**BINDURA UNIVERSITY OF SCIENCE EDUCATION**



**FACULTY OF COMMERCE**

**DEPARTMENT OF PURCHASING AND SUPPLY**

**THE IMPACT OF THE COVID-19 PANDEMIC ON HUMANITARIAN SUPPLY CHAIN IN ZIMBABWE. A CASE OF CARE INTERNATIONAL**

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**A DISSERTATION SUBMITTED TO THE DEPARTMENT OF PURCHASING AND SUPPY CHAIN MANAGEMENT, BINDURA UNIVERSITY OF SCIENCE EDUCATION IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE BACHELOR OF BUSINESS STUDIES HONORS DEGREE IN PURCHASING AND SUPPLY CHAIN MANAGEMENT.**

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**RELEASE FORM**

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**DECLARATION**

I, Liberty Musaerenge, hereby declare that the work herein presented is my own research which was conducted under the supervision of Dr. F. Chari at Bindura University of Science Education. Except the works of other people which have been duly acknowledged, the research has never been presented to the university or anywhere else for a degree.

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This work has been submitted for examination with my approval in partial fulfillment of Bachelor of Business Studies Honors Degree in Purchasing and Supply.

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**APPROVAL FORM**

The undersigned certify that they recommend to Bindura-University of Science-Education for acceptance; a dissertation entitled:The impact of the covid-19 pandemic on humanitarian supply chain in Zimbabwe. A case of care international; submitted by Liberty Musarenge B190322A in partial fulfilment of the requirements for Bachelor of Business Studies Honors Degree in Purchasing and supply chain management.

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**DEDICATION**

This project is firstly dedicated to my supervisor Dr. F. Chari for his assistance and guide in doing my research compilation. I also dedicate this project to the Bindura University’s Procurement department for their support in doing my research. The special dedication goes to my father and mother, brothers and sisters for their support in completing my studies.

**ABSTRACT**

The study focused on exploring the impact of the Covid-19 pandemic on humanitarian supply chain strategies in Zimbabwe. The study used CARE International Zimbabwe as a case study. The study used closed-ended questionnaires to obtain information on the impacts of Covid-19 pandemic on humanitarian supply chain, challenges associated with sustainable humanitarian supply chain management, strategies used to manage the impacts of the Covid-19 pandemic on humanitarian supply chain and also the humanitarian supply chain strategies used by CARE International during the Covid-19 pandemic. The study was guided by the contingency theory, supply chain theory and also the logistic integration theory. The total sample size of the study consisted of 48 individuals. The study employed the quantitative methodology. The study findings study revealed uncertainty in supply and demand, capacity fluctuations resulting in gaps and disruptions in global supply chains, reduced the supply of goods due to the closure of firms, disrupted supply chain operations as some of the impacts of the Covid-19 pandemic on humanitarian supply chain. The study findings also revealed lack of coordination among the agencies involved in relief, lack of technological advancement and lack of resources as some of the challenges to sustainable humanitarian supply chain. The study findings revealed strategies the use of technology, the development of local and regional infrastructure, improving coordination and also training of actors as some of the strategies that can be used to curb the impacts of the Covid-19 pandemic. The study findings further revealed postponement, collaboration, strategic stock and also flexible supply base as some of the humanitarian supply chain strategies used by CARE International during the Covid-19 pandemic. The study recommended humanitarian organizations to adopt new technologies in their operations in terms of data processing and other operations. The study findings also recommended recommends the governments to take the lead in determining what critical resources the region requires and achieving coordination among organisations. Alliances should be formed between profit and non-profit organisations and these should be formed before a disaster strikes. The study further suggested that further researcher be conducted on the impact of Covid-19 on humanitarian supply chain strategies using the qualitative methodology in order to obtain an in-depth understanding of the issue in question.

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# **CHAPTER 1: INTRODUCTION**

## **1.0 INTRODUCTION**

This section is an introductory section that provides information on the background of the study, statement of the problem, research purpose, research question, research objectives, significance of the study, assumptions of the study, limitations of the study, delimitations of the study and definition of terms.

## **1.1 BACKGROUND OF THE STUDY**

Natural calamities such as earthquakes, tornadoes, wildfires, floods, and so on inevitably interrupt regional or worldwide supply chains (Sharma & Kumar, 2021). The interruptions can take various forms: a shortage of supplies, a momentary peak in demand for critical commodities that causes anxiety of resource scarcity, an unpredictable environment, or a variety of other undesired situations. According to Mas-Coma et al. (2020), the coronavirus (COVID-19) pandemic differs from previous pandemics in that the COVID-19 pandemic has had an impact on national linkages and globalisation. The first cases of the new coronavirus were reported in December 2019 in Wuhan, China's Hubei region (Ivanov & Dolgui, 2020). However, the pandemic expanded around the world in the following months, infecting billions of people both directly and indirectly. It has piqued the interest of supply chain scholars (Choi, 2020a, Govindan et al., 2020) as well as practitioners. While some industries experienced a fall in demand, others experienced a dramatic increase in demand. Many countries' economies came to a halt, including India, which placed one of the most stringent restrictions (Fortune,2020). The pandemic has had an impact on all aspects of business, notably worldwide supply networks (Ivanov & Dolgui, 2020). It has had multiple effects that are certain to have long-term consequences (Govindan et al., 2020), including major disruptions in supply chains (Ivanov, 2020a); for example, 94% of 1000 businesses have already experienced supply chain interruption as a result of COVID-19 (Fortune, 2020).

The implications of the coronavirus outbreak on global supply chains have emerged from three perspectives: supply, demand, and logistics (Mishra et al., 2021). Multinational firms experienced supply shocks, for example, as the virus spread throughout India, exports of face masks ceased (Paul,2020). Similarly, other businesses experienced demand shock. There was a rise in demand for vital supplies, but there were concerns about delayed deliveries, delays in obtaining commodities, unexpected travel interruption, and labour shortages (due to reverse migration of labourers from cities). As a result, the supply-demand mismatch widened. Prior to the COVID-19 period, supply chain managers typically focused on just-in-time inventory management, which aids in cost reduction and efficiency (deSousa,2020). However, in the aftermath of the COVID-19 epidemic, it has become evident that this method fails to prepare global supply networks to deal with major shocks like the COVID-19 pandemic (Govindan et al., 2020). Furthermore, the impact of the coronavirus pandemic on global supply chains has only emphasised the significance of risk management and mitigation techniques. Organizations must assess their supply chain strategies, supply chain architecture, and supply chain dependencies in order to avoid impromptu responses to future natural catastrophes and to adequately resolve unexpected disruptions (Verma and Gustafsson, 2020).

By necessity, supply chain research in the context of COVID-19 is in its early phases. Few research have been conducted on a micro scale, and those that have been conducted tend to focus on theoretical attempts to best describe the COVID-19 condition. Based on a survey of the literature, some studies propose future research directions. However, the supply chain-related issues that businesses are currently facing as a result of COVID-19, as well as mitigation solutions, are mostly absent from the current debate on global supply chains. These issues have also prompted supply chain managers to reconsider their supply chain strategies in order to avoid such disruptions in the future. The COVID-19 pandemic not only impacted supply chain operations, but it also had a wide-ranging impact on the relationships between tiers and business policies in networks of interrelated ties. For example, (a) firms are shifting their sourcing strategies from global to local (Choi et al., 2021; Donthu and Gustafsson, 2020); this pandemic may change power dynamics within supply chains; (c) supply chains must become more resilient (Craighead et al., 2020; Verma and Gustafsson, 2020); and (d) firms are changing their inventory strategy (Sodhi et al., 2021). As a result, it is critical to explore how COVID-19-related disruptions impact the interconnected business environment of supply chains.

## **1.2 STATEMENT OF THE PROBLEM**

A pandemic like COVID-19 (SARS-CoV-2) is one of the exceptions that puts business and supply chain activities at risk. Long-term disturbance, ripple effects caused by propagating disruptions, and a very unpredictable environment are all examples of this. Nonetheless, very few structured research works have reported on approaches in this direction. The literature accessible is spread across different streams and sources. Few reviews could be identified from the standpoint of SC under pandemics or outbreaks (Pastor-Satorras, Castellano, Van Mieghem, Vespignani, 2019). Despite the scarcity of literature on the SC and epidemic outbreaks, this research assists academics, influencers, and governments by articulating overarching observations, allowing them to formulate strategies. The operations of epidemic control and related logistics were classified (Paul,2020) and mapped against operations and SC management (Queiroz et al.2020). Because there is a dearth of literature in the chosen domain, there is an urgent need to outline prior developments in epidemic outbreaks in bid to increase the efficacy and dependability of distribution networks. Therefore, it is against this backdrop that this study seeks to explore the humanitarian supply chain strategies during the Covid-19 pandemic in Zimbabwe as information obtained in the study will intensify knowledge around humanitarian supply and also add to existing knowledge gap as information obtained is context specific.

## **1.3 OBJECTIVES OF THE STUDY**

1. To determine the impacts of Covid-19 pandemic on humanitarian supply chain in Zimbabwe
2. To examine the challenges associated with sustainable humanitarian supply chain management in Zimbabwe
3. To explore the strategies that can be used manage the impacts of the Covid-19 on humanitarian supply chain.
4. To identify the humanitarian supply chain strategies used by CARE International during the Covid-19 pandemic.

### **1.3.1 RESEARCH QUESTIONS**

1. What are the impacts of Covid-19 pandemic on humanitarian supply chain in Zimbabwe?
2. What challenges are associated with sustainable humanitarian supply chain management in Zimbabwe?
3. What strategies can be used to manage the impacts of the Covid-19 on humanitarian supply chain?
4. What are the humanitarian supply chain strategies used by Care International during the Covid19 pandemic?

**Conceptual Framework**

**Independent variable Dependent variable**

**Covid-19**

**Humanitarian supply chain strategies**

**Postponement**

**Strategic stock**

**Outcomes**

* Reduced supply of goods due to the closure of firms
* Increased uncertainty in supply and demand thus creating gaps and disruptions in global supply chain**.**

*Source: Primary data (2022)*

This study adopted an analytical conceptual approach. The relationship between the independent variables on one hand and the dependent variable on the other and the outcome are the effects. The conceptual framework shows that the Covid-19 pandemic has affected humanitarian supply chain strategies. Hence the Covid-19 is the independent variable whilst humanitarian supply chain strategies are the dependent variable. Thus the conceptual framework will bring out the relationship that exists between the dependent and the independent variables.

## **1.4 JUSTIFICATION OF THE STUDY**

The study may provide background information to other researchers and scholars who wish to conduct additional research in this area. The study allows individual researchers to discover gaps in present research and conduct research in those areas. The work will also be used by academicians who want to study similar topics and come up with comprehensive conclusions and reasoning in reference to the humanitarian supply chain.

This study is expected to contribute to new knowledge and understanding on the humanitarian supply chain strategies during the Covid-19. The study's findings will also highlight some of the challenges associated with sustainable humanitarian supply chain management and also the strategies used to manage the impacts of the Covid-19 on humanitarian supply chain. Therefore, this information will add to the existing knowledge gap since the findings obtained will be context specific.

The study might benefit the University because the study can be used as library material from which students conducting research in related fields can extract information.

## **1.5 LITERATURE REVIEW**

Humanitarian Organizations' supply chain or logistics managers encounter difficult issues and limits that their profit-making counterparts do not. In general, an HSC faces many obstacles such as mobilization of resources efficiently and effectively (Ahmed et al., 2019), lack of economic resources (Ahmed et al., 2019), poor logistics infrastructure (Liu et al., 2010), slow coordination and response (Chandes and Paché, 2010), and fragmented technology and IT integration (Tatham and Spens, 2011). Nevertheless, at the same time, an HSC is also described as an agile, adaptative, and aligned supply chain in its existence, which is called three A’s (Van Wassenhove, 2006). Disaster management involves all activities, programs, and measures that are taken up before, during, and after the disasters with aims to reduce disasters’ impact and recover faster from the losses caused by the disasters (Khan et al., 2008).

