problematic in cases where

markets are difficult and unstable such as areas afflicted by war (Ayeb & Bush, 2019).

- 3) Utilization:** The dimension encompasses the provision of safe drinking water, toilet facilities and availability of healthcare among other things, because they contribute to the efficiency of nutrient utilization by the body (Gross et al., 2000). In Yemen the food utilization has been affected due to lack of water and sanitation facilities and health care services, which has caused high prevalence of under nutrition and high prevalence of diseases with cholera being one of the major infections. In Yemen, there is a high burden of under nutrition in children under five years and pregnant women with many of them been found to be acutely wasted and stunted (UNICEF, 2022). Humanitarian organizations have engaged in various interventions including targeted supplementary feeding programs, provision of treatment foods and protection and promotion of infant and young child feeding practices. Most of the time however, such relief efforts become ineffective because of environmental factors such as poor sanitation which predisposes individuals to diarrhea and other affections that in turn impair food utilization mechanisms (Sorensen & Snel, 2023). Optimal utilization in Yemen cannot be attained without the inclusion of health and WASH programs along with food aid. For example, providing a safe and clean source of drinking water and improving hygiene standards in the camps for displaced persons are very important in addition to providing food assistance because they help to achieve better nutritional outcomes (Patlán-Hernández et al., 2022).
- 4) Stability:** Stability is defined by the characteristics of food availability, access, and utilization over a period of time without any changes or variations that could jeopardize food security. Ups and downs and the capacity to bounce back from such causes as economic depression, wars, or natural calamities to ensure that the food systems are not disrupted (Barrett, 2010) is what is referred to as stability. In Yemen, Degenerative conflicts have wreaked havoc resulting in several food crisis episodes with millions being acutely food insecure as the condition prevails (IPC, 2022). To achieve stability in food security, one must pursue the rather qualitative measures such as fostering resilience, which includes taking precautionary actions such as enhancing agricultural systems, infrastructure and engaging in governance reforms. In Yemen, stabilization will be achieved by – among other interventions – restoring agricultural production systems, such as distribution of seeds, tools, and training of farmers (OCHA, 2023). In addition, active processes of peacebuilding

and conflict resolution are necessary, since it is impossible to reach any stability in food security without mitigating the causes of conflicts themselves. The threats to the stability of food security in Yemen are further exacerbated by climate change where changes in weather patterns have negatively affected the availability of water and the level of agriculture. In order to meet food security in the future, threats such as climate change need to be dealt with by adaptation interventions like increasing the cultivation of crops that can resist the changing climate and practices that use water more efficiently (Rehman et al., 2022). In addition, the food system stabilization in Yemen will be contingent upon international backing, a stable political environment and development direction that will be integrated and sustainable in nature.

#### **2.4.4 Factors Influencing Food Security**

- 1) Economic Factors:** Amid political conflict, food scarcity is worsened due to economic volatility that occurs. Where markets disintegrate due to structural destruction, unemployment, and slowing down of economic activities, people's access to food supply is oftentimes hampered. Currently Yemen faces hyperinflation and currency depreciation thus households are unable to buy any foodstuff even the cheapest (Delgado et al., 2021). Trade and farming activities were largely disrupted by the ongoing warfare thereby affecting contribute to domestic food production and imports. In addition, food insecurity driven cash banking systems or food aid reliance increases the risk of affected populations to global market dynamics. Economic shocks such as the COVID-19 and economic recessions and rising inflation in countries that are already net food importing countries have raised the prices of food even more (Kozielec et al., 2024). Health organizations operating in Yemen have also faced difficulties in providing cash due to the limited availability of the banking systems, the fear of the local currency plunging, and other logistical inconveniences (Delgado et al., 2021). During bouts of economic instability, it is common for food prices to shoot up, a phenomenon that negatively impacts the poorer demographics of the society as this spent a considerable percentage of their earnings on food. Additionally, the increased transport costs due to the limited availability of fuel and the block of roads by conflict are also quite debilitating since in some region's food becomes expensive even in the remote stores (FAO, 2013). Addressing local crises means first stabilizing the local economy through provision of jobs, markets interventions and other supportive measures to bring back normal spending levels among the people.

- 2) **Political Factors:** Political instability is a major factor affecting food security, as governments in conflict zones are unable to provide basic services such as agricultural extension or food distribution. In Yemen, the conflict between government forces and the Houthis has been characterized by the use of blockades and attacks on agricultural facilities (Delgado et al., 2021), in addition to the exploitation of food as a weapon and political tool through the misuse of humanitarian aid (Kozielec et al., 2024). Bureaucracy in areas controlled by armed groups also hinders relief efforts by denying or delaying permits, and the situation is exacerbated by the misuse of resources and funds, further restricting aid access and exacerbating the food security crisis (FAO, 2020). Political instability has its claws on food security even in agricultural policies and their corresponding investments that need to be lasting. War prone governments may tend to ignore policies regarding agriculture while concentrating on military capacity leading to a decline in food production and poor maintenance of agricultural facilities (FAO, 2013). In Yemen, the absence of synergy in government actions has left a number of the rural areas without the means to restore their agriculturally based economies, thus extending the duration of foreign aid dependency.
- 3) **Environmental Factors:** The situation of food insecurity is compounded by external factors such as climate change, scarcity of water resources and also disasters, especially in war-affected serious situations like that of Yemen. There have been changes in climatic conditions that have resulted to disruption of climatic seasons in most areas resulting to low rainfall in some and high drought and flood incidences in some (Kozielec et al., 2024). These extreme climatic conditions hinder agricultural practices and reduce the levels of harvests which in turns makes the people more susceptible to hunger. Water scarcity is one of the major challenges faced in Yemen as agriculture utilizes more than 90% of water resources. Water stress limits the capacity to farm, particularly for small farmers with no access to irrigation (FAO, 2013). In the absence of sufficient water resources, Yemen's capacity to produce local staples is significantly impaired thus it becomes more dependent on imported food. Subsequently, the scarcity of this resource has also led to intercommunity disputes further aggravating peace and food security (Kozielec et al., 2024). The problem of limited agricultural resources gets worse due to environmental destruction that is caused by poor land management systems such as overgrazing, conversion of forests to agricultural land and soil erosion. In war zones, for instance, there are often internally displaced

people who add to the existing environmental problems by overstressing the available resources in the host populations. Moreover, conditions of war and disregard for the agricultural development often result in damaging of irrigation networks and cultivating soils which are unable to recover from climate adversities (Delgado et al., 2021). One way of addressing the environmental causes of food insecurity is to encourage the use of the environmentally sustainable means of agriculture such as efficient production of food vis-a-vis water resources and the use of crops that are resistant to dry spells.

- 4) **The Interplay of Economic, Political, and Environmental Factors:** Economic factors such as the depreciation of a currency will also contribute to the inability of household level access to food, especially in situations where there is food in the area markets (FAO, 2020). Events related to climate change like droughts and flooding can also contribute to civil wars by exacerbating the fight over few existing resources. In the case of Yemen, there have been increasing tensions in the center of water politics as the society is running out of water due to the drought but they still have the need to grow crops (Delgado et al., 2021). These problems are interrelated and hence only complex solutions which target both current threats and those which may take long to develop can work.

## 2.5. Aid Delivery

The effectiveness of humanitarian interventions (HIs) to achieve food security (FS) depends to a significant extent on aid delivery systems and their ability to function properly. Aid delivery plays a critical role and serves as a mediating variable where one's aim as far as humanitarian intervention is concerned, and the results that are realized will be bridged, delivering the support to the right beneficiaries with efficiency and effectiveness (Beyene SD. 2023). The discussion in this section will focus delivery of aid as a variable where they measure HI and FS and look into its importance as being one of the determinants of success or failure of humanitarian interventions (Doustmohammadian et al., 2022).

The provision of aid in a timely manner is critical in mitigating the effects of hunger especially in conflict situations such as in Yemen. According to studies, Most of the Constraining Factors Associated with Food aid Distribution include limited access to areas affected by conflict, official clearance management, and damage to infrastructure among others (Moore et al., 2021). It is therefore clear that in the absence of effective delivery systems, even well-developed and sufficiently financed humanitarian responses may not

reach the intended target populations reducing any positive effects on the provision and accessibility of food (FAO, 2021).

Studies show that aid delivery mechanisms directly impact food security stability and effectiveness. Cash transfers are more empowering and efficient because they do not disrupt markets and allow beneficiaries to meet their needs (Peachey, 2023). Furthermore, coordinated distribution networks that are integrated with local culture improve nutrition levels and strengthen resilience (Freddy & Gupta, 2018). Conversely, corruption, mismanagement, and inefficient delivery systems reduce short-term impact and undermine trust in humanitarian actors (Moore et al., 2021). Therefore, the literature recommends building stronger local partnerships, using new technologies such as blockchain to increase transparency, and conducting periodic assessments to ensure accountability (Elayah et al., 2022).

Aid delivery as a mediating variable, especially in the case of Yemen, has been especially noticeable. Owing to the persistent conflict, transport networks have been compromised, and access to food is hampered, which makes the provision of food aid extremely difficult. Despite such challenges, new ways of providing assistance, like cash transfers through mobile phones and local networks for distributing food, have managed to improve the scope and efficiency of the humanitarian efforts (WFP, 2022). These examples indicate clearly the importance of aid delivery in the realization of humanitarian efforts towards alleviating the challenges of food insecurity.

### **2.5.1 Aid Delivery Challenges**

In conflict zones such as Yemen, the delivery of humanitarian assistance is complicated and suffers delays which impact on efficient relief operations. Such challenges include access barriers, corruption as well as impediments along the supply chain. Gaining knowledge about these hindrances is significant in coming up with ways to improve the efficacy of humanitarian actions.

- 1) Access Barriers:** Among the challenges faced by humanitarian operations, access issues are probably the greatest. The active conflict has created conditions, such as blockades, checkpoints, or even control of transportation corridors, that are designed by opposing sides to prohibit the operations of humanitarian agencies into the affected populations. For example, the Hodeidah seaport, which is a critical inlet for food and medical supplies, has been subjected to measures that restrict the inflow of assistance (Peck, 2023; FERNÁNDEZ, 2022). According to the World

Food Program (WFP), armed groups control access to areas with food and services. Such groups generally control movement and transport of aid, causing delays and increasing the risk for displaced persons (WFP, 2022). In other words, OCHA (2023) reported that approximately 70 % of the people live in regions where humanitarian access is highly restricted. This has resulted in worsening incidence of food insecurity in the country. The security situation in many parts of Yemen remains adverse. Humanitarian workers, for example, are threatened with violence, abduction and harassment which may hinder their work. Many attacks against aid convoys were documented in 2021 showing how risky the provision of aid in war-torn countries can be (UN OCHA, 2022). Whenever access is an issue, it requires humanitarian agencies to think outside the box, for example by soliciting the assistance of local leaders to ensure the movement of staff, and/or supplies, and/or equipment, and/or any forms of aid without fear of harm. Moreover, some of the logistics involved in giving help the traditional way can be circumvented by e.g., cash etc. which are delivered remotely (OCHA, 2023).

- 2) **Corruption:** Corruption is one of the most significant obstacles to the efficient distribution of aid in Yemen. Reports by Transparency International and others have documented cases of aid diversion by local administrations or armed factions, depriving those targeted and undermining the credibility of humanitarian agencies (Hezam, 2023). Aid has also been used as a political weapon by the state and the Houthis, selectively distributing it to allies, disregarding real humanitarian needs (Delgado et al., 2021). To address this problem, the literature recommends strengthening monitoring and accountability mechanisms by involving external auditors and local organizations to ensure that aid reaches the actual beneficiaries (WFP, 2022).
- 3) **Supply Chain Disruptions:** Supply chain disruption is another fundamental obstruction to the effective delivery of aids in Yemen. The war has left the roads, bridges, and airports badly damaged which limits the supply of food and other necessities to the people. Furthermore, the problems of logistics are made worse by lack of fuel and high costs of transport making it more difficult to aid distribution (FAO, 2020). Global supply chains have been further complicated by the ongoing COVID-19 situation, which has in turn, affected the availability and distribution of humanitarian items. Shipping delays and much higher costs have adversely affected the humanitarian agencies' ability to respond quickly to needs especially where the market is not stable (Kozielec et al., 2024). Humanitarian

agencies also need to build their logistics capacity to respond to such issues by developing supply chains at the local level and working with local actors to optimize the transport network. Technology can also be used to improve these processes like the use of mobile tracking systems to track the delivery of the supplies and ensure efficiency in the use of resources (OCHA, 2023).

