



Strength in Partnership: The Role of Collaborative Supply Chain Practices in Enhancing Humanitarian Outcomes in Cameroon

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Abstract

Purpose: This research aims to investigate the Role of Collaborative Supply Chain Practices in Enhancing Humanitarian Outcomes in Cameroon.

Research Methodology: This study adopted a quantitative research design, using a questionnaire as the primary data collection instrument. The sample size of 99 participants was determined using the Cochran formula for an unknown population and selected using simple random sampling techniques. The collected data were analyzed using the ordinary least squares technique (OLS) with the help of STATA 17.

Results: A positive but statistically insignificant relationship (p -value = 0.529) was found between supplier partnerships and humanitarian outcomes, suggesting no significant effect. A significant negative relationship (p -value = 0.09) was identified, suggesting that increased information sharing may lead to decreased humanitarian outcomes, necessitating a special policy focus. Strong positive significance (p -value = 0.000) was established between customer relationships and humanitarian outcomes, highlighting the need for focused attention on this factor in policy frameworks.

Contribution: This research provides policymakers and stakeholders with critical insights, highlighting the importance of strengthening customer relationships and reassessing information sharing to enhance humanitarian outcomes.

Novelty: This study uniquely explores the dynamics affecting humanitarian outcomes in Cameroon, emphasizing the distinct influences of supplier partnerships, information sharing, and customer relationships in a developing context.

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Keywords: Supply Chain Collaboration, Humanitarian Organization Outcomes, Cameroon

1. Introduction

In today's society, where disasters and conflicts are on the rise humanitarian organisation operating environment constantly changes and grows more complicated, dynamic, and unpredictable (Roh et al., 2025; Moşteanu, 2024; Georgescu et al., 2024) [58, 49, 25]. "Humanitarian organisations play a big role in meeting the basic needs of millions of people in need of humanitarian aid, humanitarians have come under immense pressure from donors, pledging millions in aid and goods, to prove that they are meeting their objectives most efficiently and effectively" (Beigbeder, 2023; Olsen et al., 2003; Miliband & Gurusurthy, 2015) [13, 54, 48]. "Eighty per cent of humanitarian organisations' operations are spent on logistics and Supply Chain Management (SCM)" (Van-Wassenhove & Pedraza-Martinez, 2012; Saïah et al., 2023; Sisay & Liku, 2022) [74, 59, 67]. Supply chain challenges faced therefore worsen humanitarian operations, creating a lot of uncertainty among humanitarian organizations (Nyamu, 2012; Kovács & Spens, 2009) [50, 39].

"Humanitarian logistics and operations have emerged as a sub-field of supply chain and operations management, and study how humanitarian organisations can be more efficient in the delivery of humanitarian aid" (Hiedemann, 2024; Olorunfoba & Banomyong, 2018; Abdifatah, 2012) [31, 51, 2].

“Collaboration is particularly important in the humanitarian context, in which only the collective performance of humanitarian organisations should count” (Ramalingam et al., 2009) ^[57]. “Humanitarian aid and consequently its operations are often categorised into disaster relief and development programs” (Kovács & Spens, 2007; Paul, 2018) ^[40, 55]. “While the former consists of preparedness and response activities to mitigate the effect of a crisis, the latter focuses on enhancing the welfare of beneficiaries, building local capacities, and improving resilience in local communities through longer and more stable operations” (Davlasheridze & Miao, 2021) ^[18].

According to Van Wassenhove (2006) ^[72], “between 60% to 80% of the total costs of any humanitarian aid go to logistics; therefore, humanitarian operations have received significant attention in recent years. The attention toward this field started after the 2004 Asian tsunami, when, despite the huge donor support, massive inefficiencies were observed and HOs were heavily criticized. “Many actors are typically engaged in humanitarian operations, especially after major crises. Although this provides a significant amount of financial, human, and material resources, without proper collaboration and coordination among these entities, inefficiencies and waste of resources would be inevitable, there is increasing pressure from donors and governments on HOs to engage in collaboration with each other as well as other actors such as local governments, military, and private sector companies, in particular, logistics service providers” (Jahre et al., 2007, Falagara-Sigala & Wakolbinger, 2019; Gossler et al., 2019) ^[21, 22, 26].

Supply chain management (SCM) has further emerged as a crucial area of management aimed at enhancing supply chain operations within humanitarian organizations (Schorsch et al., 2017; Hallikas et al., 2021) ^[61, 28]; “SCM encompasses the movement of materials, information, and finances throughout a network that includes suppliers, manufacturers, distributors, and customers. This intricate network involves a series of collaborative actions implemented by companies to ensure a smooth distribution process from the producer to the final consumer” (Ab Rashid & Bojei, 2020) ^[1]. “In the service industry, the supply chain process is comparable to a composite network that interconnects multiple entities, much like a ‘farm to fork’ approach” (Johnson et al., 2018) ^[35]. “This elaborate web of activities encompasses various elements such as supplier partnerships, meeting customer demands, product movement, and information sharing throughout the supply network” (Sjah & Zainuri, 2020; Vazquez-Melendez et al., 2024; Schorsch et al., 2017; Hallikas et al., 2021) ^[69, 75, 61, 28].

