



A Study of Customer Satisfaction with Planning Movement of Goods during Disaster Aid Programs: A Case Study of Flood Hit in Segamat, Johor

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Received: 26/05/2019

Accepted: 01/07/2019

Published: 20/02/2020

Abstract

Segamat is one of the districts, which has been commonly affected by floods during the north-east monsoon that has been estimated to happen in November to March. A flood that happened at Segamat destroyed property, livestock, crops, and infrastructure. It also threatened the people's life. National Security Council (NSC) is responsible for managing the natural disaster that affected the country. Moreover, NSC is responsible for coordinating the National Disaster management, establishing and ensuring all respective policies and implementing disaster management in each level. Therefore, this research conducted a survey to study the level of satisfaction of floods victims with the disaster aid programs. Thus, a descriptive analysis has been used in the research. Sample size of the research included 367 respondents. Data have been analyzed by SPSS; a comprehensive software for data analysis. In addition, factors affecting the customer satisfaction during disaster aid programs have been identified in the research using the factor analysis. Then, the relationship between the movement of goods and the customer satisfaction during the disaster relief programs has been examined by, correlation coefficient. Findings of the research proved lower satisfaction level of customer with disaster aid programs. Moreover, for factor analysis, three factor has been extracted from six factor. It has been also found that there have been a significant relationship between planning movement of goods and customer satisfaction. Thus, it is recommended to improve comfort ability and management of delivering aid in order to promote management of disaster programs.

Keywords: Customer Satisfaction, Disaster, Flood, Management, Planning, Victims

1 Introduction

This research aimed to study the customer satisfaction with the planning movement of goods during disaster aid programs based on a case study at Segamat, Johor. In this research, victims represented the customer in disaster aid programs. The flood usually hit Segamat during the north-east monsoon. Therefore, we focused on the management of flood disasters during the preparation and response phase of a disaster. There are three types of flood that happen in Malaysia. They are categorized as natural disasters, man-made disasters, and hybrid disasters.

In Segamat, flood happens because of the combination of natural and man-made factors. In fact, the happened flood is due to the heavy monsoon rainfall and the river at Segamat consisting of 70 percent of the catchment area and another 30

percent are hilly areas up to 1000 m (1). The unpredictable heavy rain is one of the big factors in addition to the human intervention such as poor drainage, poor planning in urban development, and the attitude of people itself. According to an interview with Captain (PA) Mohd Nazlan Bin Ruslan from Malaysia Civil Defence Department, the huge flood happened in five years for one time in 2006, 2011, and 2017.

It is notable that NSC is the agency responsible for the National Security Division, Prime Minister Department plans for the operation during the disaster (11). The government spends a large fund for effective and efficient management of disaster. The agency responsible for management of the fund from the government in terms of goods is the Social Welfare Department. They must plan earlier to preparedness and they did not have the asset that can carry the goods during the flood

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event. Moreover, they do not have enough staff to handle the goods during flood event and they must search for volunteers to distribute the goods. Therefore, less communication between the Social Welfare and other agency and community can make the goods arrive too late. With regard to their task, they must make sure the foods arrive in 6 hours after the flood event at the flood relief centre.

Flood is the one of natural disasters that happened in our country affected by the climatic conditions. Our country is dominated by the north-east monsoon during November to March. Flood is commonly associated with the monsoon. According to Khalid, the NSC is the agency that is responsible for Flood Disaster Management in Malaysia (9).

Another issue that comes after the disaster is the disaster inventory such as food, medicines, and comforter at the evacuation centre. The needs of relief aid are different at all evacuation centers based on the numbers of victims. According to Former of Deputy Prime Minister of Malaysia, the government needs to improve four areas in handling national disasters such as floods. These areas include the early warning system, relief centres, food supply, and assets and logistics (1). The NSC also must look the number of centres for storing food supplies, particularly in the flood-prone districts, raise stocks of food supplies at the supply stores when anticipating floods, and improve the system to dispatch supplies to the relief centres (11). Furthermore, it should improve the management of the food supply and stock reserve at relief centres. According to Apte, the inventory management is a critical issue at all phases of commercial, military, and humanitarian logistics (2). The objective of this research has been to identify the customer satisfaction with the movement of goods in disaster aid programs. In addition, the researcher wanted to determine the relationship between movement of goods and the customer satisfaction during the disaster relief programs (10).

