

Consumer Perceptions on the Performance of Humanitarian Logistics for Victims of the Cianjur Earthquake Natural Disaster

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Abstract: This study endeavors to assess consumer perceptions regarding the performance of health distribution assistance for victims of the earthquake natural disaster in Cianjur City. The objective is to gauge the efficiency of logistics distribution during the emergency response phase. Understanding distribution performance is crucial as it significantly impacts consumer perspectives. Employing a quantitative approach, this research employed a questionnaire as the primary data collection tool. The samples of 100 respondents were determined through accidental sampling, based on specific criteria. The findings reveal that, according to the Customer Satisfaction Index (CSI) test, consumers exhibit a high level of satisfaction with the distribution performance in providing health assistance to earthquake victims in Cianjur. The Importance-Performance Analysis (IPA) test underscores the necessity to uphold the performance of Health Aid Distribution, as it has emerged as a standout service for consumers. This study provides valuable insights for enhancing humanitarian logistics in future disaster scenarios.

Keywords: *Consumer Perception, Humanitarian Logistics, Distribution Performance, Consumer Satisfaction, Consumer Expectations.*

1. Introduction

According to the Badan Pusat Statistik (2021), following the three-year average of natural disaster data in Indonesia, earthquakes rank as the third most recurrent natural calamity in the country. This underscores the regularity of earthquake occurrences in the Indonesian region.

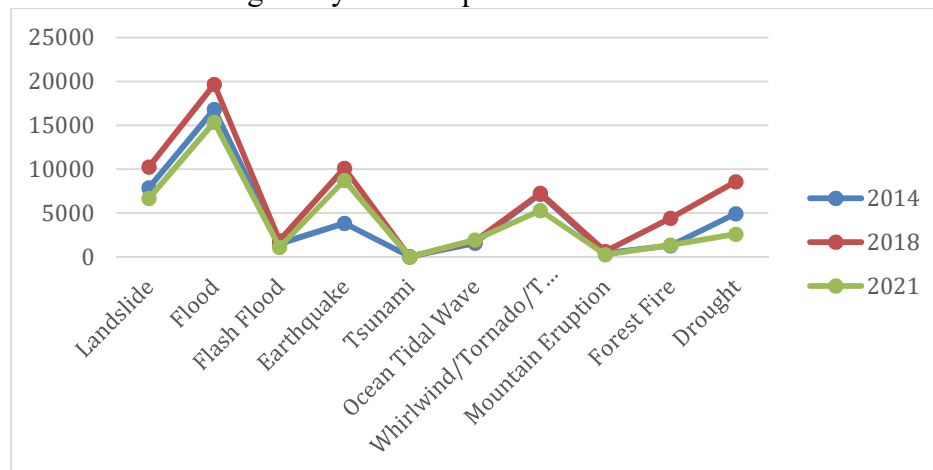


Fig. 1. Statistics on types of natural disasters in the last three years in Indonesia

Sabtaji (2020) stated that tectonic earthquakes are earthquakes that occur due to sudden shifts in the earth's crust on tectonic faults. Tectonic earthquakes often occur in Indonesia, even earthquakes can bring destruction and also loss of property and one's life. This is because Indonesia is one of the areas in the world that has a fairly complex tectonic frequency and arrangement. Indonesia is located between four tectonic plates: Eurasian Plate, Pacific Plate, Indo-Australian Plate, and Philippine Sea Plate. Therefore, many earthquakes occur there.

According to the Badan Nasional Penanggulangan Bencana (2022) In one of Indonesia's recent incidents of natural disaster, a devastating earthquake struck Cianjur. In late November 2022, a 5.6-magnitude earthquake rattled the area. By November 29, 2022, at 3:00 PM local time, BNPB, KemenPPPA, and UNFPA were continuously verifying the total number of evacuation points, which amounted to 39,985. The overall number of evacuees reached 108,720, comprising 52,987 males and 55,733 females. Regarding infrastructure, 27,434 houses suffered severe damage, 13,070 experienced moderate damage, and 22,124 had light damage, resulting in a total of 62,628 houses affected.