### **2.5.2 Impact of Conflict Intensity and Duration**

The level of conflict and the timeline of the conflict affect food security and the efficiency of humanitarian assistance during the course of the conflict. In Yemen, the ongoing internal conflict has led to over a million people in need of humanitarian assistance due to high levels of food deserts and poor social structures.

- 1) Impact of Conflict Intensity:** The degree of conflict is always destructive of the area in which it occurs. Conflict areas of high intensity witness the ravage of crop production facilities such as farms, water irrigation, and storage. Food availability in Yemen has declined considerably due to civil strife and its prolonged war, which has worked the population to depend on imported foods in great extents (FAO, 2013). Extreme violence is also accompanied with large scale movement of populations with millions of populations also losing their dwellings and occupations. Displaced persons often experience severe hunger, being devoid of the food and income that is readily available in the respective areas (WFP, 2022). The vicious cycle of violence, insecurity, and loss of productive resources services, makes it almost impossible to define and identify the level of resilience. They are also, according to humanitarian organizations, some of the hardest areas to deliver aid because there is ongoing violence, which is dangerous and unpredictable and increases the difficulties experienced by the humanitarian workers (Hezam, 2023).
- 2) Length of Conflict:** The duration of conflict also helps in the erosion of any coping mechanisms and social structures existing in such communities. This over the years leads to households going resource-less resulting to permanent under-nutrition and dependence on aid. Due to loss of income and sale of properties by families, two things happen, and one is food insecurity creeping in easily (Delgado et al., 2021). The protracted war has likewise weakened the local authorities which are responsible for managing aid and hence the aid is very chaotic. In Yemen, governance patterns vary between areas controlled by different warring parties, complicating humanitarian organizations' ability to coordinate with local authorities (OCHA, 2023). This division creates duplication of tasks and

mismanagement of resources, ultimately leading to waste. The prolonged conflict also sows despair and frustration among the population, weakening their resilience and undermining the social fabric. When institutions lose public trust, many are reluctant to cooperate with humanitarian agencies, making aid delivery more difficult (Kozilek et al., 2024).

### **2.5.3 Economic and Environmental Factors**

- 1) Economic Conditions:** The economic situation in Yemen has deteriorated sharply since the outbreak of the conflict, with many people losing their jobs, inflation rates soaring, and the currency depreciating to extremely low levels, leaving millions of people unable to purchase their basic needs, most notably food (World Food Programme, 2022). As a result, a large number of families rely on food aid due to the lack of stable jobs or sufficient wages to secure a minimum standard of living. Additionally, Yemen's food security is challenged by the fact that it is primarily dependent on food imports. Yemen is a net food importing country that brings in over 90% of its food supply and is therefore subject to changes in global markets as well as trade interruptions. Economic shocks experienced in other countries could as well lead to a chain reaction of food price increase making it harder for the Yemenis to buy such goods (FAO, 2013). In any case, the war in Ukraine has led to a reduction of grain exports from the region causing price hikes and shortages of grain in many countries including Yemen (Kozielec et al., 2024). Some of these economic challenges have been addressed by humanitarian organizations through cash-based interventions where beneficiaries are given money to buy food from the local markets. Nonetheless, there are challenges to the effectiveness of these projects because they require a functioning market which is not available in most conflict zones (OCHA, 2023).
- 2) Environmental Factors:** Food security in Yemen is also endangered by environmental issues. The region is prone to droughts, floods and dry spells which affect farming and food storage. Deterioration in weather patterns across the region has made matters even worse (Delgado et al., 2021). In Yemen, water is a major challenge since there is no irrigation and farming is rainfall dependent. This is worsened by the fact that most of the underground water is sucked up and the water management does not help. Without irrigation or farming systems that ensure the production of crops in the least favorable weather conditions over a prolonged period, it becomes hard for the farmers to ensure that food is produced (FAO, 2013). Environmental factors such as the destruction of forests and the wearing a

way of soil contribute to the lack of guarantee in food availability as well. In regions such as the former Yugoslavia, the admission of displaced people into certain areas leads to increased environmental stress particularly on resource use (Kozielec et al., 2024). Humanitarian agencies must also include ways to tackle the environmental problems within the interventions in order to adequately respond to the environmental problems. Water conserving agricultural practices and cultivating of drought resistant plant varieties can assist in dealing with the consequences of climate change on food production in the country in the future. Deterrents to the successful environmental management include the need for active participation of external and internal stakeholders that is agencies, local authorities and the population.

## **2.6. Humanitarian Context in Yemen**

### **2.7.1 Overview of the Humanitarian Crisis in Yemen**

At present, Yemen is one of the countries facing the worst humanitarian situation in the world the prolonged conflict which started in 2015, pitting the internationally recognized government, supported by a coalition led by Saudi Arabia, and the Iranian-backed Houthi rebels, has triggered this crisis. There has been calamity in every aspect of livelihood resulting in deaths, the exodus of people, and most importantly, the infrastructural collapse (OCHA, 2023). Even the economic aspect of the country has not been spared by the war, since millions of Yemenis are living in abject poverty and hunger. By 2023, over 21 million people which are close to two-thirds of the population were in need of humanitarian assistance, with millions of them at risk of starvation (WFP, 2022).

Sustained siege and relentless aerial strikes on Yemen by the coalition forces have crippled the nation's food production and market systems. The blockade on Hodeidah and other major sea ports has also curtailed the importation of essential items like food and medical supplies, which has only worsened the situation (Kozielec et al., 2024). Apart from deterring imports, the violence has displaced a significant part of the farmers from their arable regions. This has aggravated the situation since local food production has considerably declined. Consequently, the level of food insecurity has increased remarkably, with hunger affecting 17 million people, including 3.5 million malnourished children (UNICEF, 2022).

Moreover, the armed conflict has caused mass internal migration with millions of Yemeni citizens having to leave their places of residence. Many live-in refugee camps or

informal settlements where some access to facilities like health services, clean water, and toilet facilities is not guaranteed. Infestations of cholera, fueled by the unsanitary environment and absence of hospitals, have intensified the humanitarian situation (Hezam, 2023). As the humanitarian situation calls for response, the attention in Yemen does not solely focus on food insecurity but also on health care and shelter issues.

### **2.7.2 Humanitarian Aid in Yemen's Crisis**

The current wars in Yemeni society have exhibited the substantial challenges that exist for those providing assistance in war-affected regions. Almost seventy percent, over twenty-one million population, needs assistance hence food, health care and safe drinking water are the major interventions in Yemen (OCHA, 2023). It gets worse considering the fact that military led blockades, endless bureaucracies and unstable conditions hinder the delivery of relief materials. Despite the well intentions of many countries to assist, issues of aid being grabbed or misappropriated by armed factions do exist (Makara, 2023).

Yemen's heavy reliance on imported food (estimated to be nearly 90 percent of total food consumption) renders the country vulnerable to external shocks. Agencies such as WFP have adopted drastic measures to remedy such crisis by distributing in-kind and cash handouts. However, due to the prolonged duration of conflict, the focus now should be on strategies that will provide lasting solutions to the issues at hand rather than quick interventions. The experience of humanitarian assistance to Yemen emphasizes the need for engaging local partners. More and more often, the global beneficiaries' who's who realize that local civil society organizations enhance the delivery of services, particularly for hard-to-reach areas where international organizations are unable to operate smoothly. On the other hand, there are problems with such cooperation, like the possibility of succumbing to hegemonic political forces (Alqatabry & Butcher, 2020). Nevertheless, local organizations are still considered a valuable asset for the purposes of linking the international funding community with the appropriate recipient communities.

### **2.7.3 Aid Delivery Challenges in Yemen**

Yemen is facing a complex humanitarian crisis which is made worse by the providing of assistance in the country owing to multiple political, logistical and social factors.

- 1) **Logistical Issues:** critical infrastructure such as roads, bridges and even airports have come under destruction due to the conflict making the distribution of humanitarian assistance to far off places very challenging. Additionally, delays in

the provision of food and medical contents into these countries are incurred due to the blockages of the major ports. Moreover, the destruction of the energy and fuel generation systems in Yemen also restricts mobility and causes closure of some facilities like health services, markets, and water supplies scavenging (Hezam, 2023). Humanitarian agencies tend to use airlifts as well as local partnerships to overcome such challenges; however, logistical issues still remain a hindrance to effective aid delivery.

- 2) **Political Challenges:** Humanitarian aid in Yemen faces political and social challenges that further complicate its delivery. Politically, both the government and the Houthis have used aid as a means of pressure or reward, while militias have sometimes appropriated aid or sold supplies illegally on the market. Bureaucratic restrictions, such as travel permits, have also hampered organizations' work (Delgado et al., 2021; OCHA, 2023).
- 3) **Social Problems:** Socially, gender roles in traditional societies limit women's access to aid, and some families, particularly those in urban areas, are reluctant to receive aid due to the stigma associated with receiving it. Therefore, engaging community leaders is recommended to ensure that aid reaches all groups and reduce social stigma (Ayeb & Bush, 2019).

## 2.7. Previous Study

Previous studies have shown that humanitarian assistance, particularly food assistance, alleviates food insecurity in the short term but can reinforce dependency and weaken local production (Bailey & Hedlund, 2016). Subsequent research has confirmed that cash transfers are more sustainable in supporting local markets (Gentilini et al., 2021), and that combining food assistance, cash transfers, livelihood support, and community-based initiatives further improves food security (World Bank, 2020; Doustmohammadian et al., 2022). A review also concluded that the most successful interventions are those that take local context into account and involve beneficiaries in project design (Caroline & Kristina, 2022). This was confirmed by WFP (2021) in Yemen, where households receiving cash assistance achieved better dietary diversity than those relying on in-kind food. Freddy & Gupta (2018) highlighted the importance of transitioning from emergency relief to sustainability strategies. As for experiences from other countries, the Enfield (2018) review showed that cash transfers in South Sudan strengthened food security and markets, while the Syrian experience highlighted the importance of flexibility and the use of technology to reach besieged areas (InterAction, 2021). In Afghanistan, Beyene (2023) showed that

combining healthcare with food led to better nutritional outcomes, while Sassoon et al.'s (2020) study in Mali highlighted that engaging local leaders improves aid access and increases its effectiveness. In Ethiopia, Eruaga (2024) indicated that combining relief with agricultural training enhanced productivity and resilience, supporting the trend toward linking relief to long-term development.

## **2.8. Gaps in the Literature**

- 1. Longitudinal Studies on Aid Effectiveness:** The majority of the current literature deals with the short-term effects of humanitarian assistance projects. However, there are very few if any, studies which evaluated the long-term effects of humanitarian aid on food security in Yemen. It is noted by Caroline & Kristina, (2022) that it is important to understand how sustainable the aid intervention will be in the future in order to formulate approaches that will create independence from external aid. For example, knowing the patterns of aid and food security over time, especially in different aid regimes, and their correlation with local markets and livelihoods incorporation of cash or in-kind food provisions could also help to enhance the understanding of the context of the already existing literature.
- 2. Local Context and Cultural Sensitivity:** Although a number of researches recognize the role of context in most situations, few studies have been conducted to investigate the specific socio-cultural factors that help or hinder humanitarian assistance in Yemen. For example, gender, elder's roles, and attitudes towards the recipients of aid have rarely been discussed in empirical works (Ayeb & Bush, 2019). These factors must be taken into account when designing any intervention strategies to increase their chances of success. It is also important to do more work on the localized outcomes of aid interventions and the possible means through which humanitarian agencies can address cultural values in their work.
- 3. Assessment of Community Resilience:** There are some studies that explore resilience, yet there are no thorough evaluations that operationalize community resilience in regards to humanitarian assistance and food security in Yemen. Eruaga (2024) point out that while there is a natural urgency to provide humanitarian assistance, there is also a need to build up resilience. Still, there are few empirical studies that measure specific indicators of resilience and assess the effectiveness of interventions that aim at building resilience. In order to design and implementation, enhance future aid interventions, there is possibility of developing systems which measure community resilience in relation to existing conflicts and food insecurity.