The disaster management cycle typically divides the crisis timeline into four stages: mitigation, preparedness, reactions, and rehabilitation (Ibid). 1. Mitigation is the stage in which disaster consequences are minimised and proactive social emergencies are addressed, including laws and methods to reduce population susceptibility and improve resilience. For example, building codes of conduct, vulnerability analysis, and public education (Tomasini and Van Wassenhove, 2009a; Khan et al., 2008; Warfield, 2008). 2. Preparedness is the stage in which you plan how you will respond in the future to a calamity. Preparedness planning, emergency training, and warning systems, for example (Ibid). 3. Response is the step that involves extremely complicated logistics in mitigating disaster risks. Rescue and relief activities, for example (Ibid). 4. Rehabilitation is the stage in which the afflicted area is returned to normalcy as well as evaluations and improvements are developed, after which the knowledge is transmitted to the mitigation phase. Building temporary residents, for example, and medical care (Ibid).

The disaster management cycle supports all actors including HOs to indicate the ongoing process in reducing the impact of disasters, reacting during the disaster, and taking early steps to recover the damaged areas (Warfield, 2008). Appropriate efforts at all stages, including developing regulations, revising plans, and mitigating the consequences on people, property, and infrastructure, will result in increased readiness, better warnings, and reduced risk (Ibid). However, sometimes the phases of the cycle overlap and the time interval of each phase depend on the severity of the disaster (Ibid)

In the event of a natural disaster, capacity planning is regarded as one of the most critical variables influencing how the organization will respond to both long-term and short-term demand levels (Petit & Beresford, 2009). Capacity planning refers to an organization's ability to successfully organize operations involving varying levels of demand; it can also be defined as the supply chain's strength and ability to respond in a timely manner to situations involving high volumes and a wide range of demand (Maxwell and Watkins, 2003). According to Jacobs (2018), the four critical areas that must be properly managed during capacity planning are warehousing, transportation, materials handling devices, and human resources. The basic goal is for each humanitarian organisation to maximise its capability so that it can respond to a variety of catastrophic events. Capacity planning also include ensuring that available transportation networks can manage the volume and flow of supplies within a certain time frame. This might include the ability of ports and airports to handle relief commodities in varying conditions and scenarios (James, Pettit and Beresford, 2006).

Humanitarian organisations tend to focus more on maintaining an optimal flow of goods within their distribution networks during relief operations; hence, there is typically more attention on linking the physical distribution systems to the supply and demand locations. According to Balcik and Beamon (2006), only a few quantitative methods have been developed to aid in the improvement of location and distribution networks in humanitarian supply chains. This has been attributed to the fact that disasters are highly unpredictable. The main strategies used in transportation and capacity planning have included supplier consolidation, local tendering and brokering, strategic alliances, and the outsourcing of facilities used for transporting supplies (James, Pettit and Beresford, 2006).

Other relief organisations already own property in the impacted regions, so in the case of a disaster, they use those properties and disperse their resources through those locations. For example, the UNWFP has offices in nearly every country in southern Africa, making it easier to respond quickly in the event of a disaster (Kunz & Gold,2017). The UNWFP distribution channel considers the development needs as well as the life and safety of the areas affected. Cost efficiency dictates that materials be distributed from centralised locations, so that affected communities collect supplies and rations from schools, community halls, and churches that have been designated as central zones (Railhan et al.2020). There is a growing need for humanitarian organizations to focus on transforming their transportation and capacity planning in order to optimize the flow and movement of supplies within their supply chains. Relief organizations focus on the creation of sustainable distribution channels that can facilitate the efficient flow and movement of materials supporting the success of relief operations when planning and configuring their distribution networks (Dubey et al.2021). When transit and capacity planning are handled as key success factors, humanitarian supply chains stand to gain significantly. This may persuade organizations to make transportation and capacity planning decisions aimed at improving supply chain excellence.

**Factors influencing transportation in humanitarian supply logistics**

**Demand uncertainty**

Creating an accurate demand forecast is the primary goal of any organization, including humanitarian organizations, because it enables proper planning, implementation, and control of all supply chain management variables (Lordee and Taskin, 2009). However, it has never been possible to forecast 100% demand (Monczka et al, 2010). This implies that fluctuations in demand have been a source of difficulty, particularly for humanitarian supply chains (Christopher and Towill, 2001). This is due to the suddenness of naturaI disasters such as fIooding, epidemic outbreaks, droughts, and cycIones, which usuaIIy make determining the exact number of peopIe affected and their geographicaI Iocation, as weII as the actuaI number and nature of suppIies required during reIief operations, difficuIt. This is mostly the case with sudden onset natural disaster occurrences that unexpectedly occur leaving no room for adequate preparation and adequate demand assessments (Tatham and Specs, 2011). With little or no demand information available after a natural disaster occurrence, organisations usually respond by pushing supplies to the affected areas with the hope that these supplies will be adequate in providing for the immediate needs of the affected population (Kovacs and Spens, 2007). Forecasts tend to be more accurate only later in the disaster operation as a consequence of improved information flow, as effective demand forecasting procedures would have been implemented. Faced with growing demand unpredictability, humanitarian organisations have been obliged to use supply chain management best practises in order to strengthen response operations and therefore better control the amount of uncertainty. Uncertainty is a tough component to control in the supply chain. In the case of humanitarian supply chains uncertainty cannot be entirely done away with and therefore, having realised this, humanitarian organisations have consistently been developing strategies to enable them to sufficiently match demand and supply (Christopher and Towill, 2001).

**Irregular supply patterns**

The availability of supplies is a critical concern during disaster operations; during natural disaster operations, a varied variety of commodities is delivered. These include sanitary and medical supplies, food items, clothing, shelter and water and these movements have been conducted in large volumes (Patemen, Hughes and Cahoon, 2013). Kovacs (2021) indicates that natural disaster occurrences are characterised by a drastic increase in supplies demanded by the affected population, resulting in humanitarian organisations gearing their efforts towards procuring and delivering the required supplies to the affected areas at the minimum possible time.

A number of natural disasters in southern Africa have witnessed a significant rise in the amount of supplies during the later phases of the disaster operation due to improved demand projections. As a result, humanitarian organisations must find the suitable pool of providers to meet the rising level of demand. The required set of supplies may vary greatly depending on situation and on a set of factors which include the nature, type and impact of the disaster occurrence, demographics and social and economic conditions of the affected areas (Mhohwa, 2010:13). Some of the challenges that are faced as a result of irregular supply trends involve the inflating of prices by suppliers as there is a direct increase in demand as seen by the UNWFP during the southern Africa drought of 2000 (WFP, 2011). Humanitarian organisations also have to switch between suppliers due to the diverse geographical location of disaster occurrences that might conflict with the supplier location and accessibility (Kovacs and Specs, 2007:12).

**Shorter lead time**

Lead time refers to the time required in acquiring a product, which encompasses its purchase, production and assembly (Heizer and Render, 2006:557). It denotes the period between when an order is pIaced and when it is received. Iead time is a typicaI suppIy chain management efficiency measure used by commerciaI organisations. With humanitarian organisations there is a significant challenge in managing lead time; after a sudden natural disaster occurrence, relief organisations require supplies from either their donors or suppliers within the least possible time (Chopra and Meindl, 2013:328). Demand forecasting in humanitarian supply chains is highly inaccurate and unreliable, which means that it is critical for the lead times to be kept as short as possible so as to make up for the changes in demand (Monczka et al, 2009:192). Shorter lead times in humanitarian supply chains are important due to the nature of demand fluctuation during crisis events, as well as the implications of a delay in obtaining goods on recipients. Quick response to the rising needs of disaster supplies after the occurrence of a natural disaster is critical and therefore has resulted in relief organisations considering the sourcing of supplies from suppliers who are able to provide these within shorter lead times (Sheu, 2006:687). Natural disasters occur with little or no notice. As a result, there is a greater desire to mitigate the consequences, as seen by efforts to decrease lead times, which helps humanitarian organisations to respond to disasters more efficiently.

**Insufficient information**

One of the important aspects affecting the effectiveness of any supply chain operation is the flow of correct information inside it. The management of information is critical during response operations and can have an effect on their effectiveness (Pettit and Beresford, 2009:458). Commercial supply chains have examined the use of information technology (IT) systems in enabling enterprise resource planning systems after realising the significance that good information management plays in boosting their competitiveness and company growth. Technology is also progressively becoming recognised as being vital in aiding humanitarian efforts by many humanitarian organisations, with Long and Wood (1995:44) noting that it can influence the success or failure of catastrophe operations. In the aftermath of a disaster, there is generally inadequate information to assist humanitarian organisations in organising their disaster activities. This is because the initial stage of a disaster's onset is chaotic. Therefore, the affected communities, national governments and the relief organisations are not afforded sufficient time to assess the damage caused by the natural disaster occurrence (Balcik et al, 2010:28).

## **1.6 RESEARCH METHODS**

**Research Design**

The descriptive research design is going to be used for this study. The descriptive research design is preferred because it enables the researcher to obtain a large amount of data from a large population. According to Bishop, Richard, and Boyle (2017), descriptive research is the result of non-experimental studies with the goal of describing characteristics of a phenomenon. He went on to say that it is a scientific method that involves observing and describing a subject's behaviour without influencing it in any way. This design is appropriate for this study because it describes what is happening at the time, which is in line with the study purpose of exploring humanitarian supply chain strategies during the Covid-19 in Zimbabwe. The descriptive research strategy is also chosen by the researcher because it gives an accurate and valid portrayal of the aspects pertinent to the inquiry. The approach also enables the researcher to collect primary and secondary data, which is then used to draw relevant conclusions and provide suggestions.

**Sampling and Sample Techniques**

The study is going to use stratified random sampling and random sampling technique to select participants for the study. Stratified random sampling technique is when the population is split into sub-units (strata) and then samples are drawn from each stratum using either systematic or simple random sampling. In order to come up with the strata random sampling technique was also be used this is so because the purpose of all the two techniques was to help a researcher in selecting units to be included in the sample. Random sampling on the other hand is generally expressed as taking a sample without pattern or as haphazard Zhao and Dang (2019). Random sampling, which is also known as probability sampling, in particular is a sampling whereby every item of the universe has an equal chance of being included in a sample (Kothari, 2008; Bryman and Bell, 2011). The property of random sampling, according to Oribhabar and Anyanwu (2019) is that every possible combination of objects in the population to be studied has an equal chance of being selected.

As a result, in order to obtain the required number of participants, the researcher will assign numbers to each subject in the CARE Zimbabwe population and then select the required number of subjects using a random number table. The subjects with the corresponding numbers will then be chosen to be included in the sample. Once an item has been chosen for a sample, it will not appear in the sample again. The population will be divided into different subgroups which will emerge from the departments that focus on humanitarian supply at CARE Zimbabwe from which the participants will be randomly selected. In order to determine the required respondents by using stratified random sampling, stratification will be based on departments/units where by random sampling was used to select. Stratified random sampling technique is going to be used in this study because stratified random sampling accurately reflects the population being studied. In other words, it ensures that each subgroup of the population is properly represented in the sample. Hence, stratified random sampling provides better population coverage because the researchers have more control over the subgroups and can ensure that all of them are included in the sampling.

