Study of stakeholders' challenges in the humanitarian supply chain in light of covid 19.

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ABSTRACT

The field of stakeholder's challenges in the humanitarian supply chain is progressively a subject matter of research in light of the COVID 19 pandemic situation. Even though there had been some research in the field of Humanitarian supply chain management in the past, this research paper more related to the identification of the stakeholder challenges in humanitarian supply chains. Humanitarian supply chain management not only deals with natural calamities but also the wake of the novel coronavirus disease (COVID-19) pandemic, The damage the virus is unleashing is only by way of human infection — it will not affect the infrastructure like other natural disasters such as floods or earthquakes do. Tools and factors/ barriers can be used to identify the challenges of the different stakeholders in the COVID 19 crisis & who has been faced the critical challenges out of it.

The objective of this research is to identify the main challenges of different stakeholders in the HSCM. Foremost, the research goal to recognize appropriate tools for evaluating the most critical challenges be identified in the HSCM.

The research strategy covered for this study is an aggregate different case study, few research articles, a Newspaper, Strategic consulting firm Articles & The empirical data is gathered through interviews with different stakeholders. For this research in total 12 organizations' representatives and 10 volunteers were interviewed & prepared list questionnaires in the google form & had shared in the various platforms to collect the required data. The collected data have been analysed by TOPSIS (Technique of Order Preference Similarity to the Ideal Solution) a multi-criteria decision analysis method & by implementing TOPSIS, we can identify some of these challenges in Humanitarian supply chain

Introduction

Recently, the leading consulting firm KPMG states that the outbreak of the coronavirus (COVID 19) has left the world grappling with it. The pandemic has had a significant human and commercial impact globally. Under such conditions, no single relief organization can engage or respond to humanitarian relief such as ¬- aid, healthcare, sanitation, etc., Humanitarian logistics refers to the "processes and systems involved in mobilizing people, resources, skills, and knowledge to help vulnerable people affected by the disaster" (Wassenhove, 2006).

The study of stakeholder's challenges in humanitarian supply chain management (HSCM) has caught the consideration in the light of COVID 19 circumstances. There was a minimal number of revealed papers related to the field of humanitarian supply chain management (HSCM) & stakeholder's challenges associated with it.

As per Beamon (2004), there are some research published paper in the study of HSCM in the past, and research more related to the abilities and effectiveness of humanitarian supply chains is required.

Besides, the effect of the COVID 19 in blend with the socially, Economically & Environmentally (tripled layer business) areas has attracted to the public & different stakeholder's attention, as well as the attention of researchers with a humanitarian supply chain management.

A typical humanitarian supply chain

The humanitarian supply chain does not pertain only to humanitarian organizations. The research study also involved many stakeholders and influencing the process due

to the light of COVID 19 outbreak. The humanitarian supply chain is below:

- Healthcare
- Logistics & transportation
- Entrepreneur
- Manufacturing
- Aid agencies & NGOs,
- Governments,
- Suppliers
- Military Services

Objective

The objective of this research is to identify the main challenges faced by different stakeholders in today's humanitarian supply chains in the light of COVID 19 Pandemic situation.

The current study aims at achieving the following objectives:

1. To identify the challenges faced by the stakeholders of HSCM during a COVID 19 Crisis?
2. To rank the stakeholders according to the challenges

Furthermore, the research goal to recognize a suitable model (Like. TOPSIS) through the MDCA approach to measure the challenges critically amongst the different stakeholders in the HSCM.

Research questions

Q1: What are the challenges faced by the different stakeholders of the Humanitarian supply chain during a disaster/pandemic such as COVID 19?
Q2: Can the most critical stakeholders be identified?

Delimitations

Due to the time restriction and comprehensive scope of the research, delimitations are necessary. First of all, the research study more focuses on different types of stakeholders are faced with challenges with tripled layer business models (Like…Social, Economical & Environmental) in the humanitarian supply chain. Thus, I had taken the most important stakeholders in this research & few stakeholders are excluded from this research study. Therefore, the names and any other identified stakeholder's information about the interview & statement has to be maintained with complete confidentiality.

Outline of the Research

The research report pertained of seven-part.

The first part includes an initiation to the research study, providing common information regarding the most important part discussed in the research, the challenges of stakeholders, the research questions, the objective and the boundary of the research project.