4. **Comparative Studies with Other Conflict Zones:** While there are studies on humanitarian assistance and food security in the literature, there are few studies that apply or borrow comparative lessons from other regions that have experienced conflict. Insights from humanitarian responses in countries such as South Sudan, Syria, and Afghanistan can be useful when analyzing Yemen. Furthermore, comparative studies can illustrate the most effective practices and strategies that aid delivery and food security programs (Enfield, 2018). A thorough research that compares Yemen to other similar research contexts will be beneficial in identifying feasible solutions to food insecurity during protracted crises.
5. **Youth and Food Security:** There is a significant lack of scholarly work addressing the involvement of the youth in the context of food security and humanitarian issues in Yemen. Young people, especially in Yemen, are one of the demographics that suffer greatly from food insecurity. Their views and input about food security interventions, however, are rarely considered (Hezam, 2023). Research that encourages youth in food security programs, including as change agents, is important to improve such programming.

## 2.9. Framework of The Research

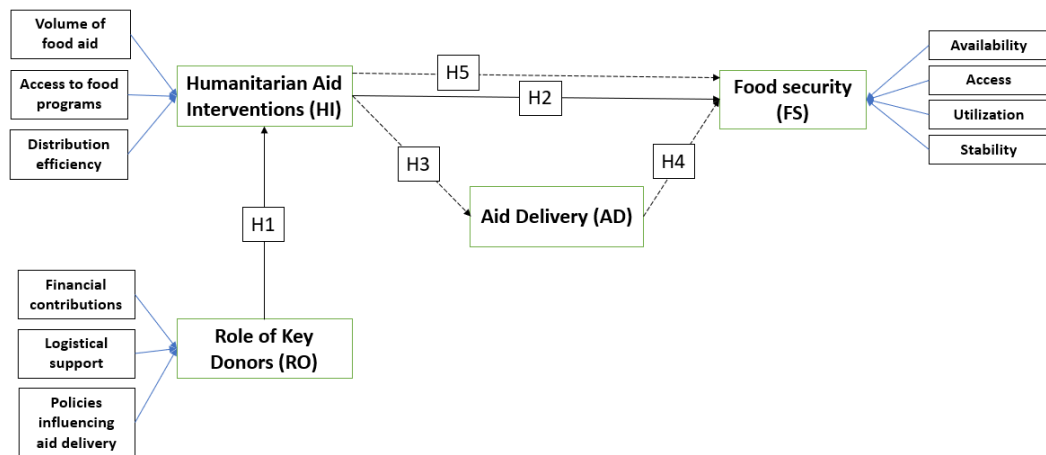
The theoretical framework for this study is based on the literature on humanitarian aid, its delivery mechanisms, and food security in conflict contexts, drawing on the work of Barrett (2010), Maxwell & Fitzpatrick (2019), FAO (2023), and WFP (2022). The framework conceptualizes the relationship between four key variables: donor roles (RO), humanitarian interventions (HI), aid delivery (AD), and food security (FS).

The framework includes structural and behavioral dimensions. Structurally, it explains that donor funding, strategic direction, and logistical resources determine the scale and scope of humanitarian interventions (Harvey & Bailey, 2015; OCHA, 2023). Behavioral, donor and implementer decisions, such as the identification of target areas, funding conditions, and the choice of distribution mechanisms, directly impact the sustainability of food security outcomes (Anderson et al., 2012; Mosel & Levine, 2014). The study's five hypotheses are:

- H1: Donor roles (RO) positively influence humanitarian interventions (HI), as stable and adequate funding has been shown to increase operational effectiveness.

- H2: Humanitarian interventions (HI) improve food security (FS), through modalities such as food assistance, cash transfers, and nutrition programs that address the four dimensions of food security.
- H3: Food security (FS) improves through aid delivery, as in Syria and Yemen, where aid has contributed to reducing hunger, improving nutrition, and strengthening resilience.
- H4: Donor roles (RO) indirectly influence food security (FS) through humanitarian interventions (HI), as demonstrated by the experiences of Somalia and South Sudan.
- H5: The relationship between humanitarian interventions (HI) and food security (FS) is mediated by aid delivery mechanisms (AD), where efficient overcoming of logistical constraints and security risks leads to aid reaching those in need, while obstacles lead to poor nutritional outcomes.

The framework also draws on the experiences of countries such as Somalia, South Sudan, and Syria, which highlight the importance of flexible financing, adaptive delivery systems, and community engagement to ensure aid effectiveness (FAO, 2023; OCHA, 2023). These relationships are presented in Figure (2.1), which illustrates the hypothetical pathways between donor roles, humanitarian interventions, aid delivery, and food security in the Yemen crisis.



**Figure 2. 1.** Conceptual Model of Humanitarian Aid and Food Security

**Source:** Adapted from FAO (2023), Maxwell & Fitzpatrick (2019), Harvey & Bailey (2015), Mosel & Levine (2014), and WFP (2022).

## CHAPTER III

### RESEARCH METHODOLOGY

#### Introduction

The purpose of this chapter is to provide the methodology that the researcher utilized in designing and implementing this study to best meet its aim by addressing its research questions accurately and, objectively. The researcher looked at food security in Yemen, one of the world's most dire food crisis. Yemen has been in the grip of a long-running and multi-faceted crisis, with conflict, political instability, and economic collapse combining to significantly hinder people's ability to make sufficient food. An estimated 17.4 million are hungry and many are on the brink of starvation, according to data released by the (WFP 2022). This framework is to determine the type and design of research, what population sample that will be taken, then what tools or data collection techniques that will be performed as well as using the type of statistical analysis to assess his results. As such, selecting the right approach is vital to ensuring that one produces results which can be trusted and generalized. This decision is taken based upon the nature of the research problem, the objectives of study, and the data to be collected. For these purposes, a methodological design was common which makes it possible to study the relationship between variables in an organised and systematic way (Pavón, 2007), in accordance with scientifically established standards of data collection and analysis whilst controlling parameters that influence results biasing. This chapter also explains the ethical considerations taken into account during the research, including ensuring confidentiality of information and obtaining participants' consent, as well as the rationale behind the selection of each research tool and procedure. This chapter thus forms the foundation upon which the reliability and objectivity of the results presented in subsequent chapters are based.

#### 3.1 Research Design

In this study, a quantitative approach was chosen because it is highly effective in examining how different factors are interrelated and testing mediating effects with high statistical confidence (Creswell & Creswell, 2018; Hayes, 2022). This method helped us systematically collect participants' views and experiences and enabled us to apply more sophisticated analysis techniques such as regression and mediation analysis. Although incorporating qualitative methods would have added richer insights to our findings, we

decided against it, primarily because collecting qualitative data in conflict zones is challenging (Johnson & Onwuegbuzie, 2004). This design allowed us to collect quantifiable quantitative data even in hard-to-reach areas, while taking into account important contextual factors such as security, economic, and environmental conditions. It also helped us better understand the determinants of food security in such challenging environments.

### 3.2 Instruments

The items were developed using prior research and literature as a guide (FAO, 2023; WFP, 2021). To guarantee its appropriateness, the questionnaire was subjected to a scientific review, which made it possible to gather precise and comparable data from donors, field workers, and beneficiaries. A more thorough examination of the factors influencing food security was made possible by the inclusion of conditional variables like security, economic, and environmental circumstances. This data provided a robust basis for statistical analysis and supported decision-making and policymaking in Yemen and similar conflict contexts, as shown in Table 3.1.

**Table 3. 1.** Questionnaire Variables and Dimensions

<b>Variable</b>	<b>Dimension</b>	<b>Number of Questions</b>
<b>Humanitarian Aid Interventions</b>	Volume of Food Aid	2
	Access to Food Programs	2
	Distribution Efficiency	2
<b>Role of Key Donors and International Organizations</b>	Financial Contributions	2
	Logistical Support	2
	Policies Influencing Aid Delivery	2
<b>Food Security Dimensions (FAO Framework)</b>	Availability	3
	Access	3
	Utilization	3
	Stability	3
<b>Aid Delivery</b>	Timeliness and Effectiveness of Aid Delivery	2
	Accessibility and Transparency	2
	Satisfaction and Coordination	2
<b>Total</b>	—	<b>39</b>

### **3.3 Research Population and Sampling**

This study sought to bring a balanced picture of the success of food aid programs in Yemen through the inclusion of three main groups: beneficiaries of aid, staff of humanitarian agencies, and staff of NGOs. Given the complexity of the crisis and the multiplicity of actors, a stratified random sampling method was used to ensure that each group has equal representation. The most noticeable organizations operating in the field were selected randomly, which allowed for the collection of diverse data that captures the opinions of both givers and recipients of aid. The overall sample amounted to 211 participants, a figure higher than the minimum required number of participants (150 participants) determined using Cohen's (1992) power analysis at a power of 0.80 and statistical significance ( $\alpha = 0.05$ ) for a medium effect ( $f^2 = 0.15$ ). This helped to enhance the generalizability of results and reduce standard errors. It was noted that 91% of the participants were male, which is reflective of the dominance of men in executive positions in humanitarian work in Yemen and identifies the need to improve gender balance in future studies.

### **3.4 Data Collection Methods**

Researchers used a five-point Likert scale to measure the perceptions of participants (Joshi et al., 2015), with an emphasis on question clarity, reduction of potential for bias, and data confidentiality. The questionnaire itself was short and straightforward and was tested on a small sample before wider circulation. Questionnaires were also disseminated through various channels, for example, direct handout at local events and workshops, post, and electronic media, allowing access to a larger and more diverse sample. Four weeks were allowed for response with occasional reminders to maximise the response rate. After collection, the data were entered into a secure database and double-verified for accuracy, with any sensitive information stripped to maintain the confidentiality of the participants. These processes served to attain believable data that reflects the reality and experience of those affected by the crisis, lending credibility to the results and research outcomes.

### **3.5 Data Analysis Techniques**

SPSS (version 24) was used with the PROCESS macro tool by Hayes (2022) to conduct the statistical analysis, aiming to test both direct and indirect effects (mediated effects). The analysis was conducted systematically to ensure transparency and robustness of the results. Descriptive statistics were first calculated to summarize the demographic characteristics of the participants and illustrate the distribution of responses to the questionnaire items. These statistics included means, standard deviations, frequencies, and

percentages, which helped paint a more accurate picture of the sample and the patterns associated with the variables. Correlation analysis was then conducted to examine the nature and strength of the relationship between the main variables and detect significant positive or negative correlations. Multiple regression models were then used to test the strength of the independent variables namely, the role of donors and international organizations (RO), humanitarian interventions (HI), and aid delivery challenges (AD) in explaining the dependent variable, food security benefits (FSB), according to the model:

$$FSB = \beta_0 + \beta_1RO + \beta_2HI + \beta_3AD + \varepsilon$$

Finally, a mediation analysis was conducted using PROCESS macro (Model 4) with bootstrapping (5,000 retests) to estimate indirect effects and obtain bias-corrected confidence intervals. This increased statistical power and overcame limitations of previous tests such as the Sobel test, enabling us to assess whether the effect of donor roles (RO) on food security benefits (FSB) is mediated by humanitarian intervention (HI), and whether HI, in turn, affects FSB via delivery challenges (AD). This integrated analytical approach allowed for a careful examination of the relationships between variables and a rigorous testing of mediation effects, enhancing the reliability and validity of the results.