Earthquakes such as these are unpredictable events and can cause significant physical damage and affect the health needs of the community. In such situations, health aid distribution becomes essential to provide medical care and support to disaster victims as the emergency aftermath of an earthquake can cause many injuries and wounds that require immediate medical attention. Injured or sick victims need quick and effective access to medicines, medical equipment, basic care, and trained medical personnel. The problems that occur are related to health assistance so that many victims are delayed in their health care. In fact, if the distribution of health assistance is good, disaster victims may not be able to get the care they need in a timely manner, which can increase the risk of health complications and death. However, there are so many obstacles in the distribution such as Cianjur earthquake refugees being isolated, closed road access and landslides, so that the logistics of health assistance received are potentially constrained. Therefore, efforts to optimize the performance of health aid distribution are essential in responding to the medical needs of earthquake victims.

Based on the above context, the problem of this research is the level of logistics distribution efficiency and the operational efficiency of the factors that influence the logistics distribution assistance process for victims of the earthquake disaster in Cianjur. The purpose of this study, according to the formulation of the problem, is to determine the efficiency of logistics distribution and the performance of factors that influence the rational distribution of logistics at the emergency response stage.

2. Literature Review

2.1 Consumer Perception

According to Asnori (2020), said that perception is the process of using one's senses to see their environment and become aware of everything that happens in it.

Sinta Listani (2016), found that it is explained that better consumer perceptions of the quality of a product or service will lead to repeated purchases of the product or service and the emergence of emotional attachment to the brand and rational preferences, thus giving rise to great consumer loyalty.

According to Sunaryo et al. (2020), states that formal perception is the process by which a person selects, seeks, and interprets stimuli into certain actions. Perception is influenced

by awareness, memory, thinking, and language. However, it is important to note that perception is not an accurate reflection of reality.

As shown by Noor et al. (2020) Customers' perception is the process of how stimuli are chosen, organized, and interpreted. The significant relationship of the service provider with customer refers to their perceptions of functionality value towards company product.

According to Syahnur et al. (2021) Customer satisfaction is an expression felt by the clients after using either products or services. This feeling is more about whether it is a pleasure or displeasure with the commodity.

2.2 Distribution Performance

In research Sutrisno et al. (2023), in this study, product distribution includes the process of providing products according to consumer orders, the company brings raw materials to the production site, sends them to a different place to turn them into semi-finished products, then sends them back to the next place to turn them into finished products.

According to David Sukardi Kodrat (2020), manufacturers or distributors use distribution channels to market their goods and services. The task of distribution is to identify and manage these distribution channels so that products can reach customers in the required quantity and variety, at the required and promised time.

2.3 Humanitarian Logistic

In research Masudin et al. (2020), Humanitarian Logistics has published various articles discussing earthquake and physical recovery after disasters. Economic recovery is the least discussed, while long-term recovery is the most discussed. In 2016-2017, most articles on recovery management and the most reviewed papers on long-term recovery were published in 2010-2012. These findings suggest that there is still a need to develop understanding and research on disaster management processes in humanitarian logistics. Humanitarian logistics operates in the humanitarian sector, in the context of natural disaster management. Humanitarian logistics adapts to each situation. Humanitarian logistics must be able to adapt to the destination and time of environmental change using existing resources.

As shown by Fathalikhani et al., (2019) humanitarian logistics service providers perform several tasks, including procurement, storage, and transportation of government, local non-governmental organizations, and other disaster-affected communities.

According to Shafa et al. (2021) Humanitarian logistics is the management of aid where there is a humanitarian emergency. This humanitarian logistics has the principles of efficiency and effectiveness in the distribution of disaster aid distribution, from the point of providing assistance or origin to recipients of assistance

2.4 Consumer Satisfaction

According to Oliver (2019) Satisfaction is a person's feeling after comparing perceived performance or results with expectations. Therefore, this satisfaction serves to determine performance and expectations. If the perceived performance does not meet expectations, consumers will be disappointed.