Supply chain collaboration (information sharing, supplier partnership, customer relationship management) affects the humanitarian logistics process and, thus, outcomes (Marín-García et al., 2025; Sheu et al., 2006) ^[46, 65]. Like Dow, with its logistics providers in North America, which deal with 90% of Dow’s shipments, develop a highway security network that shares intelligence information, discusses best approaches, and generates a mutual security plan for safe shipment which resulted in a greater outcome (Al-Doori, 2019; Shahbaz et al., 2018) ^[5, 64]. According to Alemu (2021) ^[6], “Information sharing, joint decision-making (JDM), and teamwork are the significant dimensions of SCM collaboration that enhance the outcomes of every logistics process”.

In Cameroon, “the economic instability has made it very difficult for humanitarian organisations to create, grow, and

develop their startups easily and quickly, reducing the role and impact of these humanitarian organisations on society and the economy in general” (Akuri, 2020; Bang, 2014) ^[9]. The overall economic stability appears to have deteriorated in Cameroon as the nation is struck by two socio-economic crises, the Anglophone crisis and Boko Haram surging in the Northern part of Cameroon, which continues destabilising the economy, making it difficult for humanitarian organisations to operate (Bang, 2022) ^[10]. Cameroon is faced with political instability and corruption; these have limited the ability of the humanitarian organisation to be proactive in decision-making, especially with a startup humanitarian organisation that is faced with limited resources (Herrera-Cano, 2021; Lekunze & Page, 2023) ^[30, 42]. The lack of adequate attention and expertise to supply chain collaborative practices, such as suppliers’ partnership, information sharing and customer relationships, has reduced the efficiency, outreach, and satisfaction of humanitarian organisations. Bang (2024) ^[11] highlights the importance of the strength of partnership in supply chain collaboration and the success of the humanitarian organisation. Humanitarian organisations, by adopting a supply chain collaborative mindset and implementing these dimensions’ techniques, humanitarian organisations can differentiate themselves in a country like Cameroon and attract more donors to achieve their objectives.

The paper's literature review found a dearth of research on how supply chain collaboration impacts the outcomes of humanitarian ventures in a competitive market environment. This research gap emphasises the need for additional studies to determine the effects of supply chain collaboration on the outcomes of humanitarian ventures in a competitive market environment in Cameroon. The contribution in question has three scientific relevance. First, it contributes to the limited research on supply chain collaboration in the context of the outcomes of humanitarian ventures in Cameroon with a neglected conflict from the Northwest, south-west and north regions of Cameroon, with thousands displaced as a result of instability around the Cameroonian territory seeking for humanitarian help day in, day out. Secondly, it sheds light on the intersection of supply chain collaboration dimensions (suppliers’ partnership, information sharing, customer relationship), and humanitarian outcomes (outreach, efficiency), providing valuable insights for academics, policymakers, and non-governmental organisations (NGOs). Thirdly, it solely pertains to humanitarian organisations with a limited resource capacity to provide them with approaches and actions to achieve their objectives at the lowest cost possible. This focus allows for a more in-depth analysis of the unique challenges and opportunities these types of organizations (NGOs) face regarding to best supply chain strategies to maximise their outcomes with limited resources. This paper provides a comprehensive understanding of the strength of partnership and the role of supply chain collaboration on the outcomes of humanitarian ventures in a competitive market environment in Cameroon. Thus, we formulate the following central research objective for the research based on this assertion: To examine the effect of Supply chain collaboration on the outcomes of humanitarian organisations in Cameroon

Specific research objectives

- To assess the impact of information sharing on the outcomes of humanitarian organizations in Cameroon.

- To evaluate the impact of supplier partnerships on the outcomes of humanitarian organizations in Cameroon.
- To investigate the customer relationship management on the outcomes of humanitarian organizations in Cameroon.

Specific research questions

- What is the impact of information sharing on the outcomes of humanitarian organisations in Cameroon?
- How does supplier partnership impact the performance of outcomes organisations in Cameroon?
- What is the customer relationship management on the outcomes of humanitarian organisations in Cameroon?
- What is the impact of supply chain challenges on the outcomes of humanitarian organisations in Cameroon?

Research Hypotheses

H₀₁: Information sharing does not significantly impact the outcomes of humanitarian organisations in Cameroon.

H₀₂: Supplier partnership does not significantly impact the outcomes of humanitarian organisations in Cameroon.