### **3.6 Ethical Considerations**

During the research process, we made sure to follow stringent ethical guidelines to protect and respect all the participants as per international humanitarian and conflict research standards (UNHCR, 2023; WHO, 2022). Some of the most crucial ethical practices we followed are explained below:

- **Informed Consent:** Participants were provided with explicit information about the study goals, research techniques, and anticipated impacts. As a result of strongly variable literacy levels in Yemen, we collected informed consent mostly orally, accompanied by a brief summary in writing in Arabic. Participants needed to be assured that they fully understood their contribution towards the research and that non-participation would not affect the humanitarian aid they obtain.
- **Confidentiality:** We took care to protect the privacy of participant data. Individual information was deleted from the dataset, and all responses were safely stored in encrypted files where the research team was the only group with access. This was especially important given the politically sensitive environment.
- **Right to Withdraw:** The volunteers were informed of the possibility that they could withdraw from the study at any time without any negative impact. We made sure to

emphasize this during the process of consent, which gave all the volunteers a sense of security and mastery.

- Risk Mitigation: The questionnaire was designed to avoid sensitive or politically charged topics. Our enumerators were instructed on how to observe fatigue or unease and to stop or discontinue participation if needed.
- Cultural and Gender Sensitivity: Being aware that the Yemeni humanitarian community is largely male (with 91% of respondents being male), we adhered to culturally appropriate procedures during interviewing and surveying. In approaching female participants, we took care to provide for their privacy and comfort, being sensitive to cultural expectations.

Such ethical precautions played a critical role in establishing trust, ensuring participants' well-being, and maximizing the reliability and validity of the research findings.

### **3.7 Validity and Reliability**

The validity and reliability of the research findings were critically evaluated to ensure rigorous and credible outcomes.

- Validity: The questionnaire questions were carefully examined to ensure they were consistent with the study objectives and their implications for the topic of health and nutrition effectiveness. They were also revised by field experts, and the options and simplicity were determined, including their validity and comprehensiveness of the key aspects.
- Reliability: Before data collection, the questionnaire was reliably tested on 32 participants representing the selected demographic. This enabled them to obtain their opinions on modifications to some Lynx vehicles. Volkswagen's Cronbach's Coefficient of Inner Leg Cream was also used, with a target of  $\geq 0.70$  for good confidence, meaning that each questionnaire measured itself carefully.
- Dealing with Key Companies: A statistical examination was conducted to identify outliers and anomalies, with observations recorded and results interpreted carefully. These measures strengthened our confidence in the reliability of the data collected and the validity of our analysis and research objectives.

## CHAPTER IV

### FINDINGS AND ANALYSIS

#### Introduction

In order to shed light on the nature of the relationship between the primary study variables, this chapter examines the data gathered from respondents. To better understand how donors (RO), humanitarian interventions (HI), and aid distribution mechanisms (AD) affect food security (FS), statistical analyses were performed using SPSS and SmartPLS. The results are presented in detail in this chapter, along with their direct and indirect effects on Yemen's humanitarian situation. To ascertain whether humanitarian interventions and distribution methods increase donors' influence on enhancing food security, as well as to confirm the strength of the relationships between the variables, the research hypotheses are put to the test.

#### 4.1 Descriptive Statistics

##### The Demographic Profile of Respondents

The demographic in Table 4.1 of the 211 respondents offers valuable insights into the composition of the sample population regarding their gender, education, employment status, income, marital status, geographic distribution, family size, and reliance on food aid.

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

<b>Demographic Category</b>	<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
<b>Gender</b>	Male	192	91%
	Female	19	9%
	<b>Total</b>	211	100%
<b>Education Level</b>	Secondary Education	32	15%
	Undergraduate Degree	156	74%
	Postgraduate Degree	23	11%
	<b>Total</b>	211	100%
<b>Job Status</b>	Student	51	24%
	Unemployed	32	15%
	Private Sector Employee	106	50%
	Public Sector Employee	4	2%
	NGO Employee	18	9%
	<b>Total</b>	211	100%
<b>Income</b>	Less than \$100	57	27%
	Between \$100 - \$300	53	25%
	Between \$300 - \$500	51	24%

	More than \$500	50	24%
	<b>Total</b>	211	100%
<b>Marital Status</b>	Single	91	43%
	Married	120	57%
	<b>Total</b>	211	100%
<b>Geographical Location</b>	Ibb	32	15%
	Taiz	27	13%
	Amran	23	11%
	Marib	21	10%
	Sanaa	18	9%
	Hadramout	18	9%
	Al-Dhale	15	7%
	Aden	13	6%
	Hajjah	12	6%
	Al Hudaydah	7	3%
	Shabwah	6	3%
	Other Governorates	19	9%
	<b>Total</b>	211	100%
<b>Family Size</b>	3 - 5 members	82	39%
	5 - 8 members	55	26%
	Less than 3 members	27	13%
	More than 8 members	47	22%
	<b>Total</b>	211	100%
<b>Receiving Food Aid</b>	No	141	67%
	Yes	70	33%
	<b>Total</b>	211	100%
<b>Duration of Aid Received</b>	Less than 6 months	23	11%
	More than a year	29	14%
	Between 6 months and a year	35	17%
	Did not receive any food aid	124	59%
	<b>Total</b>	211	100%

The study reveals that the majority of respondents in Yemen are male, with 91% identifying as male and only 9% as female. The education level among respondents is relatively high, with 74% holding an undergraduate degree. This education level could influence the way respondents perceive and respond to issues related to food security and humanitarian aid. The employment status of respondents reveals a broad spectrum of economic engagement, with 50% employed in the private sector, 24% students, 15% unemployed, 9% working in NGOs, and 2% in the public sector.

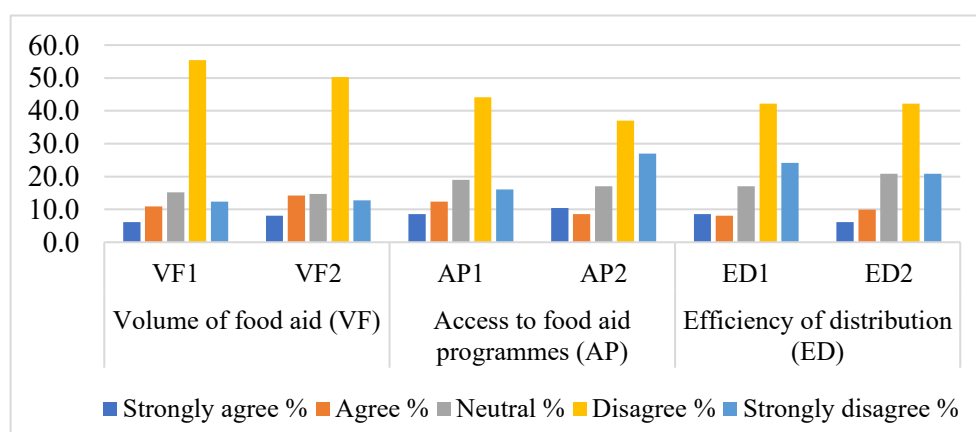
The income distribution among respondents is varied, reflecting different levels of economic stability. About 27% report earning less than \$100, while 25% earn between \$100 and \$300. Another 24% fall within the \$300 to \$500 range, and the remaining 24% earn more than \$500. Marital status consists of 57% married individuals and 43% single, potentially influencing household food needs and attitudes towards aid.

The geographic location of respondents reflects the widespread impact of food insecurity across Yemen and the varied regional contexts in which humanitarian aid is delivered. Family size varies among respondents, suggesting different levels of household food requirements and potential dependencies on aid. A majority of respondents do not receive food aid, while 33% rely on it. The duration of aid received varies, with 11% receiving aid for less than six months, 17% between six months and a year, and 14% for over a year.

**Table 4. 2.** Humanitarian Interventions in Yemen: Food Aid Volume, Access, and Efficiency

Humanitarian interventions (HI)		Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
		F	%	F	%	F	%	F	%	F	%
Volume of food aid (VF)	<b>VF1</b>	13	6.2	23	10.9	32	15.2	117	55.5	26	12.3
	<b>VF2</b>	17	8.1	30	14.2	31	14.7	106	50.2	27	12.8
Access to food aid programs (AP)	<b>AP1</b>	18	8.5	26	12.3	40	19.0	93	44.1	34	16.1
	<b>AP2</b>	22	10.4	18	8.5	36	17.1	78	37.0	57	27.0
Efficiency of distribution (ED)	<b>ED1</b>	18	8.5	17	8.1	36	17.1	89	42.2	51	24.2
	<b>ED2</b>	13	6.2	21	10.0	44	20.9	89	42.2	44	20.9

Table 4.2 and Figure 4.1 show key information about how well humanitarian efforts are working in Yemen, especially when it comes to food aid. Many people were not happy with the amount of food they received. For example, 41.8% said they didn't think it was enough, and 12.3% strongly disagreed, showing that the food aid is not meeting everyone's needs. Also, people have different opinions about the quality of the food. While 29.6% felt the food was good enough, 24.3% disagreed, pointing out that there are still issues with the nutritional value of the aid.



**Figure 4. 1.** The Levels of Humanitarian Interventions (HI)

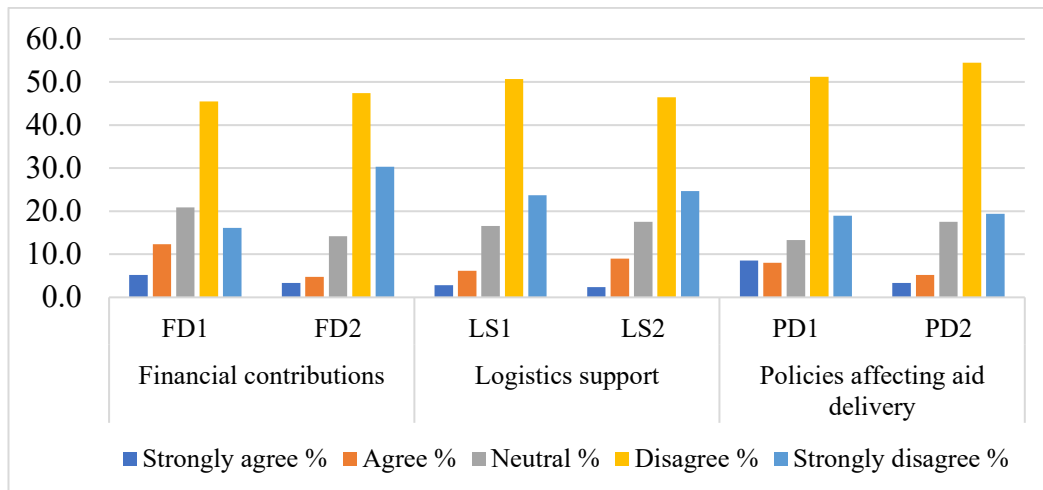
People had different opinions about food aid programs. About 33.2% thought that everyone in different areas gets equal help, but 24.3% disagreed, showing that some places might not get the same amount of help. Also, when asked about ways to check if food is being given correctly during times of hunger, 28.7% said these ways aren't very good, meaning there might be problems in the system that could slow down or mess up the help people need when they don't have enough food. When it comes to how well the distribution process works, many people are doubtful. A large number of people, 30.2%, said they don't think the distribution is efficient and reduces waste. Another 23.1% strongly disagreed. This worry needs quick action to make the distribution better. On the other hand, people had a more positive view of how well the distribution system can handle new problems. 46.3% agreed that it can adapt well. This good response shows that while there are issues, there could be ways to make the aid system more responsive to changing needs.

Overall, these results highlight important areas that need to be improved in the humanitarian response to food security issues in Yemen. This includes providing more and better aid, ensuring fair access for everyone, having better ways to check if things are working well, and making the distribution of aid more efficient.