According to Azis et al. (2020) Customer's satisfaction has become a central concept in marketing theory and practice and is one of the essential goals for business activities. Customer's satisfaction contributes to many crucial aspects, such as creating customer's loyalty, improving

company reputation, reducing future transaction costs, and increasing employee efficiency and productivity.

Zikri & Harahap (2022), found that customer satisfaction is a sense of satisfaction or disappointment that occurs in a person when they compare the performance of a product with their expectations. If the performance matches expectations, consumers will be very satisfied, whereas if the performance does not match expectations, consumers will be disappointed.

As shown by Thungasal & Siagian (2019), One measure of company success is customer satisfaction, which will affect the number of sales. When customers are satisfied, they are more likely to retain marketed products and build loyalty. When customers are satisfied with a product they buy, they are more likely to buy the product again, which results in consumer loyalty.

In Research Johan Johan et al. (2020), said that consumer satisfaction is measured based on their experience when shopping, and they will compare it with what they expect from the product or what they get. This will have a big impact on the customer's desire to buy the product again.

2.5 Consumer Expectations

In Research Latief & M (2019), Customer expectation is a consumer belief before buying goods, then becomes a standard or benchmark for evaluating the performance of a product. However, no agreement has been reached on a number of issues, such as the characteristics of certain standard expectations, how many standards to use, and the origin of expectations.

According to Kusno et al. (2021), If the seller places expectations too high, then the buyer will be disappointed if the performance does not match expectations. Conversely, if the seller places expectations too low, then the buyer will not be interested even if the performance is satisfactory. Ideally, sellers look for ways to continuously raise expectations by delivering performance that meets expectations.

In Research Wahono & Indrawati (2023), It is believed that the evaluation of service quality Ricardianto et al, (2023) and customer satisfaction is very much based on customer expectations. Basically, there is a close relationship between determining quality and customer satisfaction and customer expectations. In order to increase satisfaction, enjoyment, ease of use, and desire to repurchase, sellers must build appropriate consumer expectations, change their marketing strategies and programs, and strive to meet consumer needs. This is because consumer expectations and perceived enjoyment are significant drivers in influencing satisfaction and desire to repurchase. Consumer experience is critical to the success of an entity's offerings. Businesses are no exception who must create and make positive consumer experiences in order to gain and retain consumers.

3. Research Method

In this study, researchers used a quantitative approach. According to Sugiyono (2016), quantitative research methods are defined as research based on certainty whose purpose is to observe certain populations or samples. To explain and check the hypothesis that has been set, quantitative data analysis uses statistical techniques. This research was conducted over a period of 3 months from August 2023 to October 2023. This research is relevant because it proves that humanitarian logistics does not only occur before, during, or after a natural disaster but is also sustainable in providing the necessary medicines to support the rescue and recovery efforts of affected communities.

Data Collection Methods

In this study, researchers applied a data collection method in the form of a questionnaire using a measuring scale, namely the Likert Scale. The target respondents of the researchers were those who experienced the natural disaster of the Earthquake and recipients of medical equipment and medicines in Cianjur City. The sample collection method in this study uses a non-random technique with the accidental sampling method. According to Sugiyono (2016) the accidental sampling technique is a sample selection technique based on chance, meaning that anyone encountered by the researcher can be used as a sample if he feels he meets the specified criteria. Researchers took a sample of Mangunkerta village, Cugenang sub-district, Cianjur district, in the hamlet 1 with a population of 1,778 men and 1,695 women with a total population of 3,473 residents. To determine the sample size, the Slovin formula was used. In the research Dr. Prof. Suliyanto, S.E. (2018), The Slovin formula was first developed by Slovin in 1960 as stated in Altares et al., (2003) to determine the sample size. Slovin's formula for identifying samples is as follows:

$$n = \frac{N}{1 + Ne^2}$$

Description:

n= minimum sample size

N= population size

e= margin of error value

Calculation results:

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{3.473}{(1 + (3.473 \times (0,1)^2))}$$

$$n = 97.20 = 98$$

Respondents used in this study amounted to 100 respondents. Sample collection is carried out by observing certain criteria. The sample criteria used are as follows: People affected by the Cianjur Earthquake Natural Disaster and people who received distributed health assistance.