H₀₃: Customer relationship management does not significantly impact the outcomes of humanitarian organisations in Cameroon.

2. Literature Review

Supply Chain Collaboration

According to Issah et al. (2024) ^[34], “All businesses and operations involved in the movement and conversion of commodities from the stage of raw materials to the final consumer, as well as the information flows that accompany these processes, are included in a supply chain. Both up and down the supply chain, materials and information are transferred” (Issah et al., 2024) ^[34]. Fu et al. (2022) ^[24] “Supply chain management is a system where organisations, people, technology, activities, information and resources are involved in moving a product or service from suppliers to customers.” According to Shukla et al. (2011) ^[66], “Supply chain activities transform natural resources, raw materials and components into finished products” Larson and Rogers (1998) ^[41] define the supply chain as “all of those activities associated with moving goods, from the raw materials stage through to the end user. This includes sourcing and

procurement, production scheduling, order processing, inventory management, transportation, warehousing and customer service.”

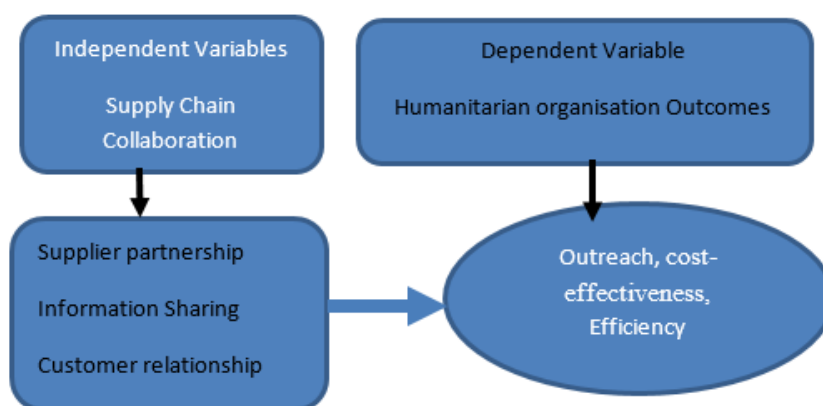
Besiou and Van-Wassenhove (2021) ^[15]; Van-Wassenhove (2006) ^[72]; Kleindorfer and Van-Wassenhove (2004) ^[38]. “customers, distributors, manufacturers, retailers, and suppliers constitute a supply chain. Material flows, which represent physical product flows from suppliers to customers as well as reverse flows for product returns, servicing, and recycling; information flows, which represent order transmission and order tracking and which coordinate the physical flows; and financial flows, which represent credit terms, payment schedules, and consignment arrangements, are the three types of “flows” that the network supports as requiring careful design and close coordination” (Oloruntoba & Gray, 2006) ^[52].

Humanitarian organisation outcomes

According to Kamau (2013) ^[36], “A humanitarian organisation is a non-profit organisation or entity that works to help those in society who are in need. These organisations work in emergencies and in places where people are suffering from poverty, illness, and conflict. According to Kamau (2013) ^[26], “Humanitarian groups rely entirely on donations from governments, volunteers, and development partners”. Mentzer et al. (2001) ^[47] and Khan et al. (2019) ^[37] describe the humanitarian supply chain as the network created through the flow of services, supplies, information and finances between donors, beneficiaries, suppliers and different units of humanitarian organisations, to provide physical aid to beneficiaries. It involves the flow of relief from the donor to the beneficiaries”.

Conceptual Framework

The results of humanitarian organisations are regarded as the dependent variable in this relationship, as it depends on the existence and calibre of supplier collaborations, information exchange, and customer connections. Conversely, the results of humanitarian organizations are impacted and influenced by supply chain collaboration, which functions as the independent variable. The graphic shows how these two are directionally linked.



Source: Author Computation (2025)

Fig 1: Framework relationship between independent variables and dependent variables

Theoretical Literature

Resource Dependence Theory and Institutional Theory were the theories which guided this research.

Resource dependence theory

According to Pfeffer and Salancik (1978), “this theory proposes that organisations form strategic partnerships to

acquire the external resources they need to operate effectively". Austin (2000)^[8] "NGOs often rely on resources acquired externally, such as expertise, funding, and networks, to carry out their activities". "Strategic partnerships allow NGOs to access additional resources by pooling them with partner organisations, sharing knowledge and skills, and leveraging complementary capabilities" (Austin, 2000; Hwang & Powell, 2009)^[8, 33]. Gulati (1998)^[27], "By reducing their dependence on a single source of resources, NGOs can mitigate resource constraints and enhance their performance".