**Table 4. 3.** Role of Donors and International Organizations

Role of donors and international organizations (RO)		Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
		F	%	F	%	F	%	F	%	F	%
Financial contributions	<b>FD1</b>	11	5.2	26	12.3	44	20.9	96	45.5	34	16.1
	<b>FD2</b>	7	3.3	10	4.7	30	14.2	100	47.4	64	30.3
Logistics support	<b>LS1</b>	6	2.8	13	6.2	35	16.6	107	50.7	50	23.7
	<b>LS2</b>	5	2.4	19	9.0	37	17.5	98	46.4	52	24.6
Policies affecting aid delivery	<b>PD1</b>	18	8.5	17	8.1	28	13.3	108	51.2	40	19.0
	<b>PD2</b>	7	3.3	11	5.2	37	17.5	115	54.5	41	19.4

Table 4.3 and Figure 4.2 critically analyze how people view the roles of donors and international organizations in humanitarian work, especially when it comes to financial support, logistical help, and policies that impact aid delivery in Yemen.



**Figure 4. 2.** The Levels of Role of donors and international organizations (RO)

Beginning with financial donations, the responses show significant worries about how much and how well they work. A large group of people, 45.5%, didn't think the money given by donors was enough, and 30.3% really didn't think so. This shows that many feel the current donations aren't enough to help those in need. On the other hand, only 5.2% strongly felt the donations were enough, which shows a big difference in opinions and points to the need for more money to help with humanitarian efforts.

Logistics support received mixed reactions, showing another level of difficulty in the aid process. Only a small group (12.5%) felt that the logistics were good, while a large number (41.4%) said they were not good, and 30.4% strongly disagreed, pointing to major problems in how aid is delivered. These responses show that logistical issues can slow down help for people in need, so improvements are needed to make sure support arrives quickly and efficiently.

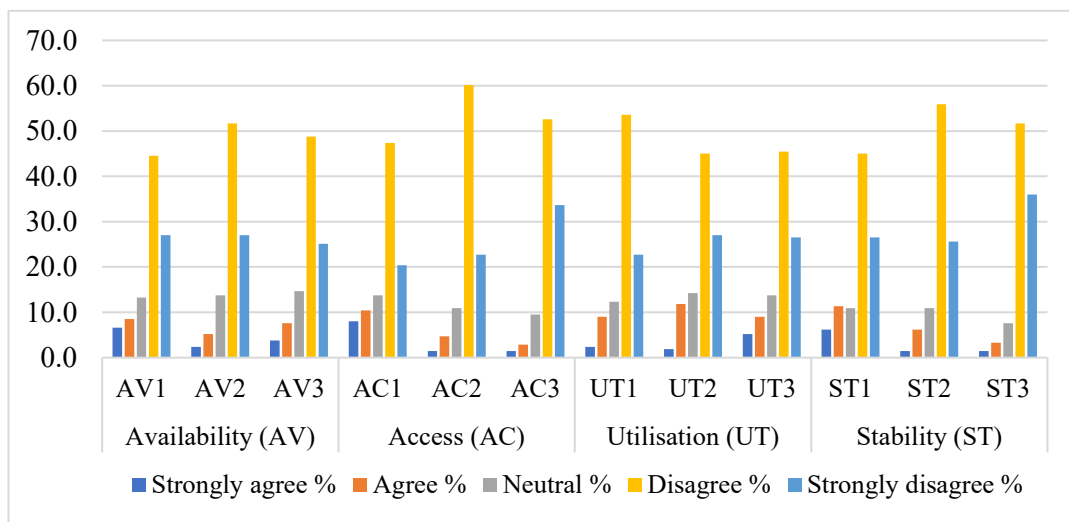
The table also shows people's thoughts on rules that affect how help is given. Many people, 36.6%, didn't like the idea that these rules work well, and 24.8% really didn't like it. This makes people think that the current rules might not be good enough for giving help, and it worries them that these rules could actually make things harder for people trying to help. Only a few people, 6.1%, really thought the rules were good for giving help.

Overall, the results highlight important areas where donors and international groups need to improve. The main idea is that there is a need for more money, better ways to get help to people, and more effective plans to make humanitarian efforts work better. Focusing on these areas is very important for making aid more effective in Yemen and making sure that people in need get the help they require.

**Table 4. 4.** Aid Delivery: Access, Corruption, and Supply Chain Issues

Aid Delivery (AD)		Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
		F	%	F	%	F	%	F	%	F	%
Access barriers (AB)	<b>AB1</b>	2	0.9	12	5.7	26	12.3	112	53.1	59	28.0
	<b>AB2</b>	0	0	11	5.2	24	11.4	116	55.0	60	28.4
Corruption (CR)	<b>CR1</b>	3	1.4	10	4.7	23	10.9	105	49.8	70	33.2
	<b>CR2</b>	3	1.4	16	7.6	34	16.1	102	48.3	56	26.5
Supply chain disruptions (SD)	<b>SD1</b>	1	0.5	7	3.3	31	14.7	106	50.2	66	31.3
	<b>SD2</b>	2	0.9	13	6.2	32	15.2	106	50.2	58	27.5

Table 4.4 and Figure 4.3 provide important information about challenges faced during aid delivery, such as difficulties in accessing areas, corruption, and problems in the supply chain. These issues greatly affect how well humanitarian aid works in Yemen.



**Figure 4. 3.** The Levels of Food security

When it comes to getting help to those who need it, many people who work in aid organizations see big problems. Only 7.6% of them think it's easy to reach people who need help, while 53.1% say it's not easy, and 28.0% say it's very hard. This shows that there are many challenges, like problems with moving things around and political issues, that make it tough for aid groups to help people in need.

Another big issue is corruption. 46.3% of those who answered the survey don't think that aid is managed well. Only 3.4% strongly believe that corruption is under control, while 27.5% strongly disagree. These numbers show that many people are worried about how aid is handled, and it's important to make sure everything is transparent and accountable so that help gets to the right people without any problems.

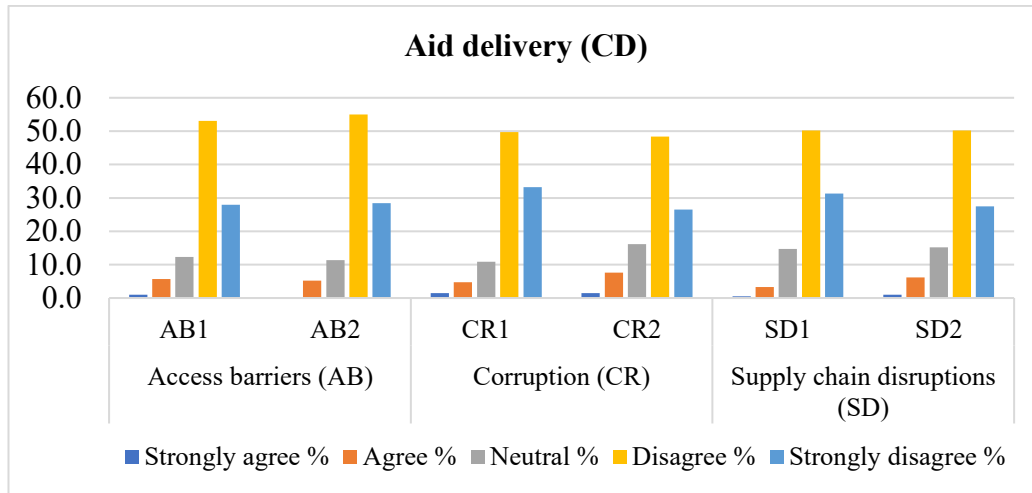
Supply chain problems are a big challenge, as shown by the answers to this question. While 29.0% think supply chain issues are handled well, 25.0% strongly disagree, showing that many are worried about how reliable and efficient supply chains are. This means that any problems in the supply chain can badly affect how quickly and well aid gets to people, which is very important in emergencies.

Overall, the results show that getting aid to people is difficult because of barriers to access, corruption, and supply chain problems. Fixing these issues is important to make sure aid works better in Yemen, so that help gets to people quickly and reaches those who need it most. The data shows that changes are needed to improve access, honesty, and how well the aid delivery process works.

**Table 4. 5. Food Security Factors: Availability, Access, Utilization, and Stability**

Food security		F	%	F	%	F	%	F	%	F	%
		Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
Availability (AV)	AV1	14	6.6	18	8.5	28	13.3	94	44.5	57	27.0
	AV2	5	2.4	11	5.2	29	13.7	109	51.7	57	27.0
	AV3	8	3.8	16	7.6	31	14.7	103	48.8	53	25.1
Access (AC)	AC1	17	8.1	22	10.4	29	13.7	100	47.4	43	20.4
	AC2	3	1.4	10	4.7	23	10.9	127	60.2	48	22.7
	AC3	3	1.4	6	2.8	20	9.5	111	52.6	71	33.6
Utilization (UT)	UT1	5	2.4	19	9.0	26	12.3	113	53.6	48	22.7
	UT2	4	1.9	25	11.8	30	14.2	95	45.0	57	27.0
	UT3	11	5.2	19	9.0	29	13.7	96	45.5	56	26.5
Stability (ST)	ST1	13	6.2	24	11.4	23	10.9	95	45.0	56	26.5
	ST2	3	1.4	13	6.2	23	10.9	118	55.9	54	25.6
	ST3	3	1.4	7	3.3	16	7.6	109	51.7	76	36.0

Table 4.5 and Figure 4.4 look at important parts of food security in Yemen, such as having enough food, being able to get it, using it well, and having it consistently. The answers from the survey give useful information about how people feel about these important areas of food security.



**Figure 4. 4.** The Levels of Aid Delivery (AD)

Starting with the availability of food, the responses show a worrying pattern. For example, only a small number (13.9%) strongly agreed that food is easily available, while a large part (51.7%) disagreed, and 27.0% strongly disagreed. This shows that many people feel there isn't enough food, which means that having enough food is still a big problem for the population.

The issue of access to food also shows challenges people face in getting food. While 26.8% of respondents agreed that they can get enough food, 38.8% disagreed, and 16.6% strongly disagreed. These numbers show that, even though some people can get food, many still have trouble getting enough nutrition. This difference suggests that we need better ways to help people, especially those who are vulnerable, get enough food.

The way food is used, which includes how good and suitable it is, has different opinions. For instance, 45.9% of people think the food meets their dietary needs, but 20.4% disagree. This shows that while some feel their nutrition is okay, there are still big worries about the variety and quality of food available.

Lastly, the stability of food security was also a concern. A large 55.8% of people disagreed that food security is stable, with 37.8% strongly agreeing. This strong response suggests that many feel there is instability in their food situation, meaning there are changes in how easy it is to get food and the overall conditions affecting food supply.

Overall, the information in the table shows significant problems in food security, including issues with food supply, access, use, and stability. The data emphasizes the immediate need for specific actions to increase food supply, improve access for those in need, ensure the use of good quality food, and maintain stability in food security. Focusing

on these areas is crucial for building resilience and improving nutrition for the people in Yemen.