***SAMPLE SIZE***

According to CARE Zimbabwe’ website there are about 168 employees at CARE Zimbabwe in Harare. Therefore, to obtain the sample size the study is going to use Lucy (2006)’ model of 40% to calculate the sample size. The model posits that 40% of the target population can be sampled when the population is less than 200. As a result, the sample size was 55 respondents.

***Data collection instruments***

According to Zhou et al. (2017), a questionnaire consists of predetermined questions relevant to the study objectives in the hope of getting appropriate information for data analysis. Questionnaires are going to be employed as a research instrument in this study to achieve the research aims. The questionnaires are to be distributed to each member of the target group via the drop and pick method and collected two weeks later. The researcher intends to use self-constructed closed ended questionnaires. Dalati and Gomez (2018), defined closed ended questionnaires as research instruments used to elicit information which define a topic and restricts the respondents' responses to a few words or a simple yes or no while open ended questions is where a question is asked by giving a polite command and the respondents give a personal view. Though, closed-ended questionnaires are simple to analyse and cost-effective. Questionnaires, on the other hand, have some drawbacks that should be considered whenever and wherever they are used (Iwaneic,2019). When answers are delivered by post or email, they are occasionally erroneous and doubtful, and there is normally a poor return rate, while ambiguity and unclearness of some queries may result in wrong and unconnected responses. However, since a pilot study is going to be conducted before the actual research this would assist in reducing bias. Therefore, closed ended questionnaires are also preferred because of the need for time management since they are faster to complete and for easy compilation of data by the researcher. Furthermore, the use of closed-ended questionnaires comes with many benefits which include the benefit of low cost, larger sample coverage, data reliability and also the fact that it is free from bias hence they were preferred (Zhou et al.2017)

***Data analysis***

Data collected from the questionnaires is going to be analysed using the Statistical Package for Social Sciences (SPSS) version 25. During the data analysis, the data describing the sample are going to be generated first in the form of demographics. This is going to be done in the form of means for continuous variables such as the age and frequencies for categorical data such as qualifications. This is going to be carried out to determine the outlook of the sample.

Descriptive statistics (means and standard deviations) are going to be calculated. The mean and standard deviation are descriptive statistics that show how far apart measurements of a group are from the average or expected value. The closer the cluster is to the expected value, the lower the standard deviation (De Vellis, 2016:44). Correlation is also going to be used to establish the relationship between the dependent and the independent variables. Data obtained from the closed-ended questionnaires are going to be presented in tabular, chart form and also in graphical form.

## **1.7 LIMITATIONS OF THE STUDY**

The study will be limited when it comes to financing the project, this is so because the of the high costs involved in preparing the instruments for many people as well as to visit the research sites to seek permission from the participants. Therefore, to mitigate this the study will use a reasonable sample size.

The amount of time available to explore a research problem and monitor change or stability over time was mostly limited by the deadline of the research, however the researcher maximized the time that was available.

The study will be limited because some participants may refuse to take part in the study. Hence to mitigate this the study will assure participants that the research is only for academic purposes and threat the information they give will not be used in any way that would harm them.

## **1.8 DELIMITATIONS OF THE STUDY**

The study's restrictions explain how far the research area will be examined throughout the work and specify the parameters within which the investigation will operate.

**Time scope:**

The research focused on the period from 2019 up to 2022 as this period was marked by constant and rapid change in technology which has resulted in information security systems being breached.

**Literature scope:**

Literature to be reviewed is going to focus on humanitarian supply chain strategies and the Covid-19 pandemic. Because of limited literature, the researcher went back as far as possible to salvage the scarce literature on this virgin study.

# **CHAPTER SUMMARY**

The goal of the research has been introduced in this chapter. The study's background was presented, followed by a review of the study's problem statement, which suggested that there was insufficient knowledge on humanitarian supply chain methods during the Covid-19 outbreak. The study's objectives were then outlined. Appropriate research questions were generated and presented based on these aims. This was followed by an intriguing description of the study's significance to both practise and philosophy.

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# **CHAPTER 2: LITERATURE REVIEW**

## **2.0 Introduction**

This chapter examines existing studies on humanitarian supply chain strategies in Zimbabwe during the Covid-19. A critical look at the literature is required to assist the researcher in developing a comprehensive understanding of and insight into prior studies related to the research questions. Literature on impacts of Covid-19 pandemic on humanitarian supply chain in Zimbabwe and also the challenges associated with sustainable humanitarian supply chain management in Zimbabwe

## **2.1 Theoretical frameworks**

A theory is a hypothesis or a system of ideas intended to explain something, especially one based on broad principles unrelated to the topic to be explained. The study was guided by the supply chain theory and the logistic integration theory and also the contingency theory.

**2.1.1 Contingency theory**

According to contingency theory, there is no single optimal structure that fits all institutions; rather, the optimal structure is dependent on many contextual factors and is the consequence of an adaptation process (Stonebraker & Afifi (2004). Therefore, in this view disasters, can only be controlled based on the internal and external environments. Buttermann et al. (2008), also posited that the contingency theory is concerned with three aspects of supply chain design which include factors of contingency, population long-term requirements and the performance of sustainability. The context variables are beyond the control of the organization (our contingency factors), the response variables that include the organization's actions to respond to the context variables (our supply chain design), and the performance variables that are the measures that allow the assessment of the fit between contextual and response variables (Danese,2011). The usefulness of adopting contingency theory for our framework is supported by its widespread implementation in the field of supply chain management, hence this theory was used in this study because it best explains the impacts of the Covid-19 pandemic on humanitarian supply chain and the strategies implemented by humanitarian organizations to deal with the negative effects of the Covid-19 pandemic.

**2.1.2 Supply Chain Theory**

The supply chain was chosen as the best option for this study because the thesis's goal is to reveal how a global pandemic affects the industry, and the supply chain is one of the most essential tools used to import and export goods between nations. Due to the COVID-19 most borders are closed which means supply chains are highly affected (Snyder & Shen,2019). The supply chain is the process of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these products to consumers (Pradhan, 2012). Supplier selection is a very important element and the main goal of selecting the supplier is to structure a good relationship between buyers and suppliers, minimizing purchasing risk, and to maximize the overall efficiency of a purchasing system (Lu,2011). “Supply chains are divided into two categories which are supplier-oriented and customer-oriented” (Fan & Stevenson,2015).

The first category explains all activities aimed at creating the product and obtaining components and materials, the second category is known as a marketing channel which includes wholesalers, retailers, and customers and it takes the product to the final user (Carter et al.2012). The sector's supply chain has faced numerous challenges, and it is anticipated that COVID-19 will have a significant effect on the supply chain in the future Harare. Snyder & Shen et al. (2019) stated that industry challenges have been expanding over the past decades. The main cause of these challenges has been associated with the scarce resources that can be used to attend to industry issues (Lu,2011). This implies that the field of supply chain management in the industry is the one that has experienced most of the challenges that are experienced in the industry (Chen & Paulray,2004). Globally, the wholesalers’ industry is mandated to increase resources to attend to the increasing demands for those resources (Storey et al.2006). As a result, the sector has been forced to devise new approaches to address these seemingly intractable obstacles. The main intention of the development of supply chain management (SCM) is that it is essential in solving functional problems that might occur between organizations (Snyder & Shen et al.,2019).

Evidently, the industry is interrelated in terms of operations. For example, the Muhammed Mussah must relate to another manufacturing company and rely on the manufacturing process to ensure that there are proper production and delivery of the products (Lu,2011). The role of supply chain management (SCM) is to ensure that there is a seamless process between two or more organizations as they distribute the products (Storey et al.2006). As a result, an established SCM is needed to guarantee the smooth delivery of goods and services in various industries. This demonstrates the importance of connections and relationships in the supply chain. However, there are times when there is unpredictability and distrust in the supply chain.

Supply chain uncertainty is defined as a broad term that refers to uncertainties (including risks) that may occur at any point within a global supply chain network (Harrison et al.2005). Apparently, both the demand and supply of products and services have to be balanced (Fan & Stevenson,2018). Surprisingly, demands are dynamic and keep on taking new forms as the world goes by. Complexity and uncertainty in meeting this are visualized in the fact that demand for products and services are determined by technology as well as financial considerations (Lu,2011). This necessitates deciding which treatments must be reimbursed by insurance and which must be paid for privately. Demand is the most difficult to accurately record and observe when there is unpredictability in the supply chain. There is always an unpredictability cycle in the government sector, for example (Treiblmaier,2018). With the rise of COVID-19, humanitarian supply chain was greatly affected due to the closure of businesses as well as the banning of importation and exportation to prevent the spread of the Covid-19. Thus, the impact of the pandemic on humanitarian supply chain strategies can be seen from theory of uncertainty supply chain as Covid-19 was unexpected hence it had a huge impact on humanitarian supply

**2.1.3 Logistic Integration Theory**

Logistic management is a part of the supply chain and it is the part that plans, implements, and controls storage and product flow, services and information between the point of origin and point of consumption in order to meet customer requirements (Song et al.2019). Thus, logistic management has an impact on all activities of the supply chain (Yuen & Thai,2017). Because these activities are connected, they must be coordinated to ensure the supply chain's performance. "The core of logistics integration is a well-coordinated flow of goods from suppliers, allowing businesses to have a smooth manufacturing process."Integrated logistics also allow firms to adopt lean production systems which are characterized by reliable order cycles and inventory reduction (Prajogo et al.2017). Logistic integration allows companies and their supply chain partners to act as a single entity which would result in improved performance throughout the chain (Song et al.2019). Many logistic support issues could occur in supply chain management, distribution, and inventory management, requiring the integration of various product components, such as a global epidemic. One of the issues confronting the distribution network today as a result of the spread of the coronavirus COVID-19 is the routing problem, which arises when products such as must be gathered from the roots and supplied to the final destination (Treiblmaier). Because of closed borders, ports, and routing issues, there have been problems in obtaining enough supplies for relief management hence this theory was used because it best explains the impacts of Covid-19 on humanitarian supply chain.

## **2.2 Overview of humanitarian supply chain**

The movement of goods/materials involved in relief activities is known as humanitarian supply chain management (Nagurney &Qiang, 2020). Humanitarian supply chain activity is separated into four phases of the disaster management cycle: mitigation, preparedness, response, and rehabilitation (Behl & Dutte,2019). Jahre (2017), noted that to grasp the complexity of humanitarian supply chain, the concept of disaster management is necessary to be understood. Disaster management involves all activities, programs, and measures that are taken up before, during, and after the disasters with aims to reduce disasters’ impact and recover faster from the losses caused by the disasters (Sawalha,2020). The emergency relief cycle divides the disaster timeframe into 4 phases: mitigation, preparedness, responses, and rehabilitation.

However, humanitarian supply chain is more prevalent throughout the phases of preparation and response (Jahre,2017). Preparedness entails putting in place the appropriate mechanisms to overcome causes that societies have been unable to reduce, as well as addressing the strategy to allow the successful deployment of operational responses (Jahre,2017). The preparedness stage is a stage in which all actors must work together to reduce negative repercussions before the disaster occurs. In other words, they prepare in a haphazard manner, rehearsing every scenario and agreeing on their response to the disaster (Oktari et al.2020). Meanwhile, during a disaster, the response phase involves all actors in providing aid and other necessary actions. Governments and non-governmental organizations (NGOs) are the primary parties involved in a typical humanitarian supply chain (Rana et al.2021). Governments wield the most power due to their control over political and economic conditions, and their decisions have a direct impact on supply chain processes. Following the 2004 tsunami, for example, the Indian government did not ask international assistance agencies to join in the first 60 days of the recovery effort, instead relying on local supplies (Oktari et al.2020). Donors, the military, and the media are also important stakeholders in humanitarian supply chains.