Ahuja & Katila (2004)^[3] argue that forming strategic partnerships can also introduce new challenges, such as power imbalances, conflicting interests, and coordination difficulties, which may hinder organisational performance. "Resource Dependence Theory highlights the potential benefits of strategic partnerships for NGOs, it is important to consider the complexities and potential drawbacks associated with such collaborations. According to the theory, utilising organisational resources enables a firm to assess its resources and financial capabilities, allowing it to implement appropriate response strategies in the face of changing environmental conditions" (Austin, 2000; Hwang & Powell, 2009)^[8, 33].

Institutional Theory

According to DiMaggio and Powell (1983)^[20], "the model places a strong emphasis on how organisations adapt to external institutional forces to obtain legitimacy and improve performance. NGOs operate within an institutional environment shaped by government regulations, donor expectations, and societal norms" (Scott, 2008)^[62]. "Strategic partnerships allow NGOs to align themselves with established organisations or networks that are perceived as legitimate within the sector, thereby enhancing their legitimacy and reputation" (Scott, 2008; Zahra & George, 2002)^[62, 77]. This increased legitimacy can lead to improved access to resources, funding opportunities, and collaboration possibilities (Battilana & Dorado, 2010; Selsky & Parker, 2005)^[12, 63], ultimately positively impacting organisational performance. However, critics argue that institutional pressures may also constrain NGOs' autonomy and flexibility, potentially limiting their ability to innovate and adapt to changing circumstances (Mair & Martí, 2006; Scott, 2008)^[44, 62].

Empirical Literature

De-Wet et al. (2025)^[19] this study explore the role of information sharing and quality among humanitarian organisations in Southern Africa during disaster response. Data was collected through semi-structured interviews with 10 participants employed by humanitarian relief organisations and analysed using thematic analysis. The findings reveal that effective information sharing is vital for coordination and transparency; major tools include meetings and relationship management, although challenges such as duplication and ethical issues remain prevalent. The conclusion emphasises the necessity for improved information-sharing practices and quality assurance processes to enhance operational effectiveness in disaster responses.

Zerihun and Lemma (2023)^[78]. "The objective of this study is to examine the effect of Supplier Relationship Management (SRM) on the humanitarian supply chain

performance at World Vision Ethiopia". A quantitative approach utilising explanatory design was employed, with 231 valid questionnaires collected through simple random sampling and analysed using inferential statistics. The findings indicate that trust, commitment, cooperation, and transparency positively influence humanitarian supply chain performance, while power and communication demonstrate a statistically insignificant effect. The conclusion suggests that practitioners should prioritize influential factors of supply relationships to enhance performance, alongside addressing managerial and theoretical implications for future research. Sisay and Liku (2022)^[68] this study investigate how supply chain management practices influence humanitarian relief organisations in the Gedeo zone. A mixed research approach was utilized, with data collected from organisation employees via questionnaires and semi-structured interviews, and analyzed through correlation and regression techniques. The results reveal that supplier integration, information sharing, postponement, and outsourcing significantly improve the performance of humanitarian organisations. The conclusion asserts that effective supply chain management practices are critical in addressing the challenges faced by humanitarian organisations in the Gedeo zone, particularly in ensuring timely responses to disasters.

Villa et al. (2017)^[76] examined the impact of Supplier Relationship Management (SRM) on the service performance of the World Food Programme (WFP) in Somalia, acknowledging the challenges of coordinating humanitarian efforts due to various involved parties and infrastructure limitations. A survey design was employed, targeting WFP employees and local food suppliers, with data collected through self-completion questionnaires and interviews, ultimately analyzing the results using SPSS. Findings indicate that effective SRM, characterized by information sharing, continuous training, and IT usage, contributes to delivering defect-free food supplies to beneficiaries. The conclusion underscores the importance of SRM strategies to achieve operational efficiency and save lives during disasters. Recommendations include rewarding cooperative suppliers and understanding the risk profiles of multiple supply tiers to enhance emergency response capabilities.

M'muthuiba (2013)^[43] study aims to examine the extent of information sharing and the factors affecting information sharing among humanitarian organisations in Kenya. A descriptive survey was conducted targeting 64 major humanitarian organisations in Nairobi, using a closed-ended online questionnaire to gather responses. The findings indicate that the majority of organisations possess an information governance policy and a defined information-sharing strategy, utilising electronic mail, online portals, and meetings as primary dissemination methods. The conclusion highlights that effective information sharing is crucial for the functioning of humanitarian organizations, emphasising the importance of governance policies and strategies to enhance collaboration.

Oloruntoba and Gray (2009)^[53] this study analyse the concepts of "the customer" and "customer service" in the management of international emergency relief chains. A literature-based approach was employed to apply commercial concepts to humanitarian aid and emergency relief contexts. The findings advocate for adopting a customer-service perspective, which is essential for the effective management of emergency relief chains and enhances service delivery to stakeholders. The conclusion underscores the need for

humanitarian organisations to recognise customer service as a strategic focus, introducing the concept of "humanitarian competitive advantage" to improve operational effectiveness.