**Table 4. 6.** Descriptive Statistics of Variables

Variables and Dimensions		Descriptive Statistics	
		Mean	Std. Deviation
Humanitarian interventions (HI)			
Volume of food aid (VF)	VF1	2.03	1.01
	VF2	2.05	1.07
Access to food aid programs (AP)	AP1	2.18	1.08
	AP2	2.15	1.14
Efficiency of distribution (ED)	ED1	2.18	1.05
	ED2	2.36	1.06
Role of donors and international organizations (RO)			
Financial contributions	FD1	2.20	1.10
	FD2	2.30	1.06
Logistics support	LS1	2.36	1.08
	LS2	2.41	1.03
Policies affecting aid delivery	PD1	2.17	1.07
	PD2	2.25	1.10
Food security: Dimensions of food security (FAO framework) (FS)			
Availability (AV)	AV1	2.13	1.02
	AV2	2.01	1.03
	AV3	2.13	1.01
Access (AC)	AC1	2.18	1.04
	AC2	1.79	1.00
	AC3	1.68	0.96
Utilization (UT)	UT1	2.10	0.97
	UT2	2.09	1.02
	UT3	2.17	1.03
Stability (ST)	ST1	2.14	1.02
	ST2	1.82	1.04
	ST3	1.58	0.95
Aid Delivery (AD)			
Access barriers (AB)	AB1	1.68	0.92
	AB2	1.63	0.88
Corruption (CR)	CR1	1.55	0.91
	CR2	1.69	0.93
Supply chain disruptions (SD)	SD1	1.51	0.89
	SD2	1.63	0.91

Table 4.6 presents descriptive statistics that reflect key findings from the survey regarding humanitarian interventions, the role of donors and international organizations, food security dimensions (based on the FAO framework), and the effectiveness of aid delivery. The interpretation is based on the average scores and standard deviations, where lower mean values indicate more severe challenges or dissatisfaction with the item in question.

- Humanitarian Aid: The average scores related to the volume of food aid (VF1 = 2.03; VF2 = 2.05) suggest a high level of dissatisfaction, confirming that most respondents found the aid insufficient. Access to food aid programs (AP1 = 2.18; AP2 = 2.15; average  $\approx$  2.17) was also rated low, indicating concerns over fairness and inclusivity. Similarly, the efficiency of distribution (ED1 = 2.18; ED2 = 2.36; average  $\approx$  2.27) reflects perceived delays and logistical weaknesses in delivery.
- Donors and International Organizations: The results show that financial contributions (FD1 = 2.20; FD2 = 2.30) highlight perceptions of inadequate or misaligned funding. Logistical support (LS1 = 2.36; LS2 = 2.41) and policy alignment (PD1 = 2.17; PD2 = 2.25) were also evaluated critically, implying that international responses were seen as poorly coordinated and not fully adapted to the local context.
- Food Security Dimensions (FAO Framework): The availability dimension (AV1 = 2.13; AV2 = 2.01; AV3 = 2.13; average  $\approx$  2.09) confirms insufficient local production and access to imports. The access dimension scored even lower (AC1 = 2.18; AC2 = 1.79; AC3 = 1.68; average  $\approx$  1.88), especially regarding affordability under inflation pressures. Utilization scores (UT1 = 2.10; UT2 = 2.09; UT3 = 2.17; average  $\approx$  2.12) reflect nutritional concerns and cultural mismatch of available aid. Stability was the most critically rated dimension, with (ST1 = 2.14; ST2 = 1.82; ST3 = 1.58; average  $\approx$  1.85), underscoring how conflict and disruption continue to destabilize food systems.
- Aid Delivery: This remains the most problematic area. Access barriers (AB1 = 1.68; AB2 = 1.63), corruption (CR1 = 1.55; CR2 = 1.69), and supply chain disruptions (SD1 = 1.51; SD2 = 1.63) scored below 2.0, reflecting deep dissatisfaction, widespread inefficiencies, and potential systemic failures in reaching intended beneficiaries.

In summary, the findings reveal widespread concerns across all domains, especially in areas related to aid access, corruption, and food stability. The lowest mean scores were consistently observed in the aid delivery and food security dimensions, reinforcing the need for urgent, strategic reforms in humanitarian operations and policy coordination in Yemen. These findings are critical for informing more responsive, transparent, and effective aid strategies in conflict-affected contexts.

## 4.2 Reliability and Validity Testing

The study presents the findings from a factor analysis that was done to confirm the connections between different variables linked to humanitarian aid, food security, and aid delivery, as shown in Table 4.7. This analysis helps find the main factors that explain the

differences in the data, making it easier for researchers to see how various indicators are related.

**Table 4. 7.** Factor Analysis of Dimensions of Variables

Variables and Indicators	Factor Analysis				
	Instruments	HI	RO	FS	AD
Humanitarian interventions (HI)					
Volume of food aid (VF)	VF1	.883**			
	VF2	.832**			
Access to food aid programs (AP)	AP1	.869**			
	AP2	.844**			
Efficiency of distribution (ED)	ED1	.908**			
	ED2	.868**			
Role of donors and international organizations (RO)			TRO		
Financial contributions (FD)	FD1		.812**		
	FD2		.772**		
Logistics support (LS)	LS1		.838**		
	LS2		.659**		
Policies affecting aid delivery (PD)	PD1		.834**		
	PD2		.667**		
Dimensions of food security (FS)				TFS	
Availability (AV)	AV1			.746**	
	AV2			.616**	
	AV3			.720**	
Access (AC)	AC1			.669**	
	AC2			.611**	
	AC3			.691**	
Utilization (UT)	UT1			.726**	
	UT2			.778**	
	UT3			.787**	
Stability (ST)	ST1			.798**	
	ST2			.661**	
	ST3			.696**	
Personal experience of food security (PE)	PE1			.648**	
	PE2			.614**	
	PE3			.701**	
Aid delivery					TAD
Access barriers (AB)	AB1				.808**
	AB2				.799**
Corruption (CR)	CR1				.745**
	CR2				.723**
Supply chain disruptions (SD)	SD1				.762**
	SD2				.642**

The results of the factor analysis revealed a set of significant relationships between the study's main variables. In humanitarian interventions, indicators of food aid volume (VF1, VF2) were associated with access to their programs (AP1, AP2), indicating that improving one aspect directly reinforces the other. Regarding the role of donors and

international organizations, indicators related to financial contributions (FD1, FD2) and logistical support (LS1, LS2) were clustered together, demonstrating that adequate funding is essential for strengthening logistical capacities and ensuring effective aid delivery. Regarding the dimensions of food security, clear correlations emerged between indicators of availability (AV1, AV2, AV3), access (AC1, AC2), utilization (UT1, UT2), and stability (ST1, ST2). Access and utilization are directly affected by food availability, while barriers to access (AB1, AB2) lead to a decline in food security overall. Finally, the aid delivery findings highlighted that corruption (CR1, CR2) and supply chain disruptions (SD1, SD2) constitute two major constraints, with high levels of both being associated with lower distribution efficiency. Overall, these findings reflect the interconnectedness of humanitarian interventions, donor roles, food security dimensions, and aid delivery factors, highlighting the need for focused strategies that enhance logistical support through funding and mitigate access barriers to maximize the effectiveness of humanitarian aid and improve food security outcomes in Yemen.

**Table 4. 8.** Reliability Statistics for Survey Constructs

<b>Variables</b>	<b>Cronbach's Alpha</b>	<b>No of Items</b>
Humanitarian interventions (HI)	0.933	6
Role of donors and international organizations (RO)	0.858	6
Aid delivery	0.838	6
Dimensions of food security (FS)	0.901	12

Table 4.8 is presenting the reliability of the measurement instruments used in this study was assessed through Cronbach's Alpha, a statistical measure that evaluates the internal consistency of a set of items.

### **4.3 Result of Hypotheses Testing**

Predicting Humanitarian Interventions (HI) Using the Role of Donors and International Organizations (RO) A regression analysis was conducted to determine if the role of donors and international organizations (TRO) significantly predicts the level of humanitarian interventions (THI) in the context of Yemen. The results are summarized in Table 4.9.

**Table 4. 9.** Summary of Regression Analysis for Predicting THI Using TRO

<b>Model Summary</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>	
Model 1	0.807	0.652	0.65	3.523	
<b>ANOVA</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	4857.861	1	4857.861	391.429	0.000
Residual	2593.808	209	12.411		
Total	7451.668	210			
<b>Coefficients</b>	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>
Constant	-2.249	1.219		-1.845	0.036
TRO	1.043	0.053	0.807	19.785	0.000

- **Model Summary:** The model indicates a strong positive relationship between TRO and THI, with a correlation coefficient  $R=0.807$ , suggesting that TRO is highly correlated with THI. The  $R^2$  value is 0.652, meaning that TRO explains approximately 65.2% of the variance in THI. The adjusted  $R^2$  value of 0.65 confirms that this model provides a strong fit, with a standard error of the estimate of 3.523.
- **Analysis of Variance (ANOVA):** The ANOVA results demonstrate that the model is statistically significant,  $F(1,209)=391.429$ ,  $p<0.001$ . This high F-value and significant p-value indicate that the model provides a good fit for the data, and TRO is a significant predictor of THI.
- **Coefficients:** The unstandardized coefficient (B) for TRO is 1.043, with a standard error of 0.053. The corresponding t-value for TRO is 19.785, which is statistically significant at  $p<0.001$ , indicating a strong positive influence of TRO on THI. The standardized coefficient (Beta) for TRO is 0.807, highlighting that an increase in the role of donors and international organizations strongly contributes to an increase in humanitarian interventions.
- **The constant (intercept)** has a coefficient of -2.249 with a standard error of 1.219 and is statistically significant at  $p=0.036$ . This suggests that when TRO is zero, the predicted value of THI would be slightly negative, though in a practical context, this is less relevant given the strong positive impact of TRO.

**Interpretation:** The findings suggest that the role of donors and international organizations plays a significant and positive role in enhancing humanitarian interventions in Yemen. The high explanatory power of the model implies that effective donor support

and international involvement are critical drivers for humanitarian initiatives, potentially leading to better support for those in need within conflict-affected regions.

### **Predicting Dimensions of Food Security (FS) Using Humanitarian Interventions (HI) and Aid Delivery (TAD)**

A multiple regression analysis was conducted to evaluate the impact of humanitarian interventions (HI) and Aid Delivery (TAD) on various dimensions of food security (FS) in Yemen. The results are summarized in Table 4.10.

Model Summary: The model shows a strong positive relationship between the predictors (HI and TAD) and the outcome variable (FS), with a correlation coefficient  $R=0.855$ . The  $R^2$  value is 0.731, meaning that 73.1% of the variance in food security can be explained by HI and TAD together. The adjusted  $R^2$  of 0.729 supports the model's robustness, with a standard error of the estimate at 5.139.

**Table 4. 10.** Summary of Regression Analysis for Predicting TFS Using THI and TAD

<b>Model Summary</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>	
Model 1	0.855	0.731	0.729	5.139	
<b>ANOVA</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	14952.449	2	7476.225	283.126	0.000
Residual	5492.451	208	26.406		
Total	20444.9	210			
<b>Coefficients</b>	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>
Constant	8.42	2.359		3.569	0.000
THI	0.966	0.063	0.583	15.377	0.000
TAD	1.214	0.099	0.466	12.279	0.000

- Analysis of Variance (ANOVA): The ANOVA results indicate that the model is statistically significant,  $F(2,208) = 283.126$ ,  $p < 0.001$ . This high F-value and significant p-value confirm that the model effectively explains variations in food security, underscoring the substantial influence of both HI and TAD on food security dimensions.
- Coefficients: The unstandardized coefficients (B) for HI and TAD are 0.966 and 1.214, respectively, both statistically significant with  $p < 0.001$ . This shows that both HI and TAD have positive, significant impacts on food security. The standardized coefficients (Beta) reveal that HI has a Beta of 0.583, indicating a moderate contribution to the

model, while TAD has a Beta of 0.466, showing it also significantly contributes, albeit slightly less than HI.

- The constant (intercept) is 8.42, with a standard error of 2.359, and is statistically significant at  $p=0.000$ . This constant represents the baseline level of food security when HI and TAD are zero, though its practical interpretation is minimal as the focus is primarily on the predictors' effects.

Interpretation The findings suggest that both humanitarian interventions and the management of Aid Delivery are essential in enhancing food security dimensions in Yemen. The model's high explanatory power underscores the importance of these factors in addressing food security. Effective humanitarian interventions and strategic handling of delivery challenges can substantially improve food security outcomes in conflict-affected areas. These results highlight the need for integrated strategies that prioritize direct interventions as well as the logistical and operational aspects of aid delivery.