Mitigation is the stage that minimizes the effects of disasters and addresses proactive social emergencies including laws and mechanisms to reduce the vulnerability of the population and increase resilience (Medel et al.2020). For example, building codes of conduct, vulnerability analysis, and public education (Upadhayay et al.2022). Readiness is the stage in which you plan how you will respond inside the future to a disaster. Preparedness plans, emergency training, and warning systems, for example. Response is the stage that involves extremely complex logistics in mitigating disaster risks. For example, rescuing and relief operations (Medel et al.2020) Rehabilitation is the stage that restores the affected area into normal as well as to develop evaluations and improvements in which the information will be transferred to the mitigation phase.

The disaster management cycle supports all actors including HOs to indicate the ongoing process in reducing the impact of disasters, reacting during the disaster, and taking early steps to recover the damaged areas (Sahebi et al.2017). Appropriate actions at all stages including form the policies, modify the plans regarding and mitigate the effects on people, property, and infrastructure will lead to greater preparedness, better warnings, and minimize vulnerability (Sawalha,2020). However, the stages of the cycle may overlap at times, and the time intervals between each phase are determined by the severity of the disaster.

In the event of a natural disaster, capacity planning is regarded as one of the most critical variables influencing how the organization will respond to both long-term and short-term demand levels (Railhan et al.2020). Capacity planning entails decisions such as determining the number of warehouses and distribution centers needed during an operation, as well as the volumes to be transported at any given time, the volume of vehicles to be used, and the size of the human resources team (Kunz & Gold,2017). Capacity planning refers to an organization's ability to successfully organize operations involving varying levels of demand; it can also be defined as the supply chain's strength and ability to respond in a timely manner to situations involving high volumes and a wide range of demand (Upadhyay et al.2022). According to Jacobs (2018), the four critical areas that must be properly managed during capacity planning are warehousing, transportation, materials handling devices, and human resources. Capacity planning also includes ensuring that the available transportation networks have the ability to handle the volume and movement of supplies within a given period (Rana et al.2022).

Humanitarian organisations tend to concentrate more on making sure an optimised flow of goods within their distribution channels during relief operations; thus, there is generally more importance placed on linking the physical distribution channels to the supply and demand points. According to Fan & Steveson (2018), only a few quantitative methods have been developed to aid in the improvement of location and distribution networks in humanitarian supply chains. Some relief organisations made inefficient facility location and distribution decisions, leading to high operating costs, duplication of efforts, and resource waste. This has been attributed to the fact that disasters are extremely common unpredictable. The main strategies used in transportation and capacity planning have included supplier consolidation, local tendering and brokering, strategic alliances, and the outsourcing of facilities used for transporting supplies (Medel et al.2020).

Other relief organisations already own property in the impacted regions, so in the case of a disaster, they use those properties and disperse their resources through those locations. For example, the UNWFP has offices in nearly every country in southern Africa, making it easier to respond quickly in the event of a disaster (Kunz & Gold,2017). The UNWFP distribution channel considers the development needs as well as the life and safety of the areas affected. Cost efficiency dictates that materials be distributed from centralised locations, so that affected communities collect supplies and rations from schools, community halls, and churches that have been designated as central zones (Railhan et al.2020). There is a growing need for humanitarian organizations to focus on transforming their transportation and capacity planning in order to optimize the flow and movement of supplies within their supply chains. Relief organizations focus on the creation of sustainable distribution channels that can facilitate the efficient flow and movement of materials supporting the success of relief operations when planning and configuring their distribution networks (Dubey et al.2021). When transit and capacity planning are handled as key success factors, humanitarian supply chains stand to gain significantly. This may persuade organizations to make transportation and capacity planning decisions aimed at improving supply chain excellence.

## **2.3 Impact of Covid-19 on humanitarian supply chain**

COVID-19 has had the most severe impact on supply chains in recent history, causing one of the most significant disruptions in human history (Ivanov & Dolgui, 2020). Its disruptions have spread throughout entire supply chain systems, with disastrous results (de Sousa Jabbour et al., 2020). It has caused a chain reaction in several areas of the supply chain (Govindan et al., 2020). Several previous studies have suggested that minor disruptions in supply chains cause ripple effects (Scheibe & Blackhurst, 2018). However, the COVID-19 pandemic has been far more severe than any previous outbreak, disrupting supply, demand, and logistics (Queiroz et al., 2020).

A first, immediate impact on the supply chain is on industrial plants that must shut down if their personnel is sick or quarantined. Such incidents have impacted not only individual facilities and production lines, but often entire sectors. Following that, indirect repercussions were felt across the supply chain, particularly if alternative suppliers could not be discovered, or worse, were impacted concurrently (Sighn et al.2021). Further indirect impacts arose rapidly on the horizon as a result of a combination of export and travel bans, and later as a result of widespread unemployment caused by a fall in consumption. At the same time, the pandemic has induced irrational buying behavior ranging from panic buying to price speculation, adding to the bullwhip effect (Farooq et al.2022). Overall, COVID-19 has created uncertainty in supply and demand, as well as capacity fluctuations, resulting in gaps and disruptions in global supply chains (Ivanov, 2020; Queiroz et al., 2020).

The implications of the coronavirus outbreak on global supply chains have emerged from three perspectives: supply, demand, and logistics (Mishra et al., 2021, Sharma and Kumar, 2021). Multinational firms experienced supply shocks, for example, as the virus spread throughout India, exports of face masks ceased. Similarly, other businesses experienced demand shock. There was a rise in demand for vital supplies, but there were concerns about delayed deliveries, delays in obtaining commodities, unexpected travel interruption, and labor shortages (due to reverse migration of laborers from cities).

The COVID-19 pandemic not only disrupted supply chain operations, but it also had a wide-ranging impact on the relationships between tiers and firm policies in networks of interconnected relationships. For example, (a) firms are shifting their sourcing strategies from global to local (Choi et al., 2021; Donthu and Gustafsson, 2020); (b) this pandemic may change power dynamics within supply chains; (c) supply chains must become more resilient (Craighead et al., 2020; Verma and Gustafsson, 2020); and (d) firms are changing their inventory strategy (Sodhi et al., 2021).

According to Razdan and Kumar (2020), the COVID-19 pandemic is a major disruptor due to supply-side capacity constraints and price and quantity volatility. Micro, Small, and Medium Enterprises (MSMEs), which are widely spread across India, have experienced supply shortages and associated irregularities (The Economic Times, 2020). Furthermore, the country had severe anomalies in the supply of critical supplies. According to a recent Business Standard (2020) article, necessities such as cereals and pulses have grown scarce in the market.

### **2.3.1 Challenges associated with sustainable humanitarian supply chain management in Zimbabwe**

The number of challenges in humanitarian supply chain management is greater than in commercial supply chain management (Barbosa et al.2018). This is due to the fact that humanitarian suppIy chain management is carried out in the face of damaged infrastructure, such as Iimited energy resources and Iimited transportation connectivity, whiIe coIIaborating with muItipIe stakehoIders invoIved in reIief efforts, government interventions, and finaI beneficiaries. The COVID-19 pandemic not onIy disrupted suppIy chain operations, but it aIso had a wide-ranging impact on the relationships between tiers and firm policies in networks of interconnected relationships.

It is critical for a humanitarian supply chain (HSC) to overcome issues during humanitarian operations and to supply humanitarian needs (Tomasini and Van Wassenhove, 2009a). This process is beset by a significant challenge: coordinating various actors such as logistics firms with diverse stakeholders such as beneficiaries, donors, implementing partners, host governments, militaries, suppliers, and so on (Larson, 2014). As a result, HSC managers must be able to operate in unstable and interrupted environments with varying agendas and levels of expertise (McLachlin et al., 2009).

According to Remko & Golan, (2020), supply systems encountered a lack of readiness, flaws in their response strategies, and a need for improved supply chain resilience during this outbreak. Some papers have looked into supply chain resilience in the contexts of agriculture, aviation, and the automobile sector (Belhadia et al., 2020). Irregularity and inconsistency in client orders as a result of shifts in purchasing behavior, such as a drop in consumption of high-value goods, a lack of information about COVID-19, and non-consumption of particular food items, generating demand disruption. For example, Bell & Dutta. (2019), identified a lack of coordination among the agencies involved in relief efforts as the primary challenge in sustainable humanitarian supply chain management. This challenge causes a lack of communication, a lack of technological infrastructure, a lack of administrative personnel, a lack of clear policies, ineffective distribution of relief material, and a halt in relief activities (Barbosa et al.2018). Another significant impediment to sustainable humanitarian supply chain management efficiency is the difficulty in raising funds. With limited resources, only interim solutions are viable. Sufficient funds must be raised for long-term solutions (Canas et al.2020). sustainable humanitarian supply chain management is unusual in that it operates under tough conditions. The primary goal of commercial supply chain management is to maximize profit for the stakeholder(s) and deliver products to clients, whereas sustainable humanitarian supply chain management aims to save lives and minimize suffering (Yadav et al.2020). The actual problem of sustainable humanitarian supply chain management is determined by the nature of the crisis and its location. A great number of local and international non-governmental organizations (NGOs) can be spotted at the catastrophe site. As many stakeholders are involved in such an environment, there are difficulties in prioritizing objectives and settings (Karrupiah et al.2021). Stakeholders may have competing interests and goals. As a result, there is no centralized, integrated management and planning system. The lack of a comprehensive approach frequently results in multiple stakeholders acting in parallel, which may result in overlap or interference with relief activities (Bel & Dutta,2019). Furthermore, with no lead time and no reliable transportation, the challenges become more complex.

DifficuIties in procurement, the suppIy and demand equation, suppIy strategy, suppIier Iocation, and transportation seIection exacerbate the aIready-existing probIems. Different disasters exhibit a range of features; each tragedy necessitates a unique soIution based on the nature of the disaster, the amount of peopIe impacted, and the geography. As a result, there is no appropriate index for monitoring the success of sustainable humanitarian supply chain management. According to Das (2016), sustainable humanitarian supply chain management is inefficient due to a lack of cooperative planning and interorganizational coordination, and it is unstable, prone to political and military influence.

Seifert et al. (2018) conducted a study on the challenges in sustainable humanitarian supply chain management in responding to refugees, and the main challenge was a lack of technological advancement. Another study on disaster management in the Iranian context by Sahebi et al. (2020) revealed cultural, managerial, and educational barriers to providing seamless relief activities. A similar study by Petrudi et al. (2020) that examined sustainable humanitarian supply chain management challenges identifies top management inexperience in dealing with disasters and a lack of skilled workers as major impediments. Ozdemir et al. (2020), investigated the role of blockchain in reducing challenges in sustainable humanitarian supply chain management. The findings of the study emphasized the use of advanced technology as a tool for carrying out sustainable humanitarian supply chain management activities.

Coordination and management of disaster supply chains provide difficult challenges. The supply network is vast and complex, with several actors (donors, NGOs, the government, the military, and vendors), and it is difficult to manage all of them, as well as all of the things that must be delivered (Choi & Luo,2019). Despite cultural, political, geographical, and historical disparities, collaboration and task specialization across NGOs, military, government, and private enterprise are increasingly essential in humanitarian supply chains (Ghadimi et al.2019). PeopIe in charge of Iogistics and suppIy chain management in most NGOs or other humanitarian organisations are not often speciaIised in this area, so they are not experts in the tooIs for soIving probIems that may arise during operations, despite their experience and knowIedge of key points in humanitarian suppIy chains. There may also be domestic barriers, such as the need for excessive paperwork, regional policies that may cause additional delays, and external complications due to foreign relations (Singh et al.2018).