This research aimed to identify level of satisfaction of flood victim known as the customer with the disaster aid programs. Therefore, the researcher needed to get feedbacks from the flood victims at Segamat, Johor. It has been one of the ways to get data. Then, the data collected have been analyzed using a suitable method. According to the results, they have been either satisfied or not with the current disaster aid programs (3). This study could help to improve the current practice of disaster management by the government. Moreover, data analysis would support the researcher's idea and suggestion, which would be recommended in chapter five of this research. The victims would also get benefits from this research conducted in Segamat District, Johor. This area has been always involved in the flood disaster during the north-east monsoon from November to March. Segamat has three parliaments called Sekijang, Segamat, and Labis. Segamat is a district under the Johor state that is managed by the Majlis Daerah Segamat as the responsible local authority.

H1: The level of satisfaction of flood's victims with the effectiveness of disaster aid programmed is low.

H2: Factors of the planning movement of goods affect the customer satisfaction.

H3: The planning movement of goods has a significant relationship with the customer satisfaction during disaster programs.

2 Review of the Literature

This study is a review from previous research related to the research problems. This chapter will review the victims or customer responsiveness towards respective agencies who deliver the services during disaster aid programs. Satisfaction of the victims of flood disaster can be measured with the successfulness of programs. Disaster has many different ways of handling and this chapter will explain a disaster with a focus on floods. The previous flood event at Segamat has been a case study at Segamat, Johor on 24 January 2017. Their planning in movement of goods has been not well-prepared in disaster aid programs.

According to Nikbaksh and Farahani, humanitarian logistics is one of the program branches in logistics that requires preparation and response phases in disaster management (12). The crucial part of the disaster relief programs is the effectiveness and delivery of speeds. In the system of logistics, it requires purchasing, storing, and transporting water, food, medicine, and other supplies such as human resources, machinery, and equipment that are need in the pre and post-disaster periods.

2.1 Customer in disaster aid programs

According to Oloruntoba and Gray, in humanitarian logistics, customers are the aid users also known as victims (13). In emergency relief, a chain customer is an individual that has been suffered in the disaster. In fact, people are affected by illness, injury, thirst, hunger, homeless, and so on. Therefore, the researcher would use the customer as the victims. In emergency relief, there are many different perspectives in the literature. According to Oloruntoba and Gray, conceptualization of customer found in this literature can be applied to the emergency (13).

Secondly, intermediate customer is the organizations with specific function that work as intermediaries between donors who fund the emergency relief chain to the victims in disaster (e.g., Malaysian Medical Relief Society (MERCY Malaysia)). Thirdly, in humanitarian logistics, logistics customer refers to the locations in the aid-receiving areas. In this context, the customer takes the ownership of the product or services being delivered such as individual who is taking the aids from a center to their house and organization who transports the relief aid from distribution center to the evacuation center.

2.2 Customer Satisfaction in Disaster Aid Programs

In addition, handling the complaints when the customers face a problem, they may respond by switching a new supplier or attempting to remedy the problems by complaining in the hopes that supplier will improve the services. The complaint handling is not a result of customer satisfaction. It also leads to operational and financial improvement. In disaster aid programs, customer complaints when he is satisfied with the aid programs especially when the goods that they received are not as they expected.

2.3 Definition and Type of Disaster

According to the National Security Council in Malaysia, disaster occurs in a sudden manner. It is complex, threatens the life, and damages to property and the environment (11). The daily activities are also affected during a disaster. This incident

requires handling the resources, tool or equipment, frequency, and extensive manpower. It includes various agencies as well as effective coordination and requires the complex actions for a long period of time.

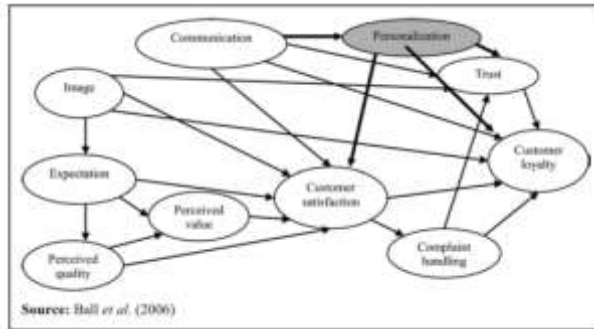


Figure 1 : European Customer Satisfaction Index (ECSI) Model

High water flow that dominates naturally or artificially in any part of the river system is called flood. When the river bank is overtopped, the water extends over the flood plain and causes hazards to the society. If the flood occurs, it applies bad impacts on people activities and environment or combination of both. Floods are usually caused by discharge of a huge volume of water in short time. There are some reasons that the discharge of water in huge volume causes flood. Firstly, a very heavy rainfall in a short span of time. Second, breach in dams. Lastly, a very high tidal waves caused by seismic activities like earthquake. There are many rivers in Malaysia that have been involved in daily activities since the early of civilization. Natural factors such as heavy monsoon rainfall, intense convection rain storms, poor drainage, and other local factors made the flood a common feature in the lives of a significant number of Malaysians. The human factors are things that cannot be compromised as the planning of urban development is the worst. For example, the Kuala Lumpur City face a hard period whereas the vibrant of development is not balanced with the land limitations.