The second part presents terms and concepts related to the research topic and previous research published paper regarding the Humanitarian supply chain & that has been conducted in the past in the HSCM filed. It indicates differentiation of the humanitarian and traditional supply chains; discuss the challenges are faced amongst the stakeholders in the HSCM in COVID 19 Pandemic.

The third part gives information related to the research pathway and strategies. Furthermore, this chapter represents a method that was used to collect the data from a different platform and analyze the data. Finally, implemented the

required Tools to find the most critically faced challenges amongst the stakeholders.

The fourth part represents the primary or initial data that was collected through the interviews and survey floated the Google questionnaire forms to all the stakeholders associated with the research study.

The fifth part represents a detailed analysis of the collected information or data about the research objectives. Furthermore, in this part, the research questions & objectives are cleared by using the TOPSIS tools through the MCDA approach.

The sixth part provides the generalization of the research project.

The final provides the contributions and recommendation for the future research part.

Review of Literature

The objective of this review of literature which focuses on theories, ideas and previously published articles, related to HSCM. The literature review part consisting of the background of the study of COVID 19 pandemic, Humanitarian vs Traditional supply chain, Different type of stakeholder in HSCM, Types of challenges faced by stakeholders during COVID 19, Most critical challenges faced by stakeholders & rank them accordingly.

Disasters can be categorised based on whether they were sudden-onset or slow-onset, natural or man-made (Wassenhove, 2006) In the case of COVID 19 pandemic, it is man-made and has a slow-onset, as the disease is due to the movement of infected people across countries or within the country. It is during disasters that humanitarian organisations focus on the supply chains. The stakeholders are united in the humanitarian supply chains include – Healthcare, individual donor, NGOs, Governments, military services, logistics service providers (Kova´cs and Spens, 2008), community-based organisations, public and private companies, international aid agencies and beneficiaries (Oloruntoba and Gray, 2006).

Various studies discuss the challenges in humanitarian logistics. Camilla (2013) states that the HSCM challenges include – infrastructure, uncertainties, urgency, media, adverse environment, bureaucracy, low incentives when using lessons learned, people, secondary importance of logistics, lack of information, cultural aspects, lack of continuous improvement, donations for the short term, lack of transportation management to name a few. Fritz Institute (2004) summarised the challenges in humanitarian logistics in Africa as those related to :

(a) Lack of standards and indicators,
(b) Inadequate training,
(c) Lack of collaboration,
(d) Low recognition of logistics, and
(e) Inadequate infrastructure.

Humanitarian supply chains

The humanitarian supply chain represents the flow of information, services, supplies, and finances between donors Aid, beneficiaries, suppliers and different units of humanitarian organizations, to provide physical aid & others stuff which is required in our daily life to the needy locality. In general, the supply chain starting from the source of suppliers to the end customers. The supply chain aims to

deliver the right products, in the right quantities to the right location at the right time. The humanitarian supply chains managing & controlling and evaluating the impact of distributed materials the beneficiaries affected by disaster or like COVID 19 pandemic to minimize human suffering and death.