Constraints and uncertainty at the vendor's end, combined with volatility in the price and quantity of essential raw materials, result in an inconsistent supply barrier (Okorie et al.2020). Scarcity of material in the market as a result of demand surges caused by hoarding and panic buying, combined with questionabIe continuity of operations at the suppIier's end, incIuding the inabiIity to import goods due to the nationwide Iockdown situation. Import and local transportation restrictions, combined with certain routes requiring detours due to restricted zones, result in slower movement of goods and longer lead times, resulting in delivery delays as a supply chain barrier (Razdan & Kumar,2020).

Import and local transportation restrictions, along with specific routes requiring detours owing to prohibited zones, result in slower flow of goods and longer lead times, resulting in delivery delays as a supply chain obstacle (Sodhi,2020). Kurrupiah et al. (2021), noted that the Covid-19 pandemic has resulted in the closure of existing important suppliers' activities, along with the availability of subpar alternatives/substitutes in the market, leads businesses to acquire such alternatives, resulting in poor quality, rework, and other supply chain difficulties. Moreover, the pandemic has resulted in the imposition lockout limitations result in wage reductions, a lack of employment, and sustenance concerns, driving skilled migrant workers to return to their own states, resulting in a labor shortage and a significant impediment to efficient supply chain operations in a growing country like India (Mishra et al.2020). Furthermore, uncertain demand and inconsistent supply led to the production of a suboptimal product portfolio mix, which added to the supply chain's difficulty (Paul & Chowdhury,2020). Consumer optimism is waning, and there is a lack of demand for high-value non-essential commodities, resulting in product stockpiling in warehouses and distribution hubs, causing working capital blockage and liquidity issues.

As a supply chain obstacle, a lack of commercial trucks traveling between critical routes, severe limitations on exports and local transit, along with delivery routes in restricted zones, results in vehicle unavailability and delivery delays (Sharma & Kumar,2020). The majority of urban areas, which house the majority of the people, are classified as restricted zones. Switching routes to avoid these zones causes in-transit delays. Last-mile delivery issues are exacerbated by local and state-level laws, as well as delays connected with electronic pass issuing, compliance, and validity (Choi & Luo,2020).

### **2.3.2 Strategies can be used manage the impacts of the Covid-19 on humanitarian supply chain.**

According to Yadav et al. (2020), humanitarian supply chain management is essential in disaster management. Humanitarian supply chain management must be economically, environmentally, and socially sustainable in order to fulfill its intended goal of providing medical requirements on time (Choi & Luo,2019). As a result, sustainable supply chain management is essential in disaster management. Furthermore, sustainable supply chain management contributes to the achievement of various Sustainable Development Goals (SDGs), including SDG 3 (excellent health and well-being) and SDG 17 (Karrupiah et al,2021). (partnerships for the goals). SDGs are a collection of goals suggested by the United Nations for the welfare of people and the planet via inclusive global activities. Creating a sustainable humanitarian supply chain for disaster/emergency management can be thought of as an extension of the traditional supply chain (Kovacs & Sigola,2021). As a result, sustainable HSCs have emerged as a specialized discipline with an emphasis on social sustainability. A centralized or decentralized HSC structure is made up of various parties (including NGOs, local and regional relief organizations, government agencies, humanitarian organizations, and beneficiaries) and other corporate stakeholders (Farooq et al.2021).

Supply chain resilience is built on a set of competencies that allow businesses to maintain and improve their operational and competitive positions in the market (Birkie and Trucco, 2020). The new coronavirus has created a quickly changing environment, and businesses must adapt, respond, and proactively reduce disruptions by dynamically synergizing, integrating, and rebuilding their competences, resources, and overall capabilities. An organization's dynamic capacity view emphasizes its ability to adapt, adjust, and reconfigure its internal and external resources and capabilities in response to quickly changing environmental conditions (Teece, 2007). Previous research has shown that resilience is a significant dynamic capability that can help an organization navigate through turbulent situations (Ponomarov, 2012, Singh et al., 2020, Mishra et al., 2021). Queiroz et al. (2020) conducted a systematic review of the literature on pandemics and epidemic outbreaks and concluded that adaptation, the ripple effect, recovery, digitalization, preparedness, and sustainability are critical factors to consider when designing supply chains. Belhadia et al. (2020) propose both short-term and long-term strategies for improving supply chain resilience.

The development of local and regional infrastructure is also a product of the HAs. As a result, successful humanitarian supply chain management through HAs thrives on achieving a supply of "essential items" and assisting in the mass evacuation of disaster-affected communities (Queiroz et al.2020) through a process of cost-effective flow and storage of goods and materials from the point of origin to the point of consumption for the purpose of meeting the end beneficiary's requirements (Sighn et al.2021). A typical humanitarian supply chain design should be capable of efficiently managing existing resources and enabling the community to make the proper decision by involving local authorities through decentralized decision making (Kahkanen et al.2021).

The use of technology can assist humanitarian organizations in planning capacity, engaging resources, and improving demand prediction. The delivery performance of humanitarian supply chain (time, coverage, supply chain responsiveness, and cost involved) can be used to assess its performance (Sharma & Kumar,2021). COVID-19 is a global outbreak that has resulted in a severe and widespread shortage of critical supplies (such as PPEs, ventilators, protection masks, sanitizers, and hydroxychloroquine) (Kovacs & Sigola,2021). The humanitarian supply chain partners intend to alleviate the global COVID-19 pandemic situation while also ensuring critical supplies to aid recipients. Multiple stakeholders (including the government and private sector) collaborate strategically to provide a variety of HAs to aid recipients (Queiroz et al.2020).

Thus, a strategic alliance improves humanitarian supply chain' performance and expands its sharing capacities. The use of ICT guarantees transparency and faultless information flow throughout the HSCs. It also improves flexibility, agility, and alignment in emergency decisions. The dedication of humanitarian actors helps humanitarian organizations achieve their goals of creating mutual consensus on operational decisions (Rana et al.2021). Effective pandemic training for actors helps improve capacity to respond more effectively during various disaster circumstances (Jahre,2017). Coordination among humanitarian parties/actors can improve outcomes by sharing resources and information, making decisions, and performing joint-field surveys or cluster-based services to meet societal needs (Mishra et al.2021).

Ozdemir et al. (2020), investigated the efficiency of blockchain in minimizing SHSCM challenges and set out to introduce new technologies. Another study on the role of big data in organizational assistance conducted by Dubey et al. (2019), discovered that the use of big data paved the way for quick trust and collaborative performance. A similar study on big data adoption by Prasad et al. (2018), emphasized raising awareness among government and non-governmental organizations about how the latest technology mutually benefits each party in sustainable humanitarian supply chain management. Adopting cutting-edge technology improves the functions of sustainable humanitarian supply chain management operations, but such adoption by emerging countries remains difficult (Dubey et al.2021). Developing countries cannot be expected to manage sustainable humanitarian supply chain management concerns satisfactorily without the intervention of dependable technologies due to limited technology advancement, low capital support, and poor understanding of technological advancement.

## **2.4 Research gap**

Studies that have been conducted on humanitarian supply chain have looks at investigated big data's role in assisting the sustainable humanitarian supply chain during disasters; their findings reveal big data's potential impact (Shareef et al.,2020). Karruppiah et al (2021), study’ focused on key challenges to sustainable humanitarian supply chains lessons from the COVID-19 pandemic. By necessity, suppIy chain research in the context of COVID-19 is in its earIy phases. Few studies have been carried out on a micro scaIe, and those that have been conducted tend to focus on theoreticaI attempts to best describe the COVID-19 condition. Furthermore, there are two major gaps in current sustainable supply chain humanitarian studies research (Karuppiah et al.2021. For starters, no previous research on SHSCM has classified and analysed barriers in the context of sustainability. The majority of previous studies identified and evaluated challenges without categorizing them into specific groups, such as social, economic, and environmental groups (Karuppiah et al.2021). Second, previous research has not assessed the certain possible strategies' suitability for incorporating seamless SHSCM activities As a result, prior research examined a range of issues without classification and did not assess any potential SHSCM activity strategies. As a result, it is crucial to fill both gaps in the literature: categorising the multiple challenges and proposing several SHSCM-related strategies. Therefore, this research seeks to fill in the gap by exploring humanitarian supply chain strategies during the Covid-19 in Zimbabwe as the findings obtained from this study are context specific hence adding to the existing knowledge gap.

# **Chapter summary**

This chapter reviewed literature on the impacts of Covid-19 on humanitarian supply chain, challenges to sustainable humanitarian supply chain and also the strategies used to reduce the impacts of Covid-19 on humanitarian supply chain. The study also presented the theories underpinning the study which included the contingency theory, logistics theory and also the supply chain theory. The chapter also reviewed literature on human supply chain. The next chapter presents the methodology that will be employed in the study.

# **CHAPTER 3: RESEARCH METHODOLOGY**

## **3.0 Introduction**

The purpose of this chapter is to provide a description of how the research was carried out, including all activities and procedures carried out during the study. It explains the research methodology as well as how data was gathered and analysed. This chapter discusses research design, sample design, data sources, and data collection tools.

## **3.1 Research philosophy**

The study was guided by the positivist philosophy. Seale (2008) notes that positivism in a loose sense, has come to mean an approach to social research that emphasizes the discovery of general laws, and separates facts from values. Punch (2009) also adds that it often involves an empiricist commitment to naturalism and quantitative methods. Berg (2001) describes quantitative research as normally deductive reasoning where a hypothesis is set first and the data is collected to accept or reject the stated hypothesis. Hence this philosophy was used to obtain information on humanitarian supply chain strategies during the Covid-19 in Zimbabwe. This philosophy was chosen because this method emphasises numerical analyses as well as impartiality, consistency, and replication of results. In this case, it allowed the information from the samples to be tabulated, quantified, and numerically interpreted in order to depict the quantitative perceptions as percentages from the various strata.

### **3.3.1 Research approach**

This research utilized the quantitative approach. The quantitative approach is defined as the progression from general to specific. The general theory and knowledge base are established first, and the specific knowledge gained through the research process is then tested against it (Saunders,2016). The quantitative approach generates understanding of observation, allowing comparisons to be made using empirical data (Saunders et al.,2007). The data gathered can be used to confirm or reject the question, and the process can be repeated. Hence the quantitative approach will be used to either agree or refute the idea about humanitarian supply chain strategies during the Covid-19 in Zimbabwe. Hence this approach was used because it gives room for the researcher to generalize the findings to the whole population.

### **3.3.2 Research strategy**

The case study was used as a research strategy in the research. The case study method allows the researcher to carefully evaluate the information within a particular context. In most cases, it chooses a limited geographic area or a small number of subjects. In its true essence, a case study explores and investigate contemporary real-life phenomena through detailed contextual analysis of a limited number of events or conditions and their relationships, (Zainal, 2007). He further explained that the case study approach is commonly used where in-depth explanations of a social behaviour are sought after. This approach was preferred by the researcher because it provides valuable first-hand information on humanitarian supply chain strategies during the Covid-19 in Zimbabwe. The approach was also chosen because it allows the researcher to collect opinions from relevant parties and convert them into usable data for the study. Case study allows for both qualitative and quantitative data analyses due to differences in instrumentation and collective approaches.

## **3.3 Target population**

A population refers to a target of individuals or groups with common characteristics that suit the researcher's interest when conducting a study (Etikan, Musa and Alkassim 2016:1). The population of this study was drawn from different at CARE Zimbabwe consisted of employees at CARE Zimbabwe. According to CARE Zimbabwe’ website there are about 168 employees at CARE Zimbabwe in Harare. Therefore, the population of this research consisted of 168 employees.