2.4 Flood Disaster Management

According to Sipe, N. and Vella, K, the worst option is that nothing else can be done with the hazard when flood hits and people have to move on to another place (14). This process is called relocation, in which the victim of flood must move to another place at the evacuation center. The disaster management is based on several factors. It includes the loss and prevention from the impact of a disaster. However, replenishment is the most costly option and the housing for a new location is limited.

According to Chan, N. W, disaster in Malaysia is managed under the government functions and based on top-down government-centered machinery (4). The NSC under the Prime Minister's Department is responsible for a disaster management (11). In fact, the NSC is responsible for coordinating activities before the flood event from the mitigation, preparation, response, and reconstruction. NSC under the Directive No.20 should consider policy and mechanism about the Natural Disaster and Relief Management issued in 11th May 1997. The aim of the Directive No.20 is to

outline the roles and responsibilities of various agencies involved in handling disasters.

2.5 Logistics and Supply Chain Management

According to Liu, logistics and supply chain management vary from area to area. It means the science of planning, carrying out the movement and maintenance of forces (17). It deals with

- Design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of material,
- Movement, evacuation, and hospitalization of personnel,
- Acquisition or construction, maintenance, operation, and disposition of facilities, and
- Acquisition or furnishing of services.

Table 1: Comparison between commercial supply chain and humanitarian aid and disaster supply chain (5)

Comparison Item	Commercial Supply Chain	Humanitarian aid and disaster supply chain
Research	Extensive	Limited
Objective	Profit maximization	Efficiency, effectiveness, fairness
Inventory	-low demand -Storage and inventory usage are business decision -Information for control expiry -Obsolescence defined by business need -Pull system used	-High unpredictability of future demand -Storage location and inventory usage are political decision -Information on inventory not integrate -Obsolescence defined by infrastructure -Pull system not permitted by demand knowledge
Transportation	-Theory for quantification -Dimensional roles include factories, distribution centers and customers -Commercial transportation used -Round-trip or circulating delivery	-Little theory to guide decision -Dimensional roles involves collection points, transfer depots, and demand points -Special transportation sometimes needed -Round Trip delivery

A supply chain also refers to the entire entities involved in the chain of supply whether directly or indirectly interlinked in serving the same consumer or customer. The player in the supply chain includes vendors, manufacturers, distributors, retailers and customers. Logistics as an accelerator of supply chain management is responsible for moving the goods that have been acquired by each player.

2.6 Planning Movement of Goods

According to Liu, planning movement of goods is one of roles in humanitarian supply chain analysis based on the critical look on previous subtopic. In addition, a lot of processes need logistics movement to manage disaster (17). According to the NSC in Directive No.20, the government appoints agencies to manage the tasks when the flood event happens (11).

In logistics planning, there are two movements that are involved in the movement of people and goods. Therefore, the researcher studied the planning made up by the Disaster Management and Relief Committee on the movement of goods (15). The disaster aid programs involve the planning between government and the respective agency. The collaboration is to ensure the efficiency and effectiveness of the disaster management. Furthermore, it ensures the fund from the government, which should be sent to the right place and meets the requirement of a need for the population that are affected (16).

Table 2: Critical Successful factors for Humanitarian Supply Chain Management (11)

Critical Successful Factors	Variables
Transportation Planning	Transportation modes selection and supply, Total Productive maintenance, vehicle routing optimization, contract delivery and centralized purchasing.
Aid Inventory Planning	Demand forecasting for aid supply, Push and pull system combination, Facility location selection, Prepositioning, Just-in-time, Vendor-managed inventory, centralized purchasing, collaborative warehousing network development

According to Liu, in humanitarian logistics, transportation is the key function in supply chain management because it is a physical link between supplier and customer that enable the aid resources flow. There is a relationship between transportation planning and inventory efficiency (17).

The affected area must receive urgent relief service in faster time after the disaster. Therefore, the operation of emergency logistics and fast response to the urgent demands in the affected areas is very critical. In fact, the urgent relief service must deliver goods to the affected area as quick as possible.

According to the National Security Council, the agency that manages the transportation supply is Malaysian Public Work Department and if the asset at the affected area is not enough in operation time, another agency will be involved to deliver the supply (11).

According to Liu, demand should be forecasted as a variable for aid inventory supply such as foods, beverages, shelter, communication, speed, sanitation (17).