#### **Indirect Impact of the Role of Donors and International Organizations (RO) on Food Security (FS) Through Humanitarian Interventions (HI)**

In the Table 4.11 is analysis examines the direct and indirect effects of the role of donors and international organizations (RO) on food security (FS), with humanitarian interventions (HI) acting as a mediating variable.

**Table 4. 11.** Indirect impact of RO on FS through HI

<b>Relationship</b>	<b>Effect</b>	<b>SE</b>	<b>t</b>	<b>p</b>	<b>LLCI</b>	<b>ULCI</b>
<b>OUTCOME: THI</b>						
Constant	-2.249	1.219	-1.845	0.066	-4.651	0.154
TRO → THI	1.043	0.053	19.785	0.000	0.939	1.147
<b>OUTCOME: TFS</b>						
Constant	27.259	2.293	11.888	0.000	22.739	31.780
Direct Effect of TRO on TFS	0.556	0.167	3.333	0.001	0.227	0.885
Effect of THI (Mediator) on TFS	0.866	0.129	6.707	0.000	0.611	1.121
<b>Indirect Effect of TRO on TFS via THI</b>	<b>Effect</b>	<b>BootSE</b>	<b>BootLLCI</b>	<b>BootULCI</b>		
TRO → THI → TFS	0.9032	0.1572	0.6121	1.2355		

#### **Part 1: Outcome - Humanitarian Interventions (HI):**

- The first part of the analysis assesses the impact of RO on HI. The coefficient for RO ( $\beta=1.043$ ,  $p < 0.001$ ) is positive and highly significant, indicating that RO has a substantial positive influence on humanitarian

interventions. For each unit increase in RO, humanitarian interventions increase by approximately 1.043 units. This strong and significant relationship suggests that as the role of donors and international organizations strengthens, the scale or effectiveness of humanitarian interventions also increases, highlighting the critical role of these organizations in mobilizing and supporting humanitarian activities.

**Part 2: Outcome - Food Security (FS): The second part of the analysis focuses on the direct and indirect impacts of RO on food security (FS):**

- Constant: The constant value for FS is 27.259, which represents the baseline food security level when all predictors (RO and HI) are zero.
- Direct Effect of RO on FS: The direct effect of RO on FS is positive and significant ( $\beta = 0.556$ ,  $p = 0.001$ ). This suggests that, independently of HI, RO has a direct and positive impact on food security. For every one-unit increase in RO, food security improves by 0.556 units, emphasizing the direct role of donor involvement and support in enhancing food security dimensions.
- Effect of HI on FS (Mediator): The impact of HI on FS is also significant and positive ( $\beta = 0.866$ ,  $p < 0.001$ ), indicating that HI significantly contributes to food security. For every additional unit of HI, FS improves by approximately 0.866 units, underscoring the effectiveness of humanitarian interventions in directly bolstering food security outcomes.
- Indirect Effect of RO on FS through HI: The indirect effect of RO on FS via HI is estimated at 0.9032, with a bootstrapped standard error (BootSE) of 0.1572 and a confidence interval (BootLLCI = 0.6121, BootULCI = 1.2355) that does not cross zero. This indirect effect is significant, indicating that a substantial portion of the impact of RO on FS operates through HI. This mediated pathway suggests that as RO improves, it enhances HI, which in turn positively impacts food security. The indirect effect value (0.9032) implies that a substantial portion of the influence of RO on FS is channeled through humanitarian interventions, highlighting the pivotal mediating role of HI.

Interpretation: Overall, this analysis demonstrates that both direct and indirect effects of RO significantly contribute to enhancing food security. While RO has a direct positive effect on FS, its impact is further amplified through humanitarian interventions, indicating that a strong RO indirectly improves food security by enabling and intensifying humanitarian efforts. These findings underscore the importance of donor support and organizational involvement in improving food security, not only through direct contributions but also by facilitating effective humanitarian interventions.

**Indirect Impact of Humanitarian Interventions (HI) on Food Security (FS) Through Aid Delivery (AD)**

In the Table 4.12 is analysis examines the direct and indirect effects of humanitarian interventions (HI) on the dimensions of food security (FS), with Aid Delivery (AD) acting as a mediating variable.

**Table 4. 12.** Indirect Impact of HI on FS through AD

Relationship	Effect	SE	t	p	LLCI	ULCI
<b>OUTCOME: TAD</b>						
Constant	19.779	0.925	21.395	0.000	17.957	21.602
THI → TAD	0.204	0.042	4.888	0.000	0.122	0.286
<b>OUTCOME: TFS</b>						
Constant	8.420	2.359	3.569	0.000	3.769	13.072
Direct Effect of THI on TFS	0.966	0.063	15.377	0.000	0.842	1.090
Effect of TAD (Mediator) on TFS	1.214	0.099	12.279	0.000	1.019	1.408
<b>Indirect Effect of THI on TFS via TAD</b>	<b>Effect</b>	<b>BootSE</b>	<b>BootLLCI</b>	<b>BootULCI</b>		
THI → TAD → TFS	0.247	0.072	0.123	0.402		

**Part 1: Outcome - Aid Delivery (AD): The first part of the analysis assesses the effect of HI on AD:**

- Constant: The constant value for AD is 19.779, which represents the baseline level of Aid Delivery when HI is zero.
- Effect of HI on AD: The coefficient for HI ( $\beta$  = 0.204,  $p < 0.001$ ) is positive and statistically significant. This indicates that humanitarian interventions are associated with an increase in Aid Delivery. For every unit increase in HI, Aid Delivery increase by approximately 0.204 units. This may reflect the complexities and logistical issues that arise as humanitarian interventions scale up, potentially leading to more obstacles in the delivery of aid.

**Part 2: Outcome - Dimensions of Food Security (FS): The second part of the analysis examines the effects of HI and AD on FS:**

- Constant: The constant value for FS is 8.420, indicating the baseline level of food security when both HI and AD are zero.

- Direct Effect of HI on FS: The direct effect of HI on FS is positive and significant ( $\beta$ beta = 0.966,  $p < 0.001$ ). This suggests that humanitarian interventions directly improve food security. For every additional unit of HI, FS increases by approximately 0.966 units, highlighting the positive role of humanitarian interventions in supporting food security.
- Effect of AD on FS (Mediator): The effect of AD on FS is also positive and significant ( $\beta$ beta = 1.214,  $p < 0.001$ ), indicating that Aid Delivery contribute to food security. For every unit increase in AD, FS improves by about 1.214 units. This counterintuitive result might suggest that addressing Aid Delivery (even as they arise with increased HI) leads to resilience-building measures, ultimately benefiting food security outcomes.
- Indirect Effect of HI on FS through AD: The indirect effect of HI on FS through AD is estimated at 0.247, with a bootstrapped standard error (BootSE) of 0.072 and a confidence interval (BootLLCI = 0.123, BootULCI = 0.402) that does not include zero. This significant indirect effect indicates that a portion of HI's impact on FS operates through encountered in aid delivery. This mediated pathway suggests that as HI increases, it leads to greater Aid Delivery, which in turn has an impact on food security, possibly due to adaptive measures taken to overcome these challenges.

Interpretation: Overall, the analysis demonstrates that humanitarian interventions positively influence food security both directly and indirectly through Aid Delivery. The direct impact of HI on FS is strong and significant, showing that humanitarian actions directly support food security. Additionally, the indirect pathway indicates that challenges arising from aid delivery partially mediate this relationship, suggesting that addressing and adapting to these challenges may enhance the long-term effectiveness of interventions on food security.

#### **4.4 Summary of Findings**

In the Table 4.13 and Figure 4.5 below is a summary of the regression analyses across the four hypotheses provide valuable insights into the relationships between the Role of Donors and International Organizations (RO), Humanitarian Interventions (HI), Aid Delivery (AD), and the Dimensions of Food Security (FS). The findings suggest both direct and mediated effects, which can help in understanding the dynamics of food security in contexts of humanitarian assistance.

**Table 4. 13.** A summary consolidating the key findings from the four hypotheses

<b>Model/Relationship</b>	<b>Effect</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	<b>p</b>	<b>Model Fit</b>
RO → HI	1.043	0.053	0.807	19.785	0.000	R <sup>2</sup> = 0.652
HI → FS	0.966	0.063	0.583	15.377	0.000	R <sup>2</sup> = 0.731
AD → FS	1.214	0.099	0.466	12.279	0.000	
RO → HI → FS	0.903	0.157		6.707	0.000	
HI → AD → FS	0.247	0.072		12.279	0.000	

**Key Findings Related to Each Hypothesis or Research Question**

**Direct Impact of the Role of Donors and International Organizations (RO) on Humanitarian Interventions (HI)**

- Finding: The regression analysis shows a significant positive relationship between RO and HI ( $R=0.807$ ,  $R^2=0.652$ ,  $p < 0.001$ ), indicating that the role of donors and international organizations is a strong predictor of humanitarian interventions. RO explains 65.2% of the variance in HI, underscoring its critical role in driving humanitarian activities.
- Insight: This result highlights the essential role of external support from donors and organizations in enabling humanitarian interventions.

**Direct Impact of Humanitarian Interventions (HI) and Aid Delivery (AD) on Food Security (FS)**

- Finding: Demonstrates that both HI ( $\beta=0.583$ ,  $p < 0.001$ ) and AD ( $\beta=0.466$ ,  $p < 0.001$ ) significantly predict FS, with an overall model fit of  $R=0.855$  and  $R^2=0.731$ , suggesting that 73.1% of the variance in FS can be explained by HI and AD together.
- Insight: The substantial influence of both HI and AD on FS highlights that, while humanitarian interventions improve food security, the encountered in aid delivery also play a significant role. Addressing these could potentially enhance food security outcomes further.

**Indirect Impact of the Role of Donors and International Organizations (RO) on Food Security (FS) through Humanitarian Interventions (HI)**

- Finding: Indicates a significant indirect effect of RO on FS through HI (Indirect Effect= $0.903$ , 95% CI [ $0.612$ ,  $1.235$ ]). The direct effect of RO on FS is also positive and significant ( $\beta=0.556$ ,  $p=0.001$ ), suggesting that RO positively influences FS, both directly and through its effect on HI.
- Insight: This finding suggests that donors and international organizations contribute to food security directly, as well as by enhancing humanitarian interventions. This dual pathway underscores the importance of sustained support from these entities to maximize food security outcomes.

## Indirect Impact of Humanitarian Interventions (HI) on Food Security (FS) through Aid Delivery (AD)

- Finding: Reveals a significant indirect effect of HI on FS through AD (Indirect Effect=0.247, 95% CI [0.123, 0.402]). Additionally, the direct effect of HI on FS is strong ( $\beta=0.966$ ,  $p<0.001$ ), showing that HI improves FS directly and indirectly by influencing AD.
- Insight: This finding suggests that while HI directly improves FS, some of its impact operates through the challenges faced in delivering aid. Overcoming these challenges could enhance the effectiveness of interventions, making this an important area for improvement in humanitarian assistance.