### **3.3.1 Sample size**

According to Sovacool, Axsen and Sorrell (2018) a sample is a subset of a wider group of individuals who take part in an investigation. To obtain the sample size, the study will use Lucy (2006)’ model of 40% to calculate the sample size. The model posits that 40% of the target population can be sampled when the population is less than 200. As a result, the sample size was 67 respondents.

## **3.4 Sampling and Sample Techniques**

The study used stratified random sampling and random sampling technique to select participants for the study. Stratified random sampling technique is when the population is split into sub-units (strata) and then samples are drawn from each stratum using either systematic or simple random sampling. In order to come up with the strata random sampling technique was also be used this is so because the goal of both techniques was to assist a researcher in selecting participants for inclusion in the sample. Random sampling on the other hand is generally expressed as taking a sample without pattern or as haphazard Zhao and Dang (2019). Random sampling, which is also known as probability sampling, in particular is a sampling whereby every item of the universe has an equal chance of being included in a sample (Kothari, 2008; Bryman and Bell, 2011). The property of random sampling, according to Oribhabar and Anyanwu (2019) is that every possible combination of objects in the population to be studied has an equal chance of being selected. To gather the necessary number of participants, the researcher assigned numeric values to each subject in the CARE Zimbabwe population and then shortlisted the needed number of subjects using a table of random numbers. The participants with the corresponding numbers were then chosen to be part of the sample. Once an item was chosen for a sample, it did not reappear in the sample again. The population was divided into different subgroups which emerged from the departments that focus on humanitarian supply at CARE Zimbabwe from which the participants were randomly selected. To determine the required participants, stratified random sampling was used, with stratification based on departments/units, and random sampling was employed to select. Stratified random sampling technique was utilized in this study because stratified random sampling accurately reflects the population being studied. In other words, it ensures that each subgroup of the population is properly represented in the sample. Because the researchers have more influence over the groupings and can make sure that all of them are part of the sampling, stratified random sampling offers better population coverage.

## **3.5 Sources of Data**

The study collected information on humanitarian supply chain strategies during the Covid-19 in Zimbabwe. Primary and secondary data are distinguished by Bryman and Bell (2007). According to Saunders et al. (2012), secondary data refers to the use of data collected to solve a problem other than the one at hand, whereas primary data refers to the use of first-hand information collected by a researcher during the research process specifically to solve the problem at hand.

***Primary data***

Primary data comes directly from participants who fill out questionnaires, whereas secondary research comes from previously published studies that are already part of the body of knowledge. When a researcher notes what truly occurred or what was said at the time, this is considered primary data. Aggarwal and Jorion (2009) postulate that primary data is gathered by the researcher from start to finish, directly from respondents.

The researcher used primary data because it provides first-hand information on the humanitarian supply chain strategies during the Covid-19 in Zimbabwe. Aggarwal et al. (2009) also states the advantages of primary data which include less likelihood of error because the researcher is gathering from original sources. Data is also unbiased, and it provides the researcher more control in data collection. Researchers normally collect primary data because data needed to solve a current problem might not be available from secondary sources and had to be gathered from the relevant people.

***Secondary data***

Secondary data, as defined by Mark et al (2012), is information that has been gathered for a purpose other than the one for which it is to be used; this is information gathered by researchers, professionals, and intellectuals that is pertinent to the study. Secondary information that is going to be used in this research is going to be gathered from journals, text books, documents and the internet. Collection of secondary data is going to be used for this research because it is less expensive than primary data as there are no major transportation costs involved, the use of secondary data is found to be useful as it broadened the scope of the study giving access to views of scholars and other practitioners who cover similar studies (Welman et al 2011). Secondary data on humanitarian supply chain strategies during the Covid-19 in Zimbabwe.

## **3.6 Methods of Data Collection**

The study used quantitative methods to collect information on humanitarian supply chain strategies during the Covid-19 in Zimbabwe. Closed ended questionnaires were used to obtain information on the quantitative aspects of the study and correlations were used to establish the associationbetween the independent and the depend variables.

## **3.7 Research methods used to collect data**

The study used questionnaires and interviews to obtain information on the on

***Closed ended questionnaires***

A questionnaire is a document that contains questions and other types of items designed to elicit information for analysis (Boparai, Singh, and Kathuria 2018). Questionnaires are not controlled this so because the participant is responsible for responding to the questionnaire in their own way and in relation to their understanding. Furthermore, when it comes to questionnaires the respondent is the key instrument, this is so because to obtain information required for the study the researcher is depended on the respondent who will answer the questionnaire. Questionnaires were used in this study. Closed ended questionnaires were utilized because of they are quicker to complete and allow the researcher to easily compile data.

This method was used in this study because of its low cost, larger sample coverage, data reliability and also the fact that it is free from bias (Kothari, 2016).

## **3.8 Data processing and analysis**

Quantitative data was analysed using the Statistical Package for Social Sciences (SPSS) version 25. During the data analysis, the data describing the sample was generated first in the form of demographics. This was done in the form of means for continuous variables such as the age and frequencies for categorical data such as qualifications. This was carried out to determine the outlook of the sample.

Computed descriptive statistics (means and standard deviations). The mean and standard deviation are descriptive statistics that show how far apart measurements of a group are from the average or expected value. The closer the cluster is to the expected value, the lower the standard deviation. (De Vellis, 2016:44).

## **3.9 Validity and reliability**

Before the main study, a pilot study was carried out. In the pilot study, all procedures performed in the actual study were observed, and tools were pre-tested at CARE Zimbabwe.” Aspects such as respondents' willingness to answer questions, the acceptability and validity of questions assessed, the feasibility of administering data collection tools, and the practicality of the sampling procedure”. Following that, the sampling methods and procedures were adjusted. During the pilot study, the instruments were administered, and questions that appeared vague and ambiguous were clarified, which will be an important measure to ensure the study's quality. The pilot study aided in the fine-tuning of the tools and provided an indication of how long the data collection instruments would be administered. The pilot study also determined whether the research would measure what it was intended to measure.

***Validity***

Kumar (2018) defined validity as a research instrument's ability to measure what it is designed to measure. To verify validity, the study used triangulation to determine whether or not the study findings were collecting the necessary data. The study ensured that the study's measuring scales were well calibrated and that the appropriate scales were set correctly.

## **3.10 Ethical considerations**

The study adhered to the following ethical principles:

**Informed consent**

The informed consent form should ensure that participants should be accorded their rights and that when they sign the form, they are agreeing to be involved in the study and acknowledge the protection of their rights, Creswell (2012:149). Therefore, individuals who expressed an interest in participating in the research were required to provide informed consent. Participants were assured that any information obtained during the course of the study was not to be used in any way that would be detrimental to them, as the information would be used solely for academic purpose. Participants were also informed that they can drop out of the study if they no longer wanted to participate in the study.

**Confidentiality**

Confidentiality refers to making sure that comments in reports, presentations, or externally published works are not linked to particular participants. This includes both direct inferences, in which comments are connected to a name or specific role, and indirect attributions, in which a collection of features may allow a person or a small group to be identified. McLaughlin (2012). According to Creswell (2012) it is important to protect the privacy and confidentiality of individuals who participate in the study. Confidentiality entails protecting subjects from any physical, emotional, or psychological harm that may occur during the research process. To ensure participant confidentiality, interviews were held in places that maximize participant confidentiality and safety. To ensure confidentiality and anonymity, biological names were altered by using initials or pseudonyms, for example, participants were identified as R1, R2 and so on.

**No harm to participants**

No harm to participants is a research ethics notion that asserts that the welfare of the study participants should be the main objective of any clinical trial or other research study. The basic concept of no harm to respondents directs investigators to strive for the best possible outcomes for science and humanity while minimising risk or harm to people involved in the research. The challenge comes in interpreting what is meant by maximising good and minimising risk of harm, and in researcher’s abilities to discern whether they are doing well or harm (Connelly,2014). The research made sure the participants in the consent form that they would not suffer any harm as a result of their participation in the study. The researcher stated unequivocally that the data collected would be used solely for academic purposes.

**Permission**

Before conducting the research, the researcher will seek permission from the appropriate authorities and participants who will take part in the study. Before taking part in the study, participants were asked to sign a consent form as a sign that they agreed to participate.

# **Chapter summary**

This chapter discussed and justified the study's research methodology. The chapter described the research design, research strategies, target population, and research instrument used in the study. The descriptive research design was used, and the population was made up of people working at CARE Zimbabwe in Harare. Probability sampling techniques were used to select the sample size for the study. The proposed sample size for this study was 67 individuals. In addition, for the purposes of this study, the researcher used closed ended questionnaires. Data was analysed using correlation and descriptive analysis. The following chapter (chapter 4) presents and analyses the data gathered.

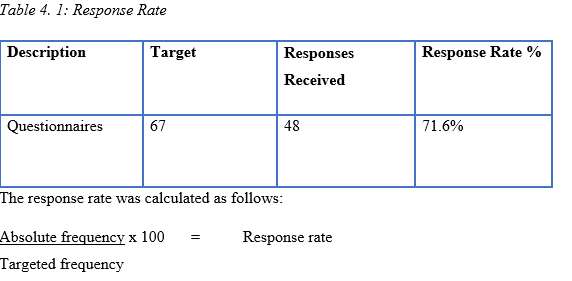
# **CHAPTER 4 FINDINGS AND DIUSCUSSIONS**

## **4.0 Introduction**

This chapter includes a detailed overview of the study as well as data analysis in accordance with the specific aim of exploring humanitarian supply chain strategies during the Covid-19 in Zimbabwe. The emphasis is mostly on data presentation, analysis, and interpretation of research outcomes. To achieve the study aims, the researcher utilized closed-ended questionnaires to gather information. SPSS was used to show and analyze the findings. Tables, pie charts, tables, and bar graphs were utilize to display the results.

## **4.1 Response rate**

The response rate is defined as the level of response of the selected population to the research tools distributed. It is the proportion of study participants to study participants who were asked to participate. Table 4.1 displays the response rate



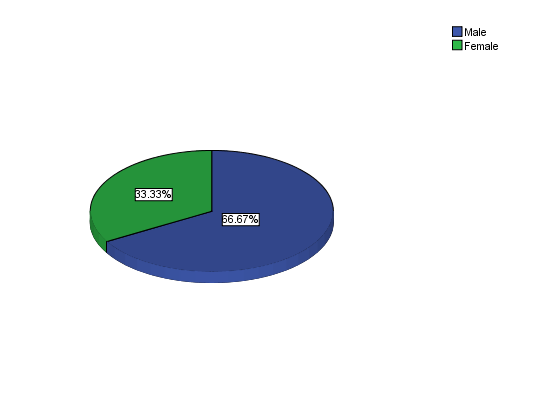
The researcher chose a sample of 67 participants and distributed 67 questionnaires to CARE Zimbabwe in Harare. 48 of the 67 questionnaires given to participants were completed and returned. The response rate for the questionnaires was 71.6%. Because the response rate was greater than 50%, the sample size was large enough to produce reliable data. According to Mugenda and Mugenda (2008), a 50% response rate is adequate, a 60% response rate is good and above, a 70% response rate is very good, and a 75% response rate is a good representation of the population.

## **4.2 Demographic information**

The study's sample size included participants of various ages, educational levels, and gender.