3. Methods

Research Design

The study makes use of a survey research design; survey research design is a quantitative research method that involves collecting data from a sample of individuals through the use of questionnaires. It allowed researchers to get primary data on the variables under study in a specific population. This design is particularly useful when studying large populations or when seeking to generalise findings to a larger population. Survey research design provides researchers with the ability to analyse statistical data and draw conclusions based on the collected responses.

Study Population

The target population for this study consisted of non-governmental organisations (NGOs) in Cameroon, with each NGO as the unit of analysis. The study focused on non-governmental organisations, selecting participants from this group. By examining the outcomes concerning their supply chain collaborative approach, this research aimed to gain insights into the effects of the role of supply chain collaboration on the outcomes of humanitarian organisations in Cameroon (Ingram & Schneider, 1991).

Sample Size

The sample size was selected based on the unknown populations of Cochran (1954) ^[17], When the size of the population is unknown, the sample size can be calculated based on Cochran's formula, and may be considered especially appropriate in situations with large unknown populations (Cochran, 1954) ^[17]. The size was determined using the Cochran's formula below;

$$\text{Sampling Size } n_0 = \frac{Z^2pq}{e^2} \quad (1)$$

Where,

Z is the abscissa of the normal curve that cuts off the tails (gotten from the Z table e is the desired level of precision P is the estimated proportion of an attribute that is present in the population, and q is 1-p

With

z = 1.96 (at type1 error of 5%)

p = 7%, e = 5%, and q = 1- p

$$\begin{aligned} \text{Sample Size} &= \frac{(1.96) (1.96) \times (0.07) \times (1-0.07)}{(0.05) (0.05)} \\ &= 99 \text{ Participants} \end{aligned}$$

Sampling Technique

The research employed a simple random sampling technique to select participants who possessed specific characteristics and experiences relevant to the study's objectives (Rai & Thapa, 2015) ^[56]. Participants were randomly chosen from among selected NGOs in Cameroon. This method ensured that the sample captured a diverse array of perspectives and experiences related to supply chain collaboration dimensions and their impact on the outcomes of humanitarian organisations in Cameroon.

Data Source

There are typically two main sources of data, primary and secondary sources. Primary sources of information refer to firsthand accounts or original data that are directly related to the topic being studied. This includes standard structural questionnaires, surveys, and observations conducted by the researchers themselves, and secondary sources of information involve analysing and interpreting existing primary sources or data collected by others. These include books, articles, reports, or scholarly papers that provide an analysis or synthesis of primary sources. The current study makes use of primary data.

Data Collection instruments

A questionnaire, as defined by Saunders and Kulchitsky (2021) ^[60], is a research tool that consists of a series of questions focused on specific issues under investigation, which respondents complete on a self-administered basis. The primary method of data collection involved administering questionnaires to key informants. The researcher utilised structured, self-administered questionnaires designed to cover all variables pertinent to the study. The current study makes use of close-ended questionnaires as instruments in collecting data for this study. This was done in informed self-administered questionnaires, and this was done to assist the respondents who ever faced difficulties in understanding the questions.

Validation of Instrument

According to Brink (1993) ^[16], "In a qualitative study, the instrument of data collection is the researcher himself". Validity and reliability present the key aspects of all research. "Many researchers use terms such as credibility, trustworthiness, truth, value, applicability, and consistency interchangeably with validity and reliability when referring to criteria for evaluating the scientific merit of qualitative research" (Brink, 1993) ^[16].

Reliability of Instrument

According to Hayashi et al. (2019) ^[29], "reliability assesses the consistency of the results of the study over time, to ensure the reliability of the questionnaire, a pre-test was conducted on a much smaller sample to ensure that the items on the instruments were within the reach of the respondents".

Data Collection Procedure

The questionnaires were administered to selected non-governmental Organizations (NGOs). To facilitate data processing and analysis, a five-point Likert scale was employed. These questionnaires were specifically designed to gather quantitative data, focusing on items related to supply chain collaboration and humanitarian outcomes. The questionnaire included closed-ended questions, such as Likert scale items and rating scales, to effectively capture quantitative data (Andrade et al., 2023) ^[7].

Estimations Technique

Model Specification

In the context of the current study on supply chain management collaboration and humanitarian outcomes in Cameroon, the model specification depended on the specific research questions and the type of analysis to conduct. This study is articulated around a single model as shown in the

equations below.

$$\text{Humanitarian Outcomes} = \beta_0 + \beta_1 (\text{Supply Chain Collaboration}) + \varepsilon \quad \text{equation 1}$$

Where β_0 represents the intercept, β_1 represents the coefficient for supply chain collaboration and ε represents the error term. The regression analysis aimed to estimate the role of supply chain collaboration on the outcomes of humanitarian organizations in Cameroon.

$$Y_t = \beta_0 + \beta_1 SP_1 + \beta_2 IS_2 + \beta_3 CR_3 + \varepsilon \quad \text{equation 2}$$

Where: Y stands for Humanitarian Outcomes; SP represent Supplier partnership; IS stands for Information Sharing; CR represent customer relationship. The β_0 is a constant term β_1 to β_3 are estimated parameters in the model, and ε_t is an error term. The a priori expectation, $\beta_0 > 0$, $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, the regression analysis coefficients from the regression showed the effect (positive or negative) of the independent variables on the dependent variable.