Data Analysis Method

In this study, researchers used data analysis methods in the form of Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA).

Customer Satisfaction Index (CSI)

According to Ghazi et al. (2019), CSI is an index that can test the quality of consumer satisfaction based on certain attributes. The following steps are taken to find out how much CSI is;

1. Determine the Mean Importance Score (MIS) for each question item.

2. Create Weight Factors (WF) per question item. This weight is the percentage of the MIS value per question item to the total MIS of all items.
3. Determine the Mean Satisfaction Score (MSS) for each question item.
4. Create a Weight Score (WS_k) for each question item. This weight is the multiplication between WF_k and MSS_k.
5. Determine the Customer Satisfaction Index (CSI), with the formula:

$$CSI = \frac{\sum_{k=1}^P WS_k}{HS} \times 100\%$$

Table 1

Satisfaction level criteria

No	CSI Value (%)	Description (CSI)
1	81% - 100%	Very Satisfied
2	66% - 80.99%	Satisfied
3	51% - 65.99%	Quite Satisfied
4	35% - 50.99%	Less Satisfied
5	0% - 34.99%	Not Satisfied

There are several benefits of the Customer Satisfaction Index (CSI), namely: Measurement results are always a reference in order to determine goals for the following years. This index is needed because the customer satisfaction measurement process takes place continuously. The index is also needed to compare the company's customer satisfaction with its competitors.

Importance-Performace Analysis (IPA)

Is a way to test service quality. According to Sastra Agustika et al. (2017) Importance-Performance Analysis can be used as a way to rank various elements of various services and determine the required performance. In this method, it is necessary to calculate the level of compatibility in order to understand the level of customer satisfaction regarding the company's activities and service providers also understand how much customers expect of the services they provide. In Importance- Performance Analysis, the map contains 4 quadrants where all variables have an impact on service quality. The quadrant division in Importance-Performance Analysis is shown in the following figure.

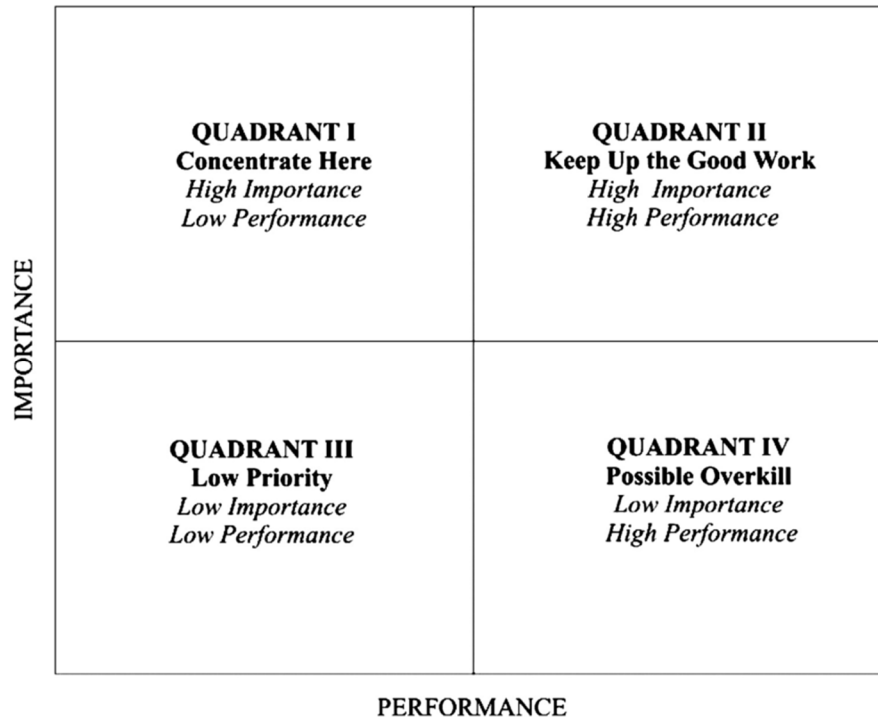


Fig. 2. Importance-Performance Analysis Grid

An explanation of how each variable falls within the four quadrants mentioned below:

1. Quadrant I (Focus)

Contains everything that is considered important but does not match expectations. Variables in this quadrant require improvement.

2. Quadrant II (Keep Up the Good Work)

Contains everything that is considered important and in accordance with the feelings that ultimately increase the level of satisfaction. The variables in this quadrant have made the product or service of high quality, so it must be maintained.

3. Quadrant III (Low Priority)

Contains everything that is considered less important because of poor performance. Increasing variables in this quadrant needs to be rethought because the impact on benefits is reduced.

4. Quadrant IV (Possibly Overkill)

Contains everything that is considered less important because it is wasteful. Variables in this quadrant can be reduced in order to reduce expenses.

After using data analysis methods in the form of Customer Satisfaction Index (CSI) and Critical Performance Analysis (IPA), researchers then used SPSS 26 (Program for Scientific Statistics) to process the data.

4. Results and discussion

Demographic Characteristics of Respondents

This analysis is based on the research data that has been collected, in the form of results from questionnaires obtained, namely 100 community respondents who received Health distribution assistance in Cianjur. The data collected is then transformed in the form of a percent pie chart for easy understanding. Researchers used this analysis in order to provide information on the demographic characteristics of respondents. The Demographic Characteristics of Respondents in a percent pie chart are as follows:

Demographic Characteristics of Respondents by Gender

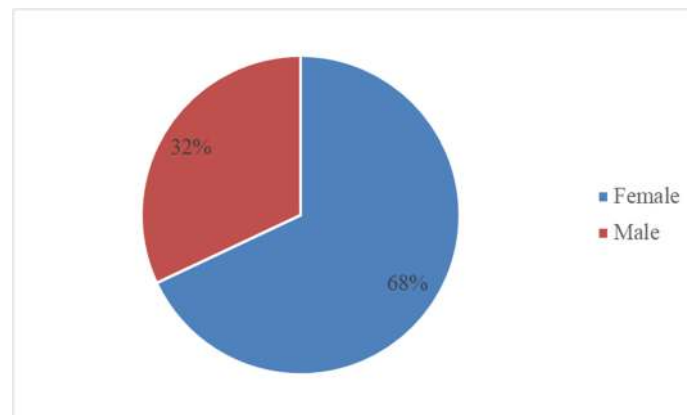


Fig. 3. Demographic Characteristics of Respondents by Gender

Based on the percent pie chart, it can be seen that out of 100 community respondents who received health distribution assistance in Cianjur, 68 people or 68% were female, while 32 people or 32% were male. This number shows that the majority of people who received health distribution assistance in Cianjur who were used as samples in this study were women.

Demographic Characteristics of Respondents by Age

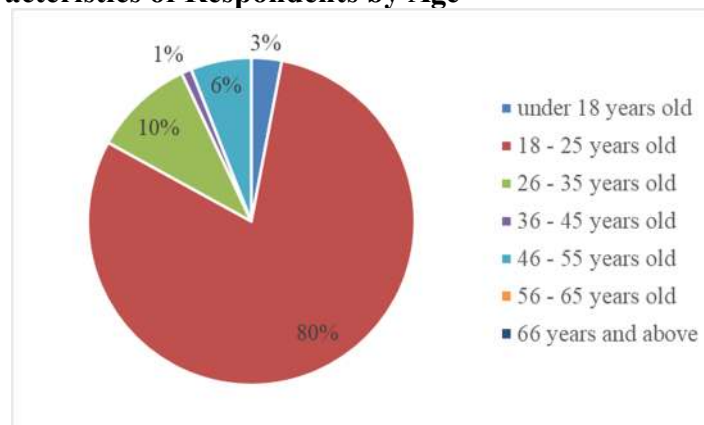


Fig. 4. Demographic Characteristics of Respondents by Age

Based on the diagram, it can be seen that of the 100 respondents who received Health distribution assistance in Cianjur, the most, namely 80 people or 80%, were aged 18-25 years. Due to those who fill out questionnaires via Google Form who are able to use digital technology.