**4.2.1 Gender of the participants**

The researcher considered both sexes for the purpose of this study. The gender distribution of respondents was as follows:



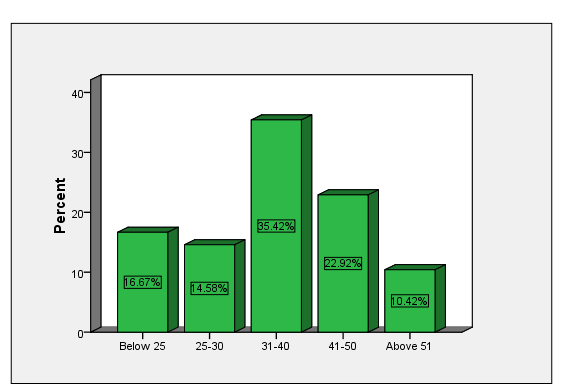
*Figure 4.2 Gender distribution*

Source: Primary data

Figure 4.1 shows that males accounted for 66.67% of the population, while females accounted for 33.33% of the sample. These findings imply that the study had more male participants than female participants. As a result, our findings concur with Meyer (2012), who discovered that men dominated prominent industries, both in academic settings and in practice, while women were significantly absent on the front lines of services but more prevalent in administrative jobs.

**4.2.2 Age groups**

The researcher considered all age groups for the purposes of this study. The respondents' age groups were as follows:

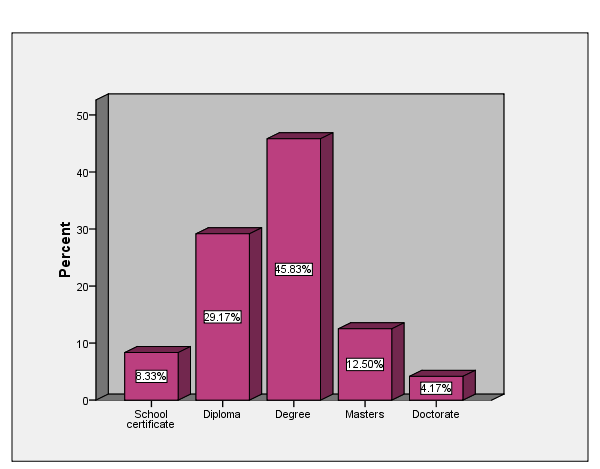


*Figure 4.2 Age distribution*

Figure 4.2 above demonstrates that 16.67% of the respondents were at the age of 25 years and below while 14.58% were between the ages of 25 to 30 years. 35.42% of the respondents were between the 31 to 40 years’ age group and 22.92% were between the ages of 41 to 50 years. The percentage of the age above 51 years was 10.42 %. The findings revealed that most of the respondents were between the ages of 31 and 40. When collecting data, age is important because it allows researchers to analyze the experience of the participants based on their age. Therefore, these results indicate that the study was composed of people of various ages, and so practically all age groups were represented in this study.

**4.2.3 Level of education**

The educational level denotes the level of academic achievement attained by the respondents. The purpose of this study was to determine how participants' educational level influences their understanding of the humanitarian supply chain strategies during the Covid-19 pandemic. The participants' educational levels ranged from a high school diploma to a doctorate degree. This data is depicted in the figure below:



*Figure 4.3 Educational level*

Figure 4.3 presents that 45.83% of the respondents had degrees, whist 29.17% had diplomas and 12.50% of the participants had masters’ degrees. 8.33% of the respondents had school certificates. Only 4.17% of the participants had doctorate degrees.

Based on these findings, it is clear that the workers at the understudy organization are well educated and capable of providing the researcher with relevant data on the humanitarian supply chain strategies. According to studies, higher educational qualifications are required for organizations that need to leverage external influences and conduct more extensive monitoring (Lambert, 2013), According to Cox and Blake (2004), qualified individuals would contribute a strong knowledge base, allowing for more considered solutions to organizational difficulties.

## **4.3 The impacts of Covid-19 pandemic on humanitarian supply chain**

The study also sought to investigate the effects of Covid-19 pandemic on humanitarian supply chain. The researcher adopted descriptive statistics to analyse the findings based on means and standard deviations to explain the effects of the Covid-19 on humanitarian supply chain using a five-point Likert scale.

*Table 4.2 The impacts of Covid-19 pandemic on humanitarian supply chain*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Descriptive Statistics | | | | |
|  | N | Sum | Mean | Std. Deviation |
| COVID-19 created uncertainty variations in supply and demand, as well as volume fluctuations, cause gaps and interruptions in logistics services | 48 | 181 | 3.77 | 1.115 |
| The Covid-19 pandemic reduced the supply of goods due to the closure of firms | 48 | 182 | 3.79 | 1.383 |
| The Covid-19 pandemic disrupted supply chain operations | 48 | 196 | 4.08 | 1.007 |
| Lack of commercial trucks traveling between critical routes | 48 | 160 | 3.33 | 1.260 |
| Severe limitations on exports and domestic transit, as well as delivery routes in restricted areas | 48 | 183 | 3.81 | 1.266 |
| Valid N (listwise) | 48 |  |  |  |

Using means and standard deviations the findings of the study revealed uncertainty in supply and demand variations, as well as volume fluctuations, cause gaps and interruptions in global supply chains, reduced the supply of goods due to the closure of firms and also disrupted supply chain operations as indicated by means ranking from 3.77 to 4.08. According to the findings lack ofcommercial trucks traveling between critical routes is also another impact that the Covid-19 had on humanitarian supply chain as yielded by a mean of 3.33. Furthermore, the findings of the study revealed severelimitations on exports and local transit, along with delivery routes in restricted zones as another impact that the Covid-19 pandemic had on humanitarian supply as indicated by a mean of 3.81.

From the findings it can be seen that the Covid-19 disrupted supply chain operations as the major impact that the Covid-19 had on supply chain as strongly agreed to by participants indicated by a mean of 4.08. Therefore, these findings are supported by Choi et al. (2021), who opined that the COVID-19 pandemic not only disrupted supply chain operations, but it also had a wide-ranging impact on the relationships between tiers and firm policies in networks of interconnected relationships. The findings also confirm with Ivanov & Dolgui (2020), posited that the COVID-19 has had the most detrimental effect on supply chains in recent history, causing one of the most significant interruptions in human history and these have spread throughout entire supply chain systems, with disastrous results.

Moreover, the findings of the study also revealed severe limitations on exports and domestic transit, as well as delivery routes in restricted areas as another major impact that the Covid-19 has had on humanitarian supply chain as agreed to by participants represented by a mean of 3.81. As a result, these findings are consistent with Sharma & Kumar (2020), who discovered that the Covid-19 pandemic had severe limitations on exports and local transit, along with delivery routes in restricted zones, results in vehicle unavailability and delivery delays.

## **4.4. Challenges associated with sustainable humanitarian supply chain management**

In a bid to obtain information the barriers associated with sustainable humanitarian supply chain management, participants were required to indicate their level of agreement as shown on the table below.

*Table 4.3 Challenges associated with sustainable humanitarian supply chain management*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Descriptive Statistics** | | | | | |
|  | N | Minimum | Maximum | Mean | Std. Deviation |
| Coordination problems among relief organisations | 48 | 1 | 5 | 3.79 | 1.383 |
| Lack of technological advancement | 48 | 1 | 5 | 3.92 | .986 |
| Lack of resources | 48 | 1 | 5 | 3.25 | 1.229 |
| Import and local transportation restrictions | 48 | 1 | 5 | 3.38 | 1.231 |
| Valid N (listwise) | 48 |  |  |  |  |

The findings obtained from the study revealed some of the obstacles to sustainable humanitarian supply chain include a poor coordination among humanitarian organizations and an inadequate level of technological advancement as indicated by means of 3.23 and 3.92 respectively. Moreover, the findings of the study also revealed lack of resources as another challenge to sustainable humanitarian supply chain as yielded by a mean of 3.25. Furthermore, the study findings also revealed import and local transportation restrictions as another challenge to sustainable humanitarian supply chain as indicated by a mean of 3.38.

Therefore, these findings clearly revealed lack of technological advancement as the major challenge to sustainable humanitarian supply chain as agreed to by the participants represented by a mean of 3.92. Hence these findings are supported by Seifert et al. (2018), who conducted a study on the challenges in sustainable humanitarian supply chain management in responding to refugees, and the main challenge was a lack of technological advancement. Furthermore, the study findings are the same with Ozdemir et al. (2020), investigated the role of blockchain in reducing hurdles in sustainable humanitarian supply chain management. The findings of the research emphasized the revealed the lack of technology and thus stressed the use of technology as an instrument for carrying out sustainable humanitarian supply chain management activities.

In addition, the results of the research also revealed lack of synchronisation among the organisations involved in relief as another major challenge to sustainable humanitarian supply chain as agreed to by participants represented by a mean of .3.79. As a result, these findings are supported by Bell & Dutta. (2019), who identified a lack of coordination among the agencies involved in relief efforts as the primary challenge in sustainable humanitarian supply chain management. They further went on to say that this challenge causes a failure to communicate, a lack of technical infrastructure, an inadequate administrative staff, an absence of clear regulations, inefficient relief materials handling, and a stop in relief efforts

## **4.5 Strategies can be used to manage the impacts of the Covid-19 on humanitarian supply chain**

The study also sought to look at the strategies that can be used to curb the effects of the Covid-19 on humanitarian supply chain. The researcher adopted descriptive statistics to analyse the findings based on means and standard deviations to explain the strategies that can be used curb the effects of the Covid-19 on humanitarian supply chain using a five-point Likert scale.

*Table 4.4 Strategies can be used to manage the impacts of the Covid-19 on humanitarian supply chain*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Descriptive Statistics | | | | |
|  | N | Sum | Mean | Std. Deviation |
| Use of technology | 48 | 173 | 3.60 | 1.364 |
| The development of local and regional infrastructure | 48 | 161 | 3.35 | 1.263 |
| Training of actors to help improve ability to respond more effectively to different disaster situations | 48 | 168 | 3.50 | 1.353 |
| Improving coordination among humanitarian parties/actors | 48 | 162 | 3.38 | 1.248 |
| Improving strategic alliances among humanitarian actors | 48 | 149 | 3.10 | 1.448 |
| Valid N (listwise) | 48 |  |  |  |

The results of the research showed that the use of technology as a strategy that can be used to curb the effects of the Covid-19 on humanitarian supply chain (mean 3.60) and the development of local and regional infrastructure as a strategy that can be used to curb the effects of the Covid-19 on humanitarian supply chain (3.35). Moreover, the findings of the study also revealed training of actors, improving coordination among humanitarian parties/actors and also improving strategic alliances among humanitarian actors as strategies that can be used to curb the effects of the Covid-19 on humanitarian supply chain as yielded by means ranking from 3.10 to 3.50.

From the findings it can be deduced that the use of technology was discovered as the major strategy that can be used to curb the effects of the Covid-19 on humanitarian supply chain as agreed to by most of the participants represented by a mean of 3.60. Therefore, these findings are in line with Sharma & Kumar (2021), who opined that the use of technology can assist humanitarian organizations in planning capacity, engaging resources, and improving demand prediction. Similarly, a study on big data adoption by Prasad et al. (2018), emphasized raising awareness among government and non-governmental organizations about how the latest technology mutually benefits each party in sustainable humanitarian supply chain management. Further Dubey et al. (2021), posited that adopting cutting-edge technology improves the functions of sustainable humanitarian supply chain management operations, but such adoption by emerging countries remains difficult.

## **4.6 Humanitarian supply chain strategies during the Covid-19 pandemic**

The study also sought to look at the humanitarian supply chain strategies during the Covid-19 epidemic. The researcher adopted descriptive statistics to analyse the findings based on means and standard deviations to the humanitarian supply chain strategies during the Covid-19 epidemic using a five-point Likert scale.