Foremost, strategic goals are also different in traditional and the humanitarian supply chain. In the most traditional supply chain, the strategic goal is to manufacturing in high economic of scale so that the cost of the product may less & it will great to earn the high profitability from that products but in case of the HSCM, the strategic goal is not only limit to maximize profitability but to minimize the loss of human life and misery.
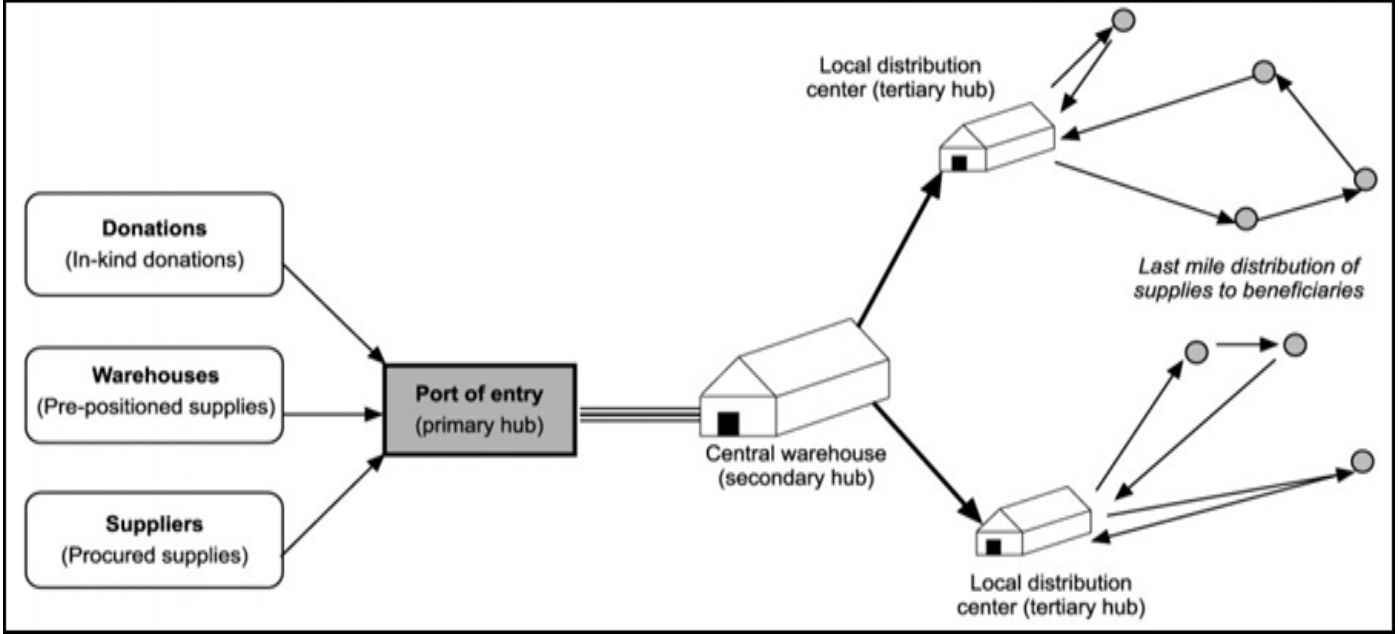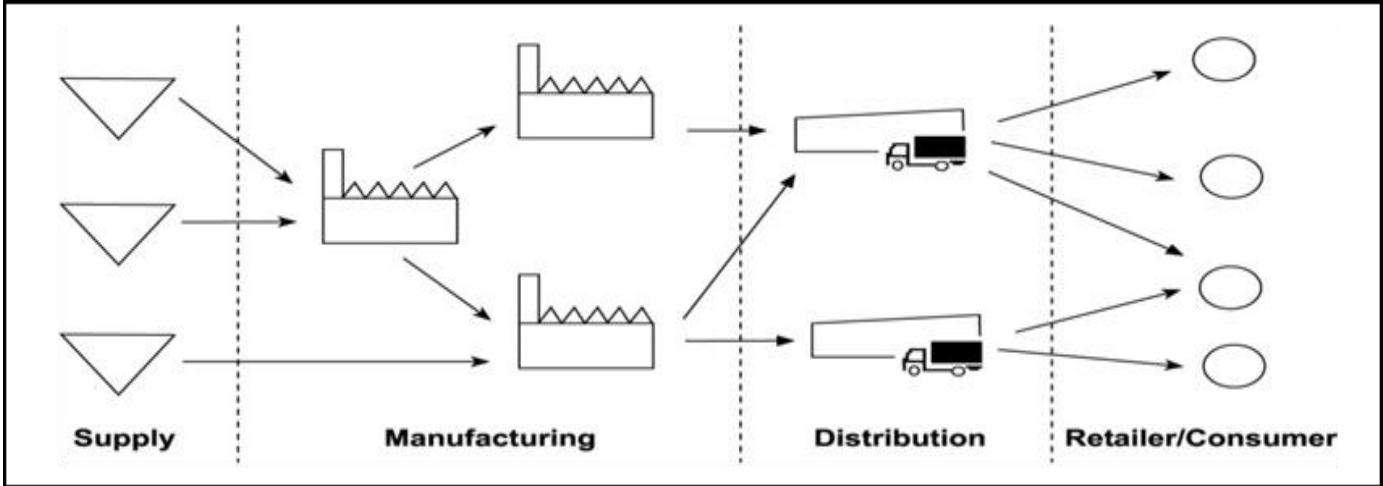

Humanitarian supply chains

Humanitarian vs. Traditional supply chains

The Humanitarian organizations are non-profit organizations & different from for-profit making organizations like primate or commercial sector in terms of revenue, vision, mission stakeholders, therefore, also there are fundamental differences in their supply chains in terms of their characteristics.