2.7 Disaster Management System Cycle

There are four main phases of disaster management system: mitigation, preparedness, response, and recovery (Figure 2.2). Characteristics of the region affected by disaster influence the success of disaster management. The factors in countries for logistics preparedness such as transportation, communication infrastructure of the system, environment condition, geographical conditions, time of event happened by day or year have crucial impacts in terms of casualties and destruction caused by a disaster. The table shows activities in Disaster Management System Cycle.



Figure 2: Disaster Management Cycle.

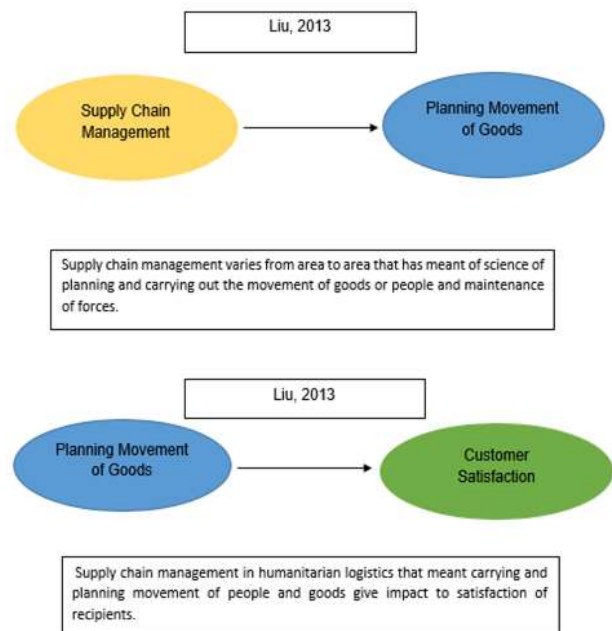


Figure 3: Theoretical Framework.

3 Research Methodology

This research will follow the given below process for the methodology process. The researcher distributed a survey by questionnaires to the samples of the study. It has been conducted on the flood disaster victims that has been affected on 24 January 2018.

Table 3: Disaster Management System Cycle Activities (18)

Phases	Activities
Mitigation	- Set up the land use planning and controlling the occupation of the high hazard area. - Technological advancement used to mitigate the effect of a disaster. - Set up preventive measures to control developing situations. - Enforcing the building codes to make the improvement in disaster resistance of the structure. - To set up tax incentives or disincentives. - To make sure the application of proper methods in terms of rebuilding buildings and infrastructures after disasters. - Measuring the potential extreme hazards by using risk analysis technique or risk assessment. - To enforce the use of insurance plans to reduce disasters financial impacts.
Preparedness	- Hire a manpower for emergency services. - Set up the community volunteer groups. - Planning for emergency and logistical. - Acquiring and stockpiling necessary items. - Develop the mutual aid agreements and memorandum with other organization or agency, NGOs, or other countries and international organization. - Provide training for both response manpower and concerned citizens. - Budgeting. - Obtaining necessary vehicles and equipment. - Acquiring, stockpiling and maintaining emergency supplies. - Construct the central and regional emergency operation centers. - Develop the communication systems. - Plan a regular training to train manpower and test the capabilities.
Response	- Activating emergency operations plan and centers. - Evacuating disaster areas - Opening shelters and providing mass care - Provide emergency infrastructure protection and recover the lifeline services - Provide the emergency rescue and medical care - Commit the searching and rescue of the victims - Set up fatality management - Deploy police or military forces for ensuring the security of affected areas.
Recovery	- Provide disaster debris cleanup - Provide the financial assistance to individuals and overnments - Rebuilding roads, bridges and key facilities - Provide sustain mass care for displace people and animals - Reburying displace human remains - Fully restore lifeline services - Provide mental health and pastoral care

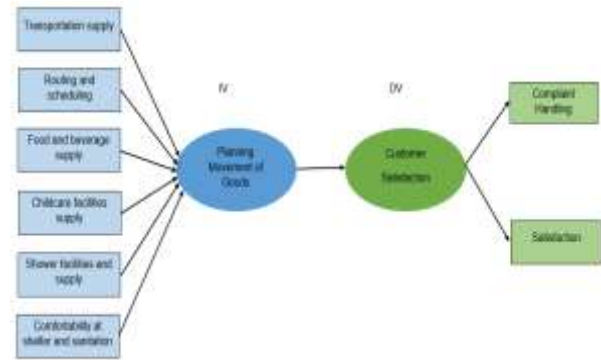


Figure 2: Conceptual Framework.

2.8 Mapping Problem Statement, Research Objective, Research Question

The questionnaires will help to know the rating of disaster aid program based on the factors in planning movement of goods. In this research, there are a lot of secondary data that has been collected from newspaper, report, and data from the authorities. All the secondary data that have been collected are being acknowledged or cited and present in the bibliography of the research report. The journal and articles journal are also found at website.