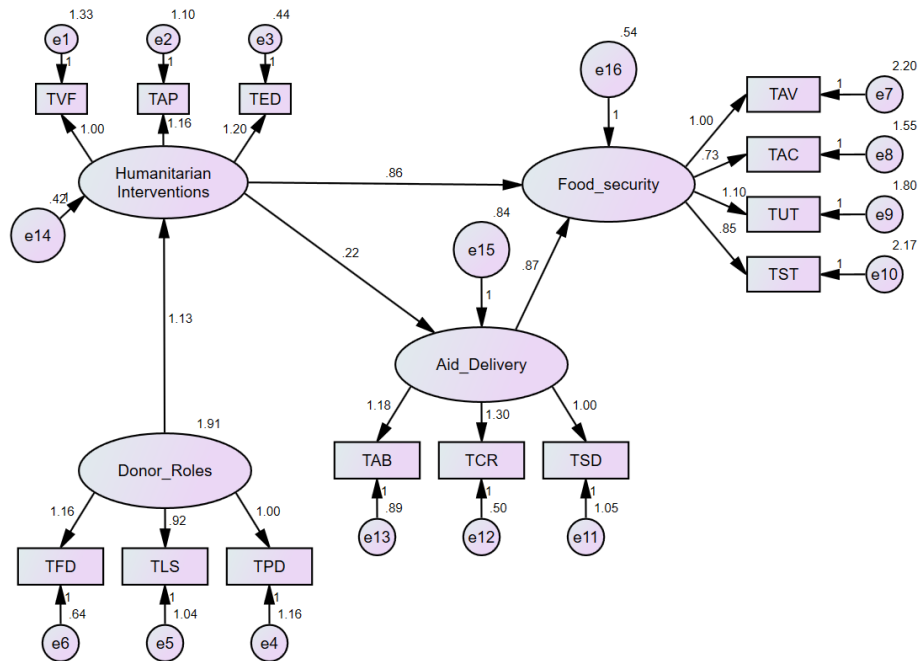


Figure 4. 5. Results Analysis of The Hypotheses

## 4.5 Discussion

The research findings show that food security in Yemen is affected by several interconnected factors, most notably the role of donors and international organizations, the nature of humanitarian interventions, and the effectiveness of aid delivery channels. These findings add a new dimension to the literature, demonstrating that the direct and indirect effects of these factors are consistent with previous studies on the need for multidimensional interventions in fragile settings such as Yemen. The results confirmed a clear positive correlation between donor and international organization contributions and

the effectiveness of interventions, indicating that external financial and logistical support is a critical element for the success of humanitarian action. This aligns with what Hinds (2015), Walker & Maxwell (2014), and Harvey & Lind (2005) have pointed out regarding the importance of capacity building, strategic coordination, and ensuring long-term funding, while weak such support leads to declining operational capacity and increased food insecurity (Barnett, 2011). Evidence also shows that donor roles have an indirect impact on improving food security through humanitarian interventions. This aligns with Makara's (2023) argument regarding the role of external funding in setting response priorities and enhancing transparency and accountability. Beyene (2023) also demonstrated that integrating health and nutrition programs into humanitarian interventions multiplies the positive impact on public health and the productive capacity of communities, which in turn enhances long-term food security. Regarding the effectiveness of aid delivery channels, the literature has confirmed that improving supply chains through innovation and ensuring fairness and efficiency are pivotal factors for the success of interventions. Hezam's (2023) study demonstrated that taking into account the principles of fairness and effectiveness in planning ensures that aid reaches the most vulnerable groups, even in complex environments. Negi (2022) emphasized that overcoming transportation and distribution obstacles is essential for transforming cash or in-kind aid into tangible results on the ground.

The conclusions were that there were two indirect channels through which donors would influence food security: the first is that of donors' influence on food security through the strengthening of humanitarian interventions, and the second is that of humanitarian interventions' influence on food security through distribution effectiveness. These two paths encapsulate the literature review conducted by FAO (2023) regarding the importance of looking at the humanitarian response system as a network where funding controls interventions, which control the effectiveness of distribution. Locally, and taking into account the Yemeni humanitarian space dynamics under which conflict and economic adversity are bane challenges for relief interventions, the current findings confirm that an intangible impact on food security is attainable at a cost that requires inclusive approach through securing diversified and sustainable funding, increasing the effectiveness of supply and distribution systems, and establishing long-term partnerships with donors and international players. The consistency of these findings with UN reports and field studies renders them more credible and provides a scientific basis on which humanitarian policies and strategies are formulated.

## CHAPTER V

### CONCLUSION, POLICY RECOMMENDATION, LIMITATIONS

Presenting the study's key findings and highlighting its significance from an academic and practical standpoint are the main goals of this chapter. It summarizes the key findings and shows how they advance our understanding of how to support vulnerable populations and guarantee their access to enough food. Comparing the results of earlier research, the chapter also addresses the function of international organizations and donors as well as the significance of aid delivery strategies in enhancing food security. In order to create more effective and responsive responses to the current issues in crisis-affected areas, it also provides policymakers and humanitarian workers with useful recommendations. Furthermore, the chapter identifies areas for future research aimed at overcoming the limitations of the study and deepening understanding of the best ways to support food-insecure groups in crisis contexts.

#### 5.1 Summary

This study examines the impact of donor attitudes, humanitarian interventions, and aid delivery mechanisms on food security in times of crisis, with a focus on Yemen. The results demonstrate direct and indirect links between these factors. Donor contributions are a key driver of humanitarian interventions, and their effectiveness is enhanced by the efficiency of distribution channels. The analysis also demonstrates that the role of donors and the efficiency of aid delivery represent the primary channels through which foreign aid impacts food security, emphasizing that sustainable funding, high-impact interventions, and efficient logistics systems are essential pillars for improving food security. In doing so, the study contributes to expanding scientific understanding of the interaction between donors, humanitarian action, and distribution processes, emphasizing that donor support goes beyond funding but also encompasses improving field impact and ensuring the sustainability of results.

#### 5.2 Policy Recommendation

The study results highlight a set of recommendations that can enhance the effectiveness, sustainability, and rapid response of humanitarian interventions related to food security in Yemen:

- Enhancing donor commitment and ensuring continued funding: It is clear that financial support from donors is the foundation of any successful humanitarian response. To

reduce chronic resource shortages, it is advisable for donors to shift to clear semi-annual financial commitments rather than short-term pledges, allowing humanitarian organizations to plan ahead and deliver longer-term, more stable responses.

- Strengthening logistics systems and distribution mechanisms: The analysis showed that efficient delivery is a critical element in the success of humanitarian interventions and their impact on food security. Therefore, policymakers need to invest in transportation infrastructure, warehouses, and electronic tracking technologies, in addition to strengthening cooperation with private sector logistics providers and developing modern mechanisms such as mobile money transfers, to ensure equitable delivery of aid and reduce the problems of diversion or misuse.
- Improving financial oversight and transparency: Given the risks of politicization and aid diversion, the study recommends strengthening accountability systems through transparent resource allocation mechanisms, independent auditing, and community oversight. Integrating Islamic finance principles and international best practices into financial governance can also contribute to enhancing donor and beneficiary confidence.

### **5.3 Limitations of the Study**

There are a number of limitations to take into account when interpreting the results of this study, even though it offered valuable insights into the interactions among donor roles, humanitarian interventions, aid delivery, and food security in Yemen.

- First, 91% of participants were men, indicating a notable gender imbalance in the sample. This restricts the representation of women's viewpoints while also reflecting the predominance of men in operational and leadership positions within the Yemeni humanitarian sector. According to the literature, implementing a gender-sensitive strategy can increase the effectiveness of aid (Mazurana et al., 2013), so the low involvement of women hid some crucial information.
- Second, the study relied on a cross-sectional design that captures relationships at a single point in time, which does not allow for tracking changes or establishing causal relationships, which is crucial in conflict environments characterized by rapidly changing circumstances (Maxwell et al., 2022). Third, although the quantitative approach enabled the testing of statistical relationships and mediation effects, it did not provide the narrative depth provided by qualitative methods. Future studies using mixed methods could enrich statistical findings with interviews or focus groups, enhancing the accuracy of interpretations (Creswell & Plano Clark, 2018).

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## APPENDIX

### Appendix 1: Questionnaires

#### Section 1: Demographic Information

1. **Gender:**
  - Male
  - Female
2. **Age Group:**
  - Under 20 years
  - 20 – 29 years
  - 30 – 39 years
  - 40 – 49 years
  - 50 years or above
3. **Educational Level:**
  - No formal education
  - Primary education
  - Secondary education
  - University degree (Bachelor's)
  - Postgraduate degree (Master's/Ph.D.)
4. **Employment Status:**
  - Employed in the public sector
  - Employed in the private sector
  - Employed in non-governmental organizations (NGOs)
  - Student
  - Unemployed
5. **Monthly Household Income (in USD or local currency):**
  - Less than \$100
  - \$100 – \$300
  - \$300 – \$500
  - More than \$500
6. **Marital Status:**
  - Single
  - Married
  - Divorced/Separated
  - Widowed
7. **Geographic Location:**
  - Hadhramaut Governorate
  - Sana'a Governorate
  - Aden Governorate
  - Taiz Governorate
  - Al Hudaydah Governorate

- Other (please specify): \_\_\_\_\_
- 8. **Number of Family Members:**
  - Less than 3 members
  - 3 – 5 members
  - 6 – 8 members
  - More than 8 members
- 9. **Does your family benefit from food aid programs?**
  - Yes
  - No
- 10. **Duration of Food Aid (if applicable):**
  - Less than 6 months
  - 6 – 12 months
  - More than one year

**Section 2: Food Security Status**

Choose one of the following to answer the questions based on your opinion:

(1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

Variable	Question	Reference
<b>Humanitarian Aid Interventions</b>		
Volume of food aid	The volume of food aid distributed has been sufficient to meet the needs of beneficiaries.	WFP (2022)
	The quality of food aid provided meets the dietary needs of beneficiaries.	WFP (2022)
Access to food programs	Access to food aid programs is equitable across different regions in Yemen.	ODI Humanitarian Reports
	There are clear mechanisms for monitoring the fairness of food aid distribution across different regions.	ODI Humanitarian Reports
Distribution efficiency	The distribution process is efficient and avoids significant delays or wastage.	WFP (2022)
	The distribution system adapts quickly to emerging crises or logistical challenges.	WFP (2022)
<b>Role of Key Donors and International Organizations</b>		
Financial contributions	Financial contributions from donors have been timely and adequate to sustain food programs.	WFP (2022)
	Changes in donor priorities have impacted the consistency of aid delivery.	FAO policy reviews
Logistical support	The logistical support provided by international organizations has enhanced the delivery of aid.	WFP (2022)
	Coordination between international organizations has improved the effectiveness of food programs.	FAO policy reviews
	Policies from donor agencies align with the local needs and context of Yemen.	WFP (2022)

Policies influencing aid delivery	Policies imposed by international donors sometimes conflict with the realities on the ground.	FAO policy reviews
<b>Food Security Dimensions (FAO Framework)</b>		
Availability	Food production and imports are sufficient to maintain local food availability.	FAO (2012)
	Seasonal changes impact the availability of food supplies in the region.	FAO (2012)
	Imports compensate for the gaps in local food production.	FAO (2012)
Access	Household income levels allow for adequate access to essential food items.	FAO (2012)
	Social assistance programs (e.g., cash transfers) improve access to essential food items.	FAO (2012)
	Inflation rates have made staple foods increasingly unaffordable.	FAO (2012)
Utilization	The nutritional quality of available food meets minimum health standards.	FAO (2012)
	Available food meets the cultural and dietary preferences of local communities.	FAO (2012)
	Food safety standards are enforced in aid-provided food supplies.	FAO (2012)
Stability	Food supplies have remained stable over the past six months.	FAO (2012)
	Fluctuations in supply chains have created unpredictable food availability.	FAO (2012)
	There have been significant interruptions in food supply due to conflict or political instability.	FAO (2012)
<b>Aid Delivery</b>		
Timeliness of Aid Delivery	The aid provided reaches the intended recipients within the expected timeframe.	ODI Humanitarian Networks, (Quak, 2020), (Beyene, 2018), (Negero, 2018), (Akl et al., 2015), (Violette et al., 2013), (Lentz et al., 2013), (Isopi & Mavrotas, 2009), (Nissanke, 2008).
Effectiveness of Aid Distribution	The distribution process ensures that aid is effectively allocated to those who need it the most.	
Accessibility of Aid to Recipients	The aid delivery mechanisms make resources easily accessible to all affected populations.	
Transparency in Aid Delivery	There is transparency in the allocation and distribution of aid to beneficiaries.	
Satisfaction with Aid Received	Recipients are satisfied with the type, quantity, and quality of aid delivered.	
Coordination Among Aid Agencies	The coordination among various aid organizations ensures efficient and effective delivery of assistance.	