Data Quality Test Results

Validity Test

A Study of Dr. Prof. Suliyanto, S.E. (2018) has shown that the validity of a measuring instrument is the level of accuracy and correctness to carry out its measurement function. A measuring instrument is considered valid if it can correctly measure what should be measured. The criteria for the assessment validity test are as follows:

a) If $r\text{-count} > r\text{-table}$, it means valid.

b) If $r\text{-count} < r\text{-table}$, it is invalid.

The results of the research validity test are as follows.

Table 2

Validity Test

Research Variables	Variable Items	Counter	Rtabel	Description
Consumer Satisfaction (X)	CS1	0.798	0,195	VALID
	CS2	0.751	0,195	
	CS3	0.782	0,195	
	CS4	0.719	0,195	
	CS5	0.732	0,195	
	CS6	0.658	0,195	
	CS7	0.807	0,195	
	CS8	0.812	0,195	
	CS9	0.769	0,195	
	CS10	0.668	0,195	
	CS11	0.741	0,195	
	CS12	0.647	0,195	
Consumer Expectations (Y)	CE1	0.676	0,195	VALID
	CE2	0.808	0,195	
	CE3	0.772	0,195	
	CE4	0.823	0,195	
	CE5	0.735	0,195	
	CE6	0.788	0,195	
	CE7	0.782	0,195	
	CE8	0.754	0,195	
	CE9	0.754	0,195	
	CE10	0.731	0,195	
	CE11	0.754	0,195	
	CE12	0.692	0,195	

Indicating that each statement item of the research variable has rcount greater than rtable, please note that the willing respondents are 100 people with a significance of 5%, the rtable is 0.195. Thus the validity of this data can make this research continue.

Reliability Test

According to Dr. Prof. Suliyanto, S.E. (2018) Instrument reliability shows that a measuring instrument produces reliable measurements. The criteria for the reliability test were carried out using the Cronbach Alpha method as follows:

- a) If the alpha value > 0.6 , it means reliable.
- b) If the alpha value < 0.6 , it means it is not reliable.

The results of the research reliability test are as follows:

Table 3

Reliability Test

Variabel	Cronbach's Alpha	Description
Consumer Satisfaction (X)	.924	Reliabel
Consumer Expectations (Y)	.930	

Based on the results of the analysis, the Cronbach Alpha value (0.924 and 0.930) is greater than 0.6, so the research variable instrument is declared reliable.

Customer Satisfaction Index (CSI) Calculation Results

The Customer Satisfaction Index is used to determine the level of consumer satisfaction with distribution performance in the delivery of health distribution assistance to earthquake victims in Cianjur City as a whole based on question attributes.

Table 4

Question Attributes Based on Total Quality

Variabel	Indicator	No.	Statement
Service Quality (Rakhmalina & Marsih, 2022)	Reliability	1.	Distribution assistance has helped you meet basic needs after the earthquake in Cianjur.
		2.	Distributor shows sincerity in handling earthquake victims in Cianjur.
	Responsiveness	3.	Health aid distribution process, goods needed to reach you quickly.
		4.	Distributors appropriately notify when support services will be provided.
		5.	The distributor's willingness to help the people affected by the earthquake in Cianjur.