Estimation Techniques

The study used the ordinary least squares technique (OLS) to estimate the coefficients (β) and explore the significance of the role of supply chain collaboration on the outcomes of humanitarian organisations in Cameroon. The Multicollinearity and Heteroscedasticity tests were done to validate the technique used in the current study (Tobin, 1980; Farrar & Glauber, 1967; Hoehn et al., 2014) ^[70, 23, 32]

Ethical Consideration

The ethical issues that were properly handled in this study concerned aspects such as informed consent, confidentiality, and voluntary participation. Such issues were adequately addressed to increase the chances of getting honest responses from respondents and consequently more reliable data. Ethical considerations pervaded each phase of data collection in this study. Concerning the construction of the instruments for data collection, the researchers ensured that the questions asked, the language used, the length of the questionnaire, and

the duration of the interview were appropriate and acceptable to the respondents. Each questionnaire distributed was accompanied by a cover letter which informed the respondents about the purpose of the study, thereby allowing them to decide whether or not to participate. Respondents' confidentiality was guaranteed as they were not expected to write their names on the questionnaire.

4. Results

4.1. Descriptive statistics

Table 1: Summary statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Humanitarian Outcomes	99	.5533402	.2733047	0	1
Supplier partnership	99	.5409764	.1829366	0	1
Information Sharing	99	.5179798	.183786	0	1
Customer Relationship	99	.5696653	.2543262	0	1

Table 1: above presents descriptive statistics for the variables. The results of the study provide a summary of the data collected from 99 observations. The variable "Humanitarian Outcomes" has a mean value of 0.5533 with a standard deviation of 0.2733, indicating a moderate average outcome across the sampled organisations, with values ranging from a minimum of 0 to a maximum of 1. Similarly, "Supplier Partnership" has a mean of 0.5410 and a standard deviation of 0.1829, reflecting a generally positive supplier collaboration, while its values also lie between 0 and 1. For "Information Sharing," the mean is 0.5180 with a standard deviation of 0.1838, suggesting that organisations engage in information-sharing practices at a slightly above-average level, again ranging from 0 to 1. The "Customer Relationship" variable has a mean of 0.5697 and a standard deviation of 0.2543, indicating that on average, organisations maintain relatively strong customer relationships. The minimum and maximum values for this variable also span from 0 to 1. Overall, these statistics suggest that while there is room for improvement, the sampled organisations display a reasonable level of humanitarian outcomes, supplier partnerships, information sharing, and customer relationships.

Table 2: Pairwise correlation Coefficients

	Humanitarian outcomes	Supplier partnership	Information Sharing	Customer relation
Humanitarian Outcomes	1.0000			
Supplier partnership	0.3256	1.0000		
Information Sharing	0.2007	0.1532	1.0000	
Customer Relationship	0.9698	0.3297	-0.1665	1.0000

The pairwise correlation coefficients provide insights into the relationships among the variables under study: humanitarian outcomes, supplier partnership, information sharing, and customer relationships. The correlation between humanitarian outcomes and customer relationships is notably high at 0.9698, indicating a strong positive relationship; this suggests that improvements in customer relationships are closely tied to better humanitarian outcomes. Additionally, there is a moderate positive correlation between humanitarian outcomes and supplier partnership (0.3256), indicating that stronger supplier partnerships may also contribute positively to humanitarian outcomes, though the relationship is less

pronounced than with customer relationships. The correlation between humanitarian outcomes and information sharing is relatively weak at 0.2007, suggesting a limited relationship. Furthermore, the correlation between customer relationships and information sharing is negative (-0.1665), implying that as customer relationships strengthen, information sharing may decrease, indicating a potential trade-off in the dynamics of these variables. These correlations highlight the importance of customer relationships in enhancing humanitarian outcomes while also suggesting that the roles of supplier partnerships and information sharing require further exploration to understand their impacts comprehensively.