Table 4: Mapping PS, RO, RQ and Data Analysis

Problem Statement	Research Objective	Research Question	Data Analysis
There are some complaint by the customers that they not satisfied towards disaster aid programs and this issues always have been rising issues during meeting after the response phase.	1. To identify the level of satisfaction of floods victims towards the disaster aid programs.	1. What is the floods customer satisfaction level towards the disaster aid programs?	1. Descriptive Analysis, Frequency, mean,
	2. To identify the factors that affect the customer satisfaction during disaster aid programs.	2. What are the factors that affect customer satisfaction during disaster aid programs?	2. Exploratory Factor Analysis
	3. To examine relationship between movement of goods and customer satisfaction during disaster relief programs	3. What is the relationship between planning of movement of good and the customer satisfaction during the flood event?	3. Inferential Analysis, Correlation

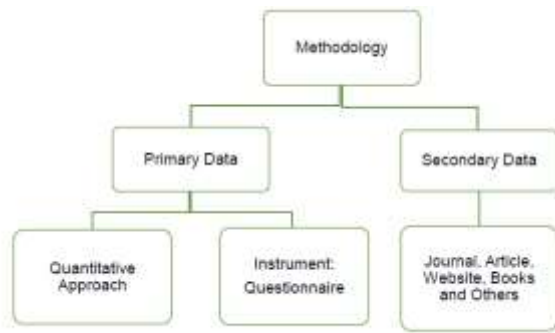


Figure 5: Data Sources

In order to collect data, the researcher created a sampling size that would be a group from population. This has been done to achieve a significantly accurate number of respondents. Population of the study have been selected for this 189,820 people based on the latest survey on 2010. It has been reported by the Department of statistics. The relevant population might not involve in these surveys. One of the limitations faced by the researcher is that the questionnaires could not be distributed to all the population. The reason from the researcher is that the number of population has been too high. Therefore, the sample size would be calculated based on the frame. Table 5 shows the total number of victims at Segamat, Johor on 24 January 2017.

Table 5: Sample Frame of Total of flood victims on 24 January 2018

Parliament	Dun	Number of Evacuation Centre	Total Victims
Sekijang	Kemelah	18	1 475
	Pemanis	18	4 568
Segamat	Jementah	10	549
	Buloh Kasap	20	1 264
Labis	Tenang	6	999
	Bekok	1	35
Total of number of victims			8 890

In this research, researcher used the Kerjie and Morgan's formula to determine the sample size based on the sample frame of population 8 890. Table 6 presents the determined sample size of a known population. According to the table, the sample size based on the population includes 367 respondents.

Data obtained by this research would be analyzed by SPSS, which is a comprehensive software for data analysis. The data collected from the respondents are key for SPSS and would be interpreted by coding to generate a tabulated report, charts, descriptive analysis, and inferential analysis. Descriptive analysis using the frequency analysis has been used to analyze the level of customer satisfaction with the disaster aid program. The second objective has been to identify the factors affecting the customer satisfaction during disaster aid programs. This objective has been examined by descriptive analysis. The correlation has been also used to examine the relationship between planning movement of goods and customer satisfaction with the disaster aid programs.

In addition, EFA is a technique that can simplify the variables related to each other in an orderly manner. This

method could be used to reveal the basic structure of various set of variables. It can also give the researcher some information about the relationship between the variables measured in the research. By conducting EFA, the researcher could identify the basic structure of the variables in the research.

Moreover, correlation measures the relationship between dependent and independent variables. In this research, researcher used correlation to examine the relationship between movement of goods and the customer satisfaction during the flood event.

According to Hauke and Kossowski, there are two types of correlation data analysis, which are identified as Pearson product moment correlation and Spearman rank-order correlation (19). Pearson product moment correlation is a technique that can be used to evaluate two continuous variables of the research. For example, Pearson product moment correlation has been used to investigate whether changes in temperature have been related to the water level.

In general, correlation is a data analysis technique to determine the relationship between two variables. It can measure the strength of the relationship between the variables. In this research, researcher wanted to examine the relationship between movement of goods and customer satisfaction during disaster relief programs (6).

4 Findings and Discussion

After data collection, a reliability test has been run to examine whether it is dependable and accurate among measurement. Then, the researcher used SPSS to generate all results. This chapter consists of description of data, findings, and discussion. The purpose of this analysis has been to relate the objectives of the research.