A traditional supply chain with five functional stages with the value chain which is supplier, manufacturing facilities, distribution center/wholesaler, retailer & end customer. In humanitarian supply chains, materials flow, similar to a traditional supply chain, through the relief chain via a series of long-haul and short-haul deliveries. In the humanitarian supply chains, materials are pre-stocked in the warehouses, materials are being procured from the manufacturer or supplier, and in-kind donations in the following steps:

●　　　　Materials generally delivered from varied locations to the port of entry that is found a close to a sea- or aerodrome.

●　　　　Then the materials are transported to the various warehouse that is close to a bigger town

●　　　　Further, the materials are received, stored & sorted & finally shipped to local distribution centres.

●　　　　Finally, the materials are delivered from the regional distribution centres to the beneficiaries.

Traditional supply chain flows

Different type of Stakeholders in Humanitarian Supply chain
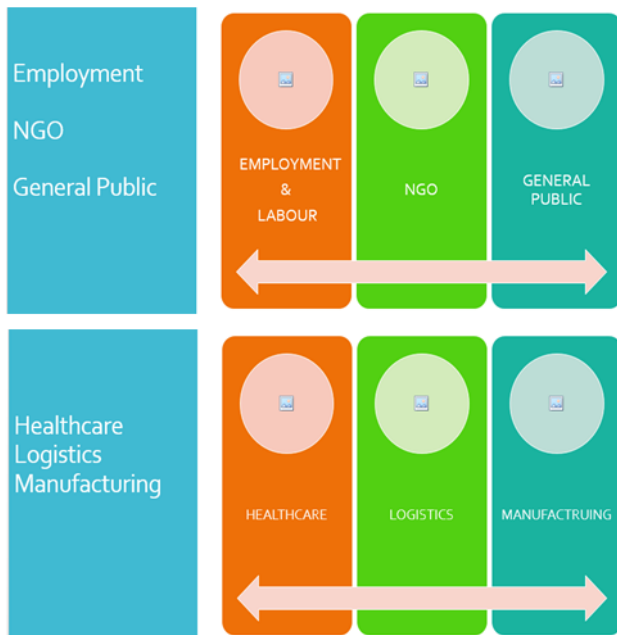
Type of challenges faced by stakeholders in COVID 19

Identify the main and crucial challenges faced by stakeholders in the humanitarian supply chain in light of COVID 19, which are:

Unprecedented need, in terms of period, place, quantity, and size.

The unexpectedness generation of demand in large quantities but with short lead times for a wide variety of materials.

Demand, supply and workforce availability are affected globally in this Pandemic.

Most of the Manufacturing facilities are closed until further notice except personal commodities.

The first- and last-mile transportation and difficulty in freight operation & distribution of essential goods affects restocking in many retail stores.

Deficiency in supply, people, technology, transportation capacity, and money in HSCM.

Many factors contribute in creating difficulties for the stakeholders in HSCM in COVID 19 Pandemic.

SL NO	SEGMENT	BARRIER/FACTOR	Stakeholder with
1	SOCIAL	Poor Infrastructure	Healthcare
2		Shortage of PPE & Bed	
3		Social distancing on Mental health	
4	ECONOMICAL	Shortage Medical funding	
5		Liquidity Crisis	
6	ENVIRONMENTAL	Disposable Masks & gloves to the environment	
7	SOCIAL	Unavailability of information	LOGISTICS & TRANSPORTATION
8		Slow of Movement of goods due to lockdown	
9		In efficiency in Last-mile delivery	
10	ECONOMICAL	Unavailbility in local transport	
11		Shipping charges in products is impacting	
12		Ban on overseas transportation	
13		Agencies revenue collection and operating/capital budgets	
14	SOCIAL	Unavailability of workforce	LABOUR & EMPLOYMENT
15		Impact on informal labour	
16		Impact on Employment	
17	ECONOMICAL	Cash flow	
18		Unavailibility of Skilled workforce	
19		Cascading effect	
20	SOCIAL	CSR funding is impacted	NGO
21		Individual Donation is reduced	
22		Shortage of Monetary support	
23	ECONOMICAL	Acute Liquidity Crisis	
24		Future Aid Budget	
25	SOCIAL	Moving business activities in online	ENTREPRENEURS
26		Government restriction	
27		Termination of Full time Employee	
28	ECONOMICAL	Impact on Revenue	
29		Business Cash Flow	
30		Liquidity Crisis	
31	SOCIAL	Unavailability of Raw materials	MANUFACTURES
32		Shortage of Non-technical Workforce	
33		Unavailability of Imported goods	
34	ECONOMICAL	The purchasing power of the buyer	
35		Slow credit flow from banks and non-banking financial companies	
36		Banned on Import & Export	
37	SOCIAL	Job Market	GENERAL PUBLIC
38		Education	
39		Field operation	
40	ECONOMICAL	The decline in consumption of High-value food commodities	
41		Higher Monthly Expenditure due to heavy inflation	
42		shortage for perishables	