4.2. Diagnostic tests

Table 3: Heteroscedasticity

Breusch–Pagan/Cook–Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of Humanitarian outcomes
H0: Constant variance
chi2(1) = 2.05
Prob > chi2 = 0.1526

The results of the Breusch–Pagan/Cook–Weisberg test for heteroskedasticity indicate that the null hypothesis (H0), which posits that there is constant variance of the error terms, cannot be rejected. The chi-squared statistic for the test is 2.05 with a corresponding p-value of 0.1526. Since the p-value is greater than the common significance level of 0.05, this suggests that there is no statistically significant evidence of heteroskedasticity in the fitted values of humanitarian outcomes. Therefore, we conclude that the assumption of constant variance holds, implying that the regression model appears to be robust regarding the homoscedasticity assumption, and the error terms are likely normally distributed around their mean, enhancing the validity of the model's estimates.

Table 4: Homoskedascity Test

Variable	VIF	1/VIF
Customer relationship	1.19	0.843103
Supplier partnership	1.18	0.846799
Information Sharing	1.08	0.923702
Mean VIF	1.15	

The results of the Homoskedasticity Test indicate that the variance inflation factors (VIF) for the variables under consideration customer relationship (VIF of 1.19), supplier partnership (VIF of 1.18), and information sharing (VIF of 1.08) are all below the common threshold of 10, suggesting that multicollinearity is not a concern among these variables. The mean VIF of 1.15 further supports this finding, indicating that the independent variables are not excessively correlated with one another. This suggests that the assumptions of linear regression regarding homoscedasticity and the independence of predictors are likely met, thereby reinforcing the reliability of the regression model employed in the analysis. Overall, the

test results imply that the relationships being examined in the study can be analyzed without the complications that multicollinearity might introduce.

4.3 Regression Analysis

The analysis of variance (ANOVA) table provides essential insights into the regression model examining the relationship between the predictors and humanitarian outcomes based on 99 observations. The model exhibits a sum of squares (SS) of 6.8976 for the regression, indicating that a significant portion of the variance in humanitarian outcomes can be explained by the independent variables included in the model. The F-statistic of 516.90, with a corresponding probability value (Prob > F) of 0.0000, suggests that the model is highly statistically significant, implying that at least one predictor variable has a significant relationship with humanitarian outcomes.

The residual sum of squares is reported as 0.4226, and the mean square (MS) for the residuals is 0.0044, indicating that while there is some unexplained variance, it is minimal relative to the total variance in the model. The R-squared value of 0.9423 indicates that approximately 94.23% of the variance in humanitarian outcomes can be explained by the independent variables, which is quite high, suggesting a good fit for the model. The adjusted R-squared of 0.9405 accounts for the number of predictors in the model, reinforcing that the model's explanatory power remains strong even after adjusting for the number of variables included. Additionally, the root mean square error (Root MSE) of 0.0667 indicates that the model's predictions are relatively close to the observed values, further supporting the model's accuracy in predicting humanitarian outcomes. Overall, these results underscore the effectiveness of the regression model in analysing the impact of various factors on humanitarian outcomes.

Table 5: The role of supply chain collaboration on the outcomes of humanitarian organisations in Cameroon

Source	SS	df	MS	Number of obs	=	99
				F(3, 95)	=	516.90
Model	6.89759236	3	2.29919745	Prob > F	=	0.0000
Residual	.422564606	95	.004448048	R-squared	=	0.9423
				Adj R-squared	=	0.9405
Total	7.32015697	98	.074695479	Root MSE	=	.06669
Humanitarian Outcomes	Coefficient	Std. err.	t	P>t	[95% conf. interval]	
Supplier partnership	.0252998	.0400204	0.63	0.529	-.0541507	.1047502
Information Sharing	-.0654273	.0381411	-1.72	0.090	-.141147	.0102923
Customer relationship	1.028261	.0288496	35.64	0.000	.9709872	1.085535
_cons	-.012221	.0295724	-0.41	0.680	-.0709296	.0464877

The finding revealed that there is a positive relationship between supplier partnership and humanitarian organisation outcomes in Cameroon, this implies that there is a likelihood that an increase in supplier partnership relationships will lead to an increase in humanitarian organization outcomes by

0.0252998 points, however, this result was statistically insignificant at 10% (p-value 0.529 > 0.1) level of significance as result we failed to reject the null hypothesis (H₀₁), in favour of alternative hypothesis (H₁) leading to a conclusion that supplier partnership does not significantly

affect humanitarian organization outcomes in Cameroon and for policy recommendation supplier partnership should not be given serious consideration.

The finding revealed that there is a negative relationship between information-sharing and humanitarian organisation outcomes in Cameroon, this implies that there is a likelihood that an increase in information-sharing relationships will lead to a decrease in humanitarian organization outcomes by 0.0654273 points, the result was statistically significant at 10% (p-value $0.09 < 0.1$) level of significance as a result we reject the null hypothesis (H_{02}), against the alternative hypothesis (H_2) leading to a conclusion that information sharing significantly affect humanitarian organisation outcomes in Cameroon and for policy recommendation information sharing should be given special treatment.