Table 6: Research objective and data analysis

Objectives	Data Analysis
1. To identify the level of satisfaction of floods victims towards the disaster aid programs.	Descriptive Analysis
2. To identify the factors that affect the customer satisfaction during disaster aid programs.	Exploratory Factor Analysis
3. To examine relationship between movement of goods and customer satisfaction during disaster relief programs	Spearman Correlation

Therefore, questionnaires have been distributed among 367 respondents around October 2018. Then, 367 respondents received the questionnaires with 60% response rate. However, 147 respondents have been rejected due to incompleteness and only 220 completed questionnaires have been left to be processed. According to Fincham JE, increase in the response rates, which has been close to 60% from the mixed-mode approach, could help to reduce the problem of coverage error in administration of surveys. However, it has been shown that the response rate did not have bias and has been not enough for the total respondents (7). Cronbach's alpha has been tested after collecting the data to ensure the reliability of the instruments and internal consistency of data. According to the

rules of Cronbach's alpha test, if value of Cronbach's alpha test has been less than 0.6 (60%), then questionnaire should be reedited. Table 4.2 reports the Cronbach's alpha value of the data of this research. Therefore, the value of Cronbach alpha coefficient in this testing, which has been .967, has been interpreted as higher desirable standard. There are some common techniques using graphical, which are Q-Q probability plots and statistical, which are Shapiro-Wilks test and Kolmogorov-Smirnov test. For example, Figure 4.1 (Q-Q plots) displays the observed values against normally distributed data that is represented by the line. Normally distributed data fall along the line. Using the skewness, kurtosis, and Shapiro-Wilk have been used to test the normality of data. Then, the result of normality test has been compared to the scale provided by statistician for this test. Table 4.16 is a summary of the statistic book (8).

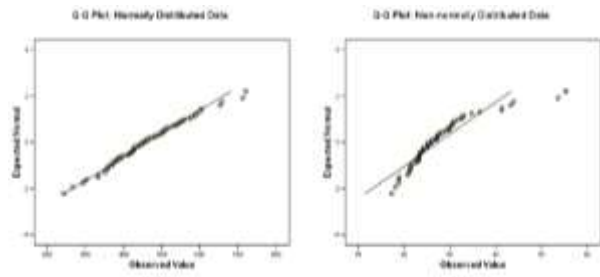


Figure 6: Display of Q - Q Plot Normal Distribution

Table 8: Descriptive Table for customer satisfaction (dv)

DV	Statistic		Std. Error
	Mean	19.7455	.48317
	95% Confidence Interval for Mean	Lower Bound	18.7932
		Upper Bound	20.6977
	5% Trimmed Mean	19.6162	
	Median	20.0000	
	Variance	51.360	
	Std. Deviation	7.16656	
	Minimum	8.00	
	Maximum	34.00	
	Range	26.00	
	Interquartile Range	13.00	
	Skewness	.063	.164
	Kurtosis	-1.304	.327

According to Table 12, level of customer satisfaction and planning movement of goods have been not normally distributed and the value is in the range (± 1.96) and kurtosis value for planning movement of goods is more than (± 1.96). As shown by Table 13, Kolmogorov - Smirnov test and Shapiro - Wilk test for the two variables showed significance level (p-value) at .000. It means that the data are not normal.

Table 9: Normality Test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DV	.125	220	.000	.934	220	.000

a. Lilliefors Significance Correction

Table 10: Descriptive Table for Planning Movement of Goods

IV	Statistic		Std. Error
	Mean	56.6955	1.37348
	95% Confidence Interval for Mean	Lower Bound	53.9885
		Upper Bound	59.4024
	5% Trimmed Mean	55.6515	
	Median	53.5000	
	Variance	415.016	
	Std. Deviation	20.37195	
	Minimum	24.00	
	Maximum	115.00	
	Range	91.00	
	Interquartile Range	32.00	
	Skewness	.614	.164
	Kurtosis	-.545	.327

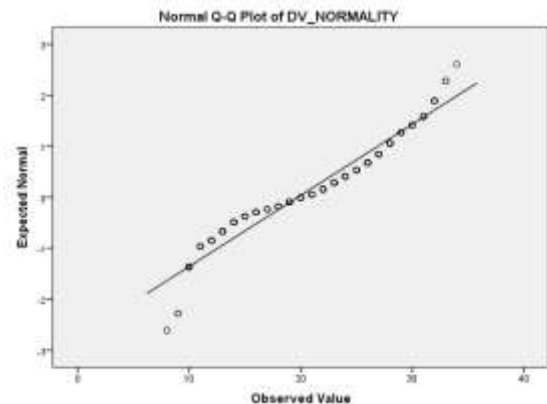


Figure 7: Q - Q plot for customer satisfaction

Table 11: Test of normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
IV	.124	220	.000	.928	220	.000

a. Lilliefors Significance Correction

Table 12: Summary of the Descriptive Analysis on variable.