To Rank the stakeholders according to the challenges

According to the data has received from the different stakeholders on the floated questionnaire & had taken an interviewed with few of the stakeholders. So, as per the closeness index on the data analysis through the TOPSIS, Following rank is given to the respective stakeholders.

Calculation of Closeness Index				
STAKEHOLDERS			**PERCENTAGE**	**RANK**
HEALTHCARE	0.252699192	0	25%	7
LOGISTIC	0.850681006	1	85%	1
ENTREPRENUER	0.812098819	0	81%	2
MANUFACTURING	0.622651301	0	62%	4
LABOUR & EMPLOYMENT	0.658143293	0	65%	3
NGO	0.333400591	0	33%	5
GENERAL PUBLIC	0.481148938	0	48%	6

Most critically challenges faced by Stakeholders

As per the closeness index, the Logistics sector are facing the most critical contravention in the Humanitarian supply chain in the light of COVID 19 Pandemic.

Calculation of Closeness Index				
STAKEHOLDERS			**PERCENTAGE**	**RANK**
HEALTHCARE	0.252699192	0	25%	7
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N.B: Used if Loop to identify the most critically challenges faced stakeholders

Summary of the review of Literature

To realize the primary distinction between humanitarian and Traditional supply chains, which has been cleared in the previous content & Humanitarian supply chains refer the identities with traditional supply chains, in terms of the value chain and logistics network analysis & also differences in various levels due to unprecedented demand & unpredictability in which they operate.

The humanitarian relief environments involved in global autonomy organizations, the governments, the military services, NGO, and private companies, which have different interests, capability, resources, and logistics expertise.

Structure of the relief chain can be divided into four stages in HSCM:

- Supplier & Manufacturer
- Transportation
- prepositioning/warehousing
- Last-mile delivery

In measuring the challenges in HSCM involves several challenges in terms of both the traditional and humanitarian supply chain (HSCM) across the value chain. The difficulty of the measurement & give the all identified stakeholders rank in the humanitarian process are more difficult in the light of COVID 19 pandemic. According to the closeness index from the data analysis study logistic sector are facing the most critical challenges & given the RANK 1 as per data analysis & based upon the closeness index data using TOPSIS analysis through MCDA approach.

Research Methodology

In this part, Moreover, the research approach, strategy and preparation of questionnaire that were used to collect the data are discussed as well as data collection, techniques. Finally, Data Analysis with TOPSIS.

Business research

Business research is the application of define research as something to find out in a logical & in a systematic way & here methodology indicating the concept of which the research is conducted. On the other side, indicates the techniques that are used for the collection and the analysis of the data i.e. questionnaire through the Google form & The tools and techniques (i.e.TOPSIS) & observation, interviews, quantitative analysis are discussed later in this research methodology part.
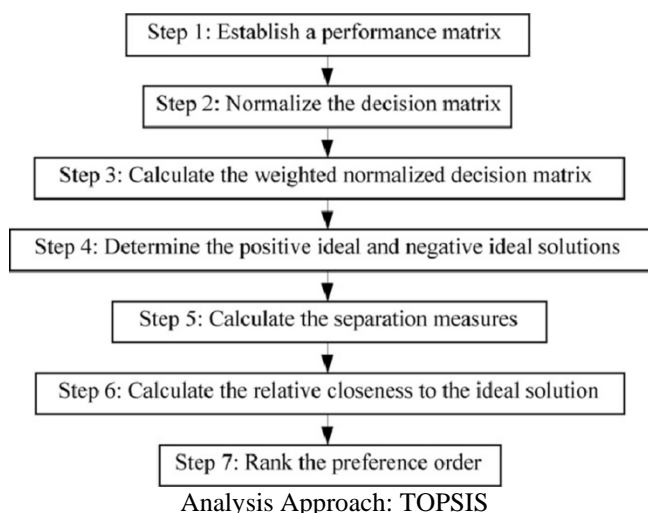
The research topic