The finding further shows that there is a positive relationship between customer relationships and humanitarian organisation outcomes in Cameroon, this implies that there is a likelihood that an increase in customer relationships will lead to an increase in humanitarian organization outcomes by 1.028261 points, the result was statistically significant at 1% (p-value $0.000 < 0.01$) level of significance as a result we reject the null hypothesis (H_{03}), against the alternative hypothesis (H_3) leading to a conclusion that customer relationships significantly affect humanitarian organization outcomes in Cameroon and for policy recommendation information sharing should be given special treatment.

Discussion of Results

The finding revealed that there is a positive relationship between supplier partnership and humanitarian organisation outcomes in Cameroon, this implies that there is a likelihood that an increase in supplier partnership relationships will lead to an increase in humanitarian organisation outcomes by 0.0252998 points, however, this result was statistically insignificant at 10% (p-value $0.529 > 0.1$) level of significance. The result was in line with the findings of Zerihun and Lemma (2023) examined the effect of Supplier Relationship Management (SRM) on the humanitarian supply chain performance at World Vision Ethiopia. The findings indicate that trust, commitment, cooperation, and transparency positively influence humanitarian supply chain performance, while power and communication demonstrate a statistically insignificant effect. The conclusion suggests that practitioners should prioritize influential factors of supply relationships to enhance performance, alongside addressing managerial and theoretical implications for future research.

The finding revealed that there is a negative relationship between information-sharing and humanitarian organisation outcomes in Cameroon, this implies that there is a likelihood that an increase in information-sharing relationships will lead to a decrease in humanitarian organisation outcomes by 0.0654273 points, the result was statistically significant at 10% (p-value $0.09 < 0.1$) level of significance. The finding was contrary to the result of de Wet et al. (2025) This study explores the role of information sharing and quality among humanitarian organisations in Southern Africa during disaster response. The findings reveal that effective information sharing is vital for coordination and transparency; major tools include meetings and relationship management, although challenges such as duplication and ethical issues remain prevalent. The conclusion emphasizes the necessity for improved information-sharing practices and quality assurance processes to enhance operational

effectiveness in disaster responses.

The finding further shows that there is a positive relationship between customer relationships and humanitarian organisation outcomes in Cameroon, this implies that there is a likelihood that an increase in customer relationships will lead to an increase in humanitarian organisation outcomes by 1.028261 points, the result was statistically significant at 1% (p-value $0.000 < 0.01$) level of significance. The result was similar to the work of Oloruntoba and Gray (2009) ^[53] analysed the concepts of "the customer" and "customer service" in the management of international emergency relief chains. The findings advocate for adopting a customer-service perspective, which is essential for the effective management of emergency relief chains and enhances service delivery to stakeholders. The conclusion underscores the need for humanitarian organisations to recognize customer service as a strategic focus,

5. Conclusion

The findings of this study reveal varying dynamics in the relationships between supplier partnership, information sharing, and customer relationships, and their impacts on humanitarian organisation outcomes in Cameroon. Specifically, while it was found that supplier partnership does not have a statistically significant effect on outcomes, with an insignificant positive relationship leading us to fail to reject the null hypothesis, a contrary situation arises with information sharing and customer relationships. Information sharing demonstrated a significant negative relationship with outcomes, indicating that increased information-sharing efforts could detrimentally affect humanitarian organisation performance. In contrast, customer relationships showed a strong positive correlation with outcomes, suggesting that enhancing these relationships can lead to substantial improvements. Therefore, the research concludes that fostering effective customer relationships is essential for enhancing organisational performance, while re-evaluating approaches to supplier partnerships and information sharing is necessary.

Limitation

A key limitation of this study is the reliance on quantitative data, which may not capture the nuanced realities of relationships and interactions within humanitarian organisations. The focus on Cameroon may also restrict the generalisability of the findings to other contexts or regions, as unique local challenges could influence the outcomes differently. Additionally, the statistical significance levels, particularly concerning supplier partnerships, indicate that further investigation is warranted. The potential lack of robust internal processes within organisations to facilitate supplier partnerships may also contribute to the insignificant results observed. Future studies could benefit from qualitative exploration to provide richer insights into the complexities of these relationships.

Policy Implication

The results of this study yield important policy implications for humanitarian organisations operating in Cameroon. Given that supplier partnerships were found to be statistically insignificant, policymakers should not prioritize significant investments in enhancing supplier relationship frameworks without evidence of their impact on outcomes. Instead, it is recommended that organisations place special emphasis on

improving information-sharing processes, as the findings suggest that these significantly affect outcomes negatively. Moreover, enhancing customer relationships stands out as a critical area for policy focus, as strengthening these connections has demonstrated a direct positive effect on humanitarian organisational outcomes. Consequently, developing strategies that prioritize customer engagement and satisfaction, while considering adjustments to information-sharing practices, would be beneficial for optimizing humanitarian operations in the region.

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