Assurance	6.	People feel comfortable, safe when interacting with distributors.
	7.	Distributors can be trusted regarding the quality of their work.
	8.	Distributors have knowledge and skills that support their work.
Empathy	9.	Distribution aid prioritizes those in need of assistance.
	10.	Distributors give personal attention to the interests of the people affected by the earthquake in Cianjur.
Tangibles	11.	Distributors have adequate transportation to support the health distribution assistance process.
	12.	The location of natural disasters is easy to reach.

Importance Performance Analysis Map

Importance-Performance Analysis is measured in order to identify which attributes of questions or statements are included in quadrants I, II, III and quadrant IV on the Importance Performance Analysis map. The mapping results on the overall Importance-Performance map are as follows:

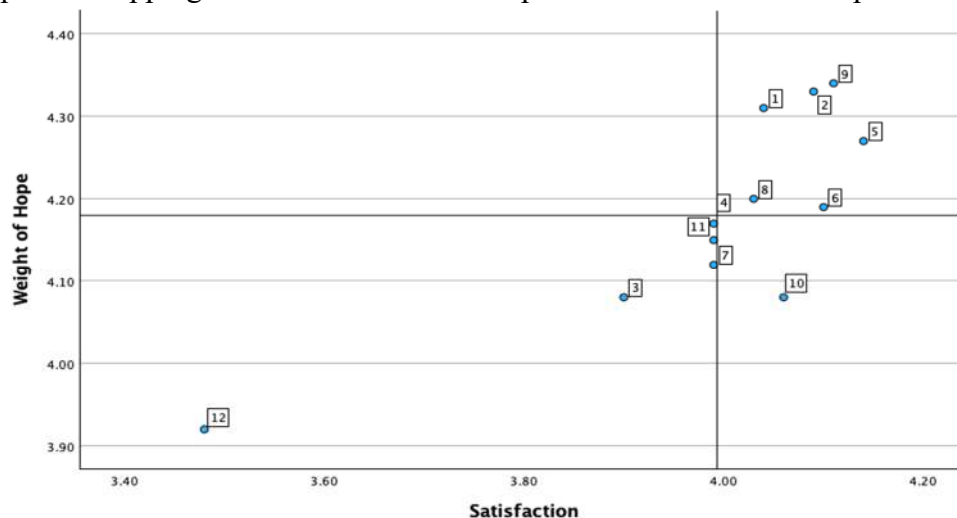


Fig. 5. The Importance-Performance Map Analysis

Customer Satisfaction Index & Importance Performance Analysis

Customer Satisfaction Index (CSI) Analysis

From the results of the calculation of the Customer Satisfaction Index is 83.680%, the total satisfaction level is > 80%, which means that consumers are very satisfied with the distribution performance in the delivery of health distribution assistance for victims of the earthquake natural disaster in Cianjur City.

Importance Performance Analysis (IPA)

In the Importance Performance Analysis, the various attributes of the statements in quadrants II, III & IV are for segmentation based on the overall obtained differences in attributes in each quadrant. This means that consumer interests and satisfaction with these segments are different. However, quadrant I does not exist because all attributes are in accordance with expectations even though some are considered less important.

Table 4

Statement Attributes in Quadrant II Overall.

No.	Statement Attributes in Quadrant II
1	Distribution assistance has helped you fulfill basic needs after the earthquake in Cianjur.
2	Distributor shows sincerity in handling earthquake victims in Cianjur.
5	The distributor's willingness to help the people affected by the earthquake in Cianjur.
6	People feel comfortable, safe when interacting with distributors.
8	Distributors have knowledge and skills that support their work.
9	Distribution aid prioritizes those in need of assistance.

Table 5

Statement Attributes in Quadrant III Overall.

No	Statement Attributes in Quadrant III
3	Health aid distribution process, goods needed to reach you quickly.
4	Distributors appropriately notify when support services will be provided.
7	Distributors can be trusted regarding the quality of their work.
11	Distributors have adequate transportation to support the health distribution assistance process.
12	Natural disaster locations are easy to reach.

Tabel 6

Statement Attributes in Quadrant IV Overall.