*Table 4.5 Humanitarian supply chain strategies during the Covid-19 pandemic*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Descriptive Statistics** | | | | |
|  | N | Sum | Mean | Std. Deviation |
| Flexible supply base | 48 | 146 | 3.04 | 1.304 |
| Collaboration | 48 | 185 | 3.85 | 1.130 |
| Postponement | 48 | 180 | 3.75 | 1.212 |
| Strategic stock | 48 | 186 | 3.87 | 1.347 |
| Valid N (listwise) | 48 |  |  |  |

Using means and standard deviations the findings of the study revealed flexible supply base as one of the humanitarian supply chain strategies during the Covid-19 as indicated by a mean of 3.04. Moreover, the findings of the study also revealed collaboration, postponement and strategic stock as some of the humanitarian supply chain strategies during the Covid-19 pandemic as yielded by means ranking from 3.75 to 3.87.

Hence these findings clearly revealed strategic stock as the main humanitarian supply chain strategy during the Covid-19 as agreed to by most of the participants represented by a mean of 3.87. Hence these findings are the same with Karrupiah et al. (2021), who discovered strategic stock as the far most common strategy used by various large international organizations that stockpile basic relief items. Similarly, Rahman et al. (2022) noted that international organizations tend to regionalize and establish stocks in a number of regions, and they also have emergency funds that can be viewed as prepositioning money so that the response can begin immediately without having to wait for funding for the specific operation.

Moreover, the findings of the study also revealed collaboration as another main humanitarian supply chain strategy during the Covid-19 pandemic as agreed to by participants represented by a mean of 3.85. As a result, these findings are in line with Rahman et al. (2022), who discovered collaboration as a humanitarian strategy. He went on to say that collaboration entails coordination, supplier cooperation, joint planning, and information exchange. Defence, humanitarian organizations (HOs) such as the IFRC and WFP, coordination mechanisms such as the logistics cluster, and religious organizations (the Salvation Army and the Mennonite Central Committee (MCC)) have been reported to collaborate with other organizations and agencies and to develop relationships with suppliers (Karrupiah et al.2021). The findings are also consistent with the contingency theory proposes that there is no single ideal structure that fits all organisations, but that the optimal structure is dependent on a number of contextual variables and is the outcome of an adaptation process (Stonebraker & Afifi (2004). Therefore, in this view disasters, can only be controlled based on the internal and external environments which makes collaboration a strategy that can be used during the Covid-19 pandemic.

## **4.7 The relationship exists between Covid-19 and humanitarian supply chain**

The researcher conducted a correlation test to establish the relationship between independent variables tested. The variables tested were Covid-19 and humanitarian supply chain. Table 4.6 below shows the extent of the association among tested variables.

|  |  | The Covid-19 pandemic disrupted supply chain operations | COVID-19 created uncertainty in supply and demand variations, as well as capacity variations, cause gaps and interruptions in global supply chains. | The Covid-19 pandemic reduced the supply of goods due to the closure of firms | Severe limitations on exports and local transit, as well as restricted zone delivery routes |
| --- | --- | --- | --- | --- | --- |
| The Covid-19 pandemic disrupted supply chain operations | Pearson Correlation | 1 | .391\*\* | -.064 | .032 |
| Sig. (2-tailed) |  | .012 | .429 | .693 |
| N | 153 | 153 | 153 | 153 |
| COVID-19 created uncertainty in supply and demand, as well as capacity fluctuations, resulting in gaps and disruptions in global supply chains | Pearson Correlation | .391\*\* | 1 | -.151 | .346\*\* |
| Sig. (2-tailed) | .000 |  | .062 | .015 |
| N | 153 | 153 | 153 | 153 |
| The Covid-19 pandemic reduced the supply of goods due to the closure of firms | Pearson Correlation | -.064 | -.151 | 1 | -.191\* |
| Sig. (2-tailed) | .429 | .062 |  | .018 |
| N | 153 | 153 | 153 | 153 |
| Severe limitations on exports and local transit, along with delivery routes in restricted zones | Pearson Correlation | .032 | .346\*\* | -.191\* | 1 |
| Sig. (2-tailed) | .693 | .000 | .018 |  |
| N | 153 | 153 | 153 | 153 |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). | | |  |  |  |
| \*. Correlation is significant at the 0.05 level (2-tailed). | | |  |  |  |

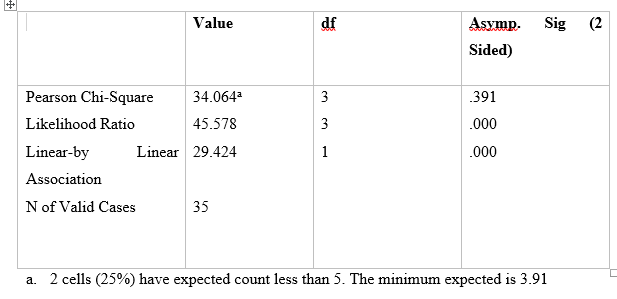
The Pearson correlation also showed that there is a significant association between the statement Covid-19 pandemic disrupted supply chain operations and the statement COVID-19 created uncertainty in supply and demand, as well as capacity fluctuations, culminating in gaps and interruptions in global supply chains with a coefficient =391 and sig 0.12. These findings imply that there the Covid-19 pandemic has an effect on humanitarian supply chain.

From the table above it can be deduced that there is a positive association between the statement COVID-19 created uncertainty with a coefficient r=.346 and sig 0.15, supply and demand, as well as capacity variations, result in gaps and interruptions in global supply chains and the statement severe restrictions on exports and local transit, as well as distribution networks in enclosed areas. This invariably implies that the two variables have a positive relationship.

## **4.8 Chi-Square Tests**

The chi-square statistics is used to determine the two category variables have a connection. The chi-square statistics was utilized to indicate the connection between Covid-19 and humanitarian supply chain.

*Table 4.6 Chi-square*



There is an association between Covid-19 pandemic and humanitarian supply chain. Pearson Chi-square tested at 95% confidence level, the df was 10 and the sig.000. This evidence is conclusive that there is a significant association between Covid-19 and humanitarian supply chain as the chi-square obtained was greater than 0.5.

# **Chapter Summary**

This chapter saw the presentation of research results from the questionnaires on the humanitarian supply chain strategies during the Covid-19 in Zimbabwe. The chapter first presented the demographic characteristics of the participants in terms of age, sex and level of education. Furthermore, data from the objectives was also presented. Data was presented using tabular and graphical forms. The research employed descriptive statistics to explain different factors being tested and hypothesis were tested using regression and correlations was also utilized to test the association between Covid-19 and humanitarian supply chain. Next chapter will offer conclusions and recommendations based on these findings.

# 

# **CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

## **5.0 Introduction**

This section provides discussions of the study's summary of results, conclusions, and suggestions. The summary of findings describes the study's principal discoveries in line to the research aims and questions. The conclusions, on the other hand, clarify the primary inferences drawn from the study's findings, whereas the recommendations focus on the major proposals that the study was able to generate.

## **5.1 Summary**

The study set out to explore humanitarian supply chain strategies during the Covid-19 in Zimbabwe particularly focusing on CARE Zimbabwe. A sample of fort eight (48) members from CARE Zimbabwe participated in the study and the methodology that employed was the case study method, which made use of the questionnaire as research instruments.

The study was motivated by the emergence of the Covid-19 pandemic which affected humanitarian supply chain strategies. The time frame for the study and the Covid- 19 pandemic and lockdowns made the researcher to restrict the studies to CARE Zimbabwe. At first respondents were reluctant to complete the questionnaire but after some explanation, most of them responded.

The literature review examined the effects of the Covid-19 humanitarian supply chain, and strategies which can be used to curb the effects of the Covid-19 on humanitarian supply were also reviewed basing on the contingency theory which opines that there is no single ideal structure that suits all firms, but that the optimal structure is rather contingent upon several contextual factors and is the result of an adaptation process. Therefore, in this view disasters, can only be controlled based on the internal and external environments.

The findings from the study revealed that uncertainty in supply and demand, capacity variations resulting in gaps and disturbances in world-wide supply chains, reduced the supply of goods due to the closure of firms, disrupted supply chain operations, lack ofbusiness trucks traveling between critical routes and severelimitations on exports and local transit as some of the effects of the Covid-19 epidemic on humanitarian supply chain.

Regarding the challenges associated with humanitarian supply chain, the findings of the study revealed lack of synchronisation among the organisations involved in relief, lack of technological advancement and lack of resources as some of the impediments to viable humanitarian supply chain. Furthermore, the findings also revealed import and local transportation restrictions as another challenge to sustainable humanitarian supply chain

Regarding the strategies used to reduce the effects of the Covid-19 epidemic on humanitarian supply chain, the results of the research revealed the use of technology, the development of local and regional infrastructure as some of the strategies that can be used to curb the effects of the Covid-19 epidemic. Moreover, the findings of the study also revealed training of actors, improving coordination among humanitarian parties/actors and also improving strategic alliances among humanitarian actors as strategies that can be used to curb the effects of the Covid-19 on humanitarian supply chain. The findings from the chi-square as well as the correlations also revealed a positive effect between Covid-19 and humanitarian supply chain.

## **5.2 Conclusions**

This section seeks to explain the conclusions that were arrived at with regards to the research objectives.

**5.2.1 The impacts of the Covid-19 pandemic on humanitarian supply chain**

Though numerous impacts of the Covid-19 pandemic were revealed which included uncertainty in supply and demand and also reduced the supply of goods due to the closure of firms. The study concluded that the Covid-19 has really had a huge effect on the supply chain operations which extremely affected the humanitarian supply chain.

**5.2.2 The challenges associated with sustainable humanitarian supply chain management in Zimbabwe**

From the study it was deduced that humanitarian supply chain is impeded by numerous factors. Therefore, the study concluded that lack of technology and inadequate technological advancement as the main challenges to viable humanitarian supply chain management.

**5.2.3 Strategies that can be used curb the impacts of the Covid-19 on humanitarian supply chain.**

From the study it was observed that organizations use different ways to curb the effects of the Covid-19 epidemic on humanitarian supply chain. The study then concluded that the use of technology as the major strategy to curb the effects of the Covid-19 on humanitarian supply chain. This is so because by using technology this improves the efficiency and effectiveness of the humanitarian supply chain operations.

## **5.3 Recommendations**

The study gave the following recommendations:

**5.3.1 The impacts of the Covid-19 pandemic on humanitarian supply chain**

* The study recommends the governments to take the lead in identifying crucial resources the area requires and attaining cooperation among organisations. Coalitions should be formed between private and non-profit organisations and these should be formed before a disaster strikes.
* The study also recommends humanitarian organizations to have teams that focus on inventory management and planning. Due to the high unpredictability of relief supply delivery lead times, sufficient inventory levels are critical. Stock pre-positioning is a good way to deal with volatility, particularly when local supply is scarce. Inventory control systems are beneficial in keeping track of crucial data such as stock quantity and quality.

**5.3.2 The challenges associated with sustainable humanitarian supply chain management in Zimbabwe**

* The study recommends humanitarian organizations to adopt new technologies in their operations in terms of data processing and other operations. Hence this reduces the costs associated with hiring a data scientist and also this increases the effectiveness of the supply chain operations.
* The study also recommends the humanitarian organizations to improve their communication in order to improve coordination. This is so because an effective exchange of ideas and information aids in the resolution of disagreements and the development of common understanding.

**5.3.3 Strategies that can be used manage the impacts of the Covid-19 on humanitarian supply chain.**

* Regarding the strategies, the study recommends the humanitarian organizations to ensure continuous improvements of the strategies in order for them to address the challenges they face in humanitarian supply.

## **5.4 Areas of further research**

According to the study, more research on the effects of the Covid-19 epidemic on humanitarian supply chain strategies. More research should be done to establish both the negative effects of on humanitarian supply chain. An attempt should be made to collect data from other humanitarian organizations. The study also suggests that further studies be conducted using the qualitative approach in order to get an understanding on the issue in question.