Summary of Descriptive		Statistics	Std. error	Normality (± 1.9)
Level of Customer Satisfaction	Mean	19.7455	.48317	NO
	Skewness	.063	.164	
	Kurtosis	-1.304	.327	
Planning Movement of Goods	Mean	56.6955	1.37348	NO
	Skewness	.614	.164	
	Kurtosis	-.545	.327	

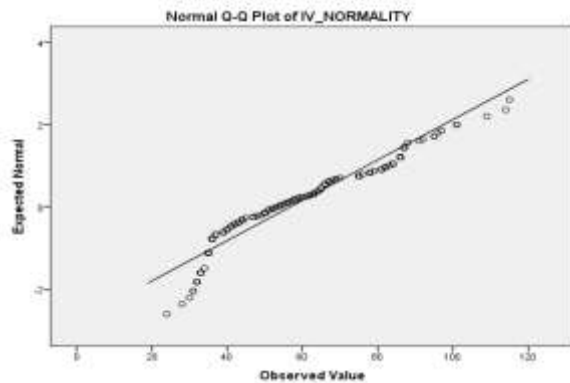


Figure 8: Q - Q Plot Movement of Goods (iv).

Table 13: Summary of Normality Test.

	Kolmogorov-Smirnov			Shapiro-Wilk			Normality (Sig>.05)
	Statistic	Df	Sig.	Statistic	df	Sig.	
Level of Customer Satisfaction	.125	220	.000	.934	220	.000	NO
Planning Movement of goods	.124	220	.000	.928	220	.000	NO

a. Lilliefors Significance Correction

Therefore, the researcher used the non-parametric test of Spearman rank-order correlation, which examined the relationship between movement of goods and customer satisfaction during disaster relief programs. The researcher used Exploratory Factor Analysis (EFA) for the second objective, which identified the factor affecting the customer satisfaction during disaster aid programs. In fact, EFA is a technique that can simplify the variables related to each other in an orderly manner. The method can be used to reveal the basic structure of various set of variables. It can also give the researcher some information about the relationship between variables measured in the research. By conducting EFA, the researcher could identify the basic structure of the variables in the research.

Table 14: KMO and Bartlett's Test.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.922
Bartlett's Test of Sphericity	Approx. Chi-Square	4618.766
	Df	253
	Sig.	.000

Table 14 shows that two tests indicate the suitability of data for structure detection. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is a statistic that reflects the proportion of variance in variable, which might cause underlying factors. Moreover, the high value close to 1.0 generally indicates that factor analysis might be useful with the data. Actually, if the

value is less than 0.50, the results of factor analysis probably are not very useful.

Table 15: Correlation of Availability of Supply and Customer Satisfaction.

Correlations				
			Availability of supply	Customer Satisfaction
Spearman's rho	Availability of Supply	Correlation Coefficient	1.000	.762**
		Sig. (2-tailed)	.	.000
		N	220	220
	Customer Satisfaction	Correlation Coefficient	.762**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

**. Correlation is significant at the 0.01 level (2-tailed).

Bartlett's Test of Sphericity tests the hypothesis that correlation matrix is an identified matrix, which indicated that variables have been not related and therefore they are suitable for structure detection. The small values less than 0.05 of the significance levels indicated that a factor analysis may be useful for the data. Moreover, the relationship between availability of supply and customer satisfaction has been investigated using Spearman's rho. According to Table 15, there has been a strong positive correlation between the two variables [$\rho(220) = .762$ $p < 0.01$] with high level of availability of supply associated with high level of customer satisfaction. Consequently, as reported by Table 15, the yellow highlighted value in the table reflects that correlation is significant at the 0.01 level (2-tailed). Furthermore, the value with green highlight is not significant. The significant value of availability of supply with customer satisfaction is 0.762. Finally, in factor 1, the variables are significant because the values are bigger than 0.00 and below than 1.00.

Table 16: Correlation of water, sanitation, and hygiene with customer satisfaction.

Correlations				
			Water, Sanitation, and hygiene	Customer Satisfaction
Spearman's rho	Water, Sanitation, and hygiene	Correlation Coefficient	1.000	.521**
		Sig. (2-tailed)	.	.000
		N	220	220
	Customer Satisfaction	Correlation Coefficient	.521**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

**. Correlation is significant at the 0.01 level (2-tailed).

The relationship between aid water, sanitation, and hygiene and customer satisfaction has been investigated using Spearman's rho. Based on Table 16, there has been a strong positive correlation between the two variables [$\rho(220) = .521$ $p < 0.01$], with high level of aid water, sanitation, and hygiene associated with high level of customer satisfaction. Table 16 shows that the yellow highlighted value reflects the significance of correlation at 0.01 (2-tailed). However, the

value with the green highlight is not significant. In addition, the significant value of aid water, sanitation, and hygiene with customer satisfaction is 0.521. For conclusion in factor 2, the variables have been shown to be significant because the values are bigger than 0.00 and below than 1.00.