No	Statement Attributes in IV
10	Distributors give personal attention to the interests of the people affected by the earthquake in Cianjur.

Therefore, the performance of Health Aid Distribution should be maintained because it has become a superior service for consumers.

5. Conclusions

Based on the results of this study, it can be concluded that the performance of distribution services in the delivery of distribution assistance has a significant influence on customer perceptions. The results show that when the quality of service provided is satisfactory, customer

perception tends to be positive. This shows the importance of providing quality services in the aid distribution process.

Furthermore, the study also showed that distribution performance in health assistance to victims of natural disasters in Cianjur was able to meet the needs of post-earthquake victims, despite difficult road access due to landslides. Thus, consumer perceptions of distribution performance also tend to be positive. This shows the effectiveness of aid distribution efforts in addressing the needs of people affected by natural disasters.

In addition, the study also found that consumer perceptions were very satisfied with the distribution performance in the delivery of health distribution assistance for victims of natural disasters. This shows that the performance provided in the aid distribution process is considered very good by consumers. This satisfied consumer perception reflects the success in providing services that meet the expectations and needs of disaster victims.

Combining these conclusions, it follows that service quality in the delivery of distribution assistance has a significant impact on consumer perceptions. If service quality is satisfactory, then consumer perception will be positive. In addition, distribution performance in health aid in Cianjur was also able to meet the needs of natural disaster victims and received positive consumer perceptions. Finally, consumer perceptions are very satisfied with the distribution performance, which is considered very good.

These conclusions provide a more comprehensive understanding of the importance of service quality and distribution performance in the delivery of health distribution assistance in natural disaster-affected areas. By knowing the impact of service quality and distribution performance on consumer perceptions, improvement measures can be taken to enhance the efficiency and effectiveness of the relief distribution process.

6. Implications

Firstly, this research can help find factors that influence how consumers perceive the performance of health aid distribution. Therefore, the results of this study can be utilized by relevant parties in order to increase consumer satisfaction by assessing and improving the current distribution system.

Secondly, this research enhances our understanding of what consumers want from health service delivery. To effectively fulfill these expectations, consumer communication and participation must be improved, and the process of health aid distribution must be transparent.

Third, this study provides information on how health aid distribution went during the earthquake disaster that hit Cianjur City. It is crucial to evaluate and improve distribution performance to ensure the quality and sufficiency of aid, increase responsiveness and speed, improve the efficiency and effectiveness of coordination, and create sustainable solutions for health aid distribution.

Fourth, this study investigates how consumers perceive health aid distribution to function. This suggests that understanding how consumers view and assess the performance of the distribution is very important. By knowing consumers views, improvements can be made to enhance the quality and effectiveness of health aid distribution.

Fifth, this research can increase our understanding of how important it is for various related parties to work together in the distribution of health assistance. Consequently, this research may encourage relevant parties to further cooperate to distribute aid to meet the needs of disaster victims more efficiently and effectively.

Overall, this research is expected to provide better health assistance services to earthquake victims in Cianjur City, meet consumer expectations and satisfaction, and improve distribution performance.

7. Research limitation

Time limitations: This research may have been conducted over a limited period of time, so it may not cover all aspects of the study. More time spent on the research may provide a more in-depth picture in analyzing.

The challenge of using SPSS software: SPSS has a complicated interface, with many menus and options. Start by learning the basic layout of the program and find out where to find the functions you need. The researcher looked for online tutorials on using SPSS to serve as an example of how to use SPSS for analysis.

Challenges in quantitative analysis: Ensuring that the data collected is accurate. Measurement errors or under-sampling that is not representative of the target population can affect the validity of the analysis results. Every quantitative analysis method has certain assumptions that must be met for the results to be valid. Overcoming these assumptions, such as normality tests and reliability tests can be challenging so that the quality of the data is valid.

Nonetheless, this study provides further exploratory insights in the areas of transportation service quality, operational performance, and customer loyalty. Future research can use these findings to learn more about these complex correlations and their implications.

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