The first phase after deciding to conduct research is to develop and refine the research objective. The research topic has been put together after gone through the latest article on COVID 19, Newspaper, personal experience and knowledge & thorough review of the existing literature on the humanitarian supply chain. Moreover, aspects such as the time limitations & constraint and lack of information resources & current data particularly on stakeholder challenges have been taken into consideration to formulate the research report.

The current study aims at achieving the following objectives:

- To identify the challenges faced by the stakeholders of HSCM during a COVID 19 Crisis
- To rank the stakeholders according to the challenges.

Research Pathway

Thereafter mapped out the objective & research input with a clear objective for the research and locating the appropriate report & model in the previously published articles, the next part is to decide on the research pathway that will be implemented using TOPSIS (Technique of Order Preference Similarity to the Ideal Solution') through MCDA approach.

Step 1: Establish a performance matrix

↓

Step 2: Normalize the decision matrix

↓

Step 3: Calculate the weighted normalized decision matrix

↓

Step 4: Determine the positive ideal and negative ideal solutions

↓

Step 5: Calculate the separation measures

↓

Step 6: Calculate the relative closeness to the ideal solution

↓

Step 7: Rank the preference order

Analysis Approach: TOPSIS

Research strategy

The research strategies for stakeholder's challenges in Humanitarian supply chain are experimental, survey through Google form made questionnaire, case study & news article on COVID 19, grounded theory & MBB firm report and the research questions & the final implementation part of TOPSIS through MCDA approach using the Normalized equally weighted data. Moreover, understanding the objective, the time constraints and the few available resources should be taken into analysis for the research strategy.

Data collection

The current study would be a qualitative & quantitative study which includes interviews with experts among different stakeholders & data are usually collected through surveys and questionnaires & would be put through tools such as TOPSIS for analysis.

There are two different types of data,

- Quantitative
- Qualitative.

So, initially, I have floated a Google survey form with the questionnaire of a Tripled business layer (Social, Economical & Environmental) & quantitative data are usually collected through surveys and questionnaires. Moreover, the analysis technique is also determined based on the type of data & implemented here the TOPSIS analysis to give the Rank of the respective stakeholders & finally to identify which stakeholder is faced critically challenged in the humanitarian supply chain in the light of COVID 19. For qualitative data collecting processes such as categorizing different stakeholders in Logistics and Healthcare etc. & the comments regarding the challenges they're facing that has been mentioned in the challenges part.

Data analysis-TOPSIS

For this research, interviews have been used to collect the information about the identified stakeholders Quantitative data has been collected, used to analyse the numeric data. Before starting the analysis of the objective for the same, I had floated a Google survey form along with questionnaire with tripled business model & after received the input data from the different stakeholders, the data were summarized, structured based on the questions, and categorized. Furthermore, relationships among the data and then

normalized the data matrix & taken equally weightage for Socially, Economically and Environmental and then calculated positive and negative ideal solution & distance from positive & negative ideal solution & finally calculated the closeness index to identify the Rank of the stakeholders & also identify who has faced most critical challenges in HSCM in light of COVID 19 Pandemic.

RESPONSE MATRIX WITH TOPSIS			
STAKEHOLDERS	**SOCIAL**	**ECONOMICAL**	**ENVIRONMENTAL**
HEALTHCARE	4.1	3.4	3.3
LOGISTIC	4.07	3.59	1.1
ENTREPRENUER	3.83	4.16	0.72
MANUFACTURING	4.18	4.11	1.5
LABOUR & EMPLOYMENT	4.21	4.25	1
NGO	3.85	4.14	2.8
GENERAL PUBLIC	4.25	4.14	2

Squared Matrix			
STAKEHOLDERS	**SOCIAL**	**ECONOMICAL**	**ENVIRONMENTAL**
HEALTHCARE	16.81	11.56	10.89
LOGISTIC	16.5649	12.8881	1.21
ENTREPRENUER	14.6689	17.3056	0.5184
MANUFACTURING	17.4724	16.8921	2.25
LABOUR & EMPLOYMENT	17.7241	18.0625	1
NGO	14.8225	17.1396	7.84
GENERAL PUBLIC	18.0625	17.1396	4

Sum	116.1253	110.9875	27.7084
Square Root	10.77614495	10.53506051	5.263876898

Normalized Matrix			
STAKEHOLDERS	**SOCIAL**	**ECONOMICAL**	**ENVIRONMENTAL**
HEALTHCARE	1.55992705	1.097288429	2.068817377
LOGISTIC	1.537182367	1.223353201	0.229868597
ENTREPRENUER	1.361238186	1.642667356	0.098482546
MANUFACTURING	1.621396156	1.603417463	0.427441607
LABOUR & EMPLOYMENT	1.644753303	1.71451317	0.189974048
NGO	1.375491891	1.626910446	1.489396533
GENERAL PUBLIC	1.676155999	1.626910446	0.75989619

Weightage		
SOCIAL	**ECONOMICAL**	**ENVIRONMENTAL**
0.33	0.33	0.33

Weighted Normalized Matrix			
STAKEHOLDERS	SOCIAL	ECONOMICAL	ENVIRONMENTAL
HEALTHCARE	0.514775926	0.362105182	0.682709735
LOGISTIC	0.507270181	0.403706556	0.075856637
ENTREPRENUER	0.449208601	0.542080228	0.03249924
MANUFACTURING	0.535060731	0.529127763	0.14105573
LABOUR & EMPLOYMENT	0.54276859	0.565789346	0.062691436
NGO	0.453912324	0.536880447	0.491500856
GENERAL PUBLIC	0.55313148	0.536880447	0.250765743

Positive and Negative ideal Solution			
	SOCIAL	ECONOMICAL	ENVIRONMENTAL
Positive	0.55313148	0.565789346	0.682709735
Negetive	0.449208601	0.362105182	0.03249924

Distance From positive ideal solution				
STAKEHOLDERS	SOCIAL	ECONOMICAL	ENVIRONMENTAL	
HEALTHCARE	0.038355553	0.203684165	0	0.2420397
LOGISTIC	0.045861298	0.16208279	0.606853097	0.8147972
ENTREPRENUER	0.103922878	0.023709119	0.650210494	0.7778425
MANUFACTURING	0.018070748	0.036661583	0.541654004	0.5963863
LABOUR & EMPLOYMENT	0.01036289	0	0.620018299	0.6303812
NGO	0.099219155	0.028908899	0.191208879	0.3193369
GENERAL PUBLIC	0	0.028908899	0.431943992	0.4608529

Distance From negative ideal solution				
STAKEHOLDERS	SOCIAL	ECONOMICAL	ENVIRONMENTAL	
HEALTHCARE	0.065567325	0	0.650210494	0.7157778
LOGISTIC	0.05806158	0.041601375	0.043357397	0.1430204
ENTREPRENUER	0	0.179975046	0	0.179975
MANUFACTURING	0.08585213	0.167022581	0.10855649	0.3614312
LABOUR & EMPLOYMENT	0.093559989	0.203684165	0.030192195	0.3274363
NGO	0.004703723	0.174775266	0.459001615	0.6384806
GENERAL PUBLIC	0.103922878	0.174775266	0.218266502	0.4969646

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Conclusions

It concludes the main findings of the stakeholder's challenges from the review of literature & Research methodology part. Finally, research contributions for stakeholders challenges identification & rank accordingly and ideas for future research will be continued.

The objective of this research was to identify the main challenges of the stakeholders in humanitarian supply chains in the light of COVID 19 Pandemic and which stakeholders has faced critical challenges. Moreover, the purpose of this research was to identify a suitable model for measuring stakeholder's challenges. In conclusion, by implementing appropriate tools to identify the stakeholder's challenges in HSCM & after analysed with TOPSIS, It is identified the most faced challenges stakeholder in light of COVID 19 i.e. Logistic sector among different stakeholders.

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