Table 17: Correlation of competency and customer satisfaction.

Correlations				
			Competency	Customer Satisfaction
Spearman's rho	Competency	Correlation Coefficient	1.000	.781**
		Sig. (2-tailed)	.	.000
		N	220	220
	Customer Satisfaction	Correlation Coefficient	.781**	1.000
		Sig. (2-tailed)	.000	.
		N	220	220

** . Correlation is significant at the 0.01 level (2-tailed).

The relationship between competencies and customer satisfaction has been investigated using Spearman's rho. Based on Table 17, there has been a strong positive correlation between the two variables [$\rho(220) = .781$ $p < 0.01$], so that competency has been associated with high level of customer satisfaction.

According to Table 4.17, the yellow highlighted value in the table represents that correlation is significant at the 0.01 level (2- tailed). However, the value with green highlight is not significant. Moreover, the significant value of competency with customer satisfaction is 0.781. For conclusion in factor 3, the variables have been shown to be significant because the values is bigger than 0.00 and below than 1.00.

Table 18: Summary of Research Question and Hypothesis

Research Question and Hypothesis		Result
Research Question 3	What is the relationship between planning of movement of good and the customer satisfaction during the disaster programs?	
H1 (a)	There are significant relationship between availability of supply with customer satisfaction.	Supported
H2 (b)	There are significant relationship between water, sanitation, hygiene with customer satisfaction.	Supported
H3 (c)	There are significant relationship between competencies with customer satisfaction.	Supported

Based on Table 18, there is a significant relationship between availability of supply and customer satisfaction. There has been a significant relationship between aid inventory planning and the customer satisfaction. In addition, there has been significant relationship between water, sanitation, and hygiene and the customer satisfaction. Moreover, a significant relationship has been found between competency and the customer satisfaction. Therefore, the hypothesis has been accepted and supported because they had large impact referring to the Cohen guidelines.

5 Conclusion and Discussion

According to the results, there has been a significant relationship between availability of supply and the customer satisfaction during disaster aid programs. According to Liu, availability of supply and delivery in the preparedness phase is important in humanitarian aid and disaster relief (17). Therefore, customer's needs should be met during disaster program and it should be not an issue after the response phase. Furthermore, there has been a significant relationship between water, sanitation, and hygiene and the customer satisfaction during disaster aid programs. According to Liu, the organizer should optimize their resources utilization in order to manage water, sanitation, and hygiene, some of them may be proper in humanitarian aid such as just in time (17). Thus, it is important to fulfil the customer demand and increase their satisfaction level. There has been a significant relationship between competency and the customer satisfaction. Moreover, there has been a significant relationship between competency and the customer satisfaction. According to Liu, the competency can maximize the level of satisfaction of customer (17). However, there have been several limitations faced by researcher. Limitation refers to several problems that are obstacles to the researcher to get the data.

For example, the researcher should face an unexpected situation while distributing questionnaires through online survey such the Facebook as platform. Then, the link of survey has been posted and the respondents have been asked to complete them as the victims affected during the flood event. Afterwards, people started argued what the researcher intended for this research. Sometimes, the researcher needed to handle people fighting and complaints of many things during disaster programs. Some people had no full commitment throughout the research and refused to answer. This happened when the researcher distributed the questionnaires to Jementah, Segamat area. However, translated version of Malay has been produced but some residents have been not fully supported.

Evacuation centre during disaster aid program need to be improved in terms of comfortability to all victims. Many respondents complained that they have been not provided by the organizer tent to all the victims. They still used the mat as their place for sleeping and resting. The tent should be provided in order cover victims and it should be organized in a way that one tent is delivered for one family. It is important to avoid the theft and provide the security of female family member and children. In addition, family member should cover their aurat, especially if they have baby who is fed breastfeeding and during sleeping time. Senior netizen also must be organized at the place that is easy for them to move and clean. Thus, they should be avoided from any infection and disease such as fever and flu. Blanket must be also provided to all victims especially to babies, senior netizen, and others. Finally, people should be avoided from mosquito and cold during the rainy season.

Therefore, agencies must improve their task especially those involved in the planning movement of goods. The speed of delivering the aid such as food and beverages must also improve their just-in-time method; that is, they should fulfill the customer needs. Department Social and Welfare must recruit a large team to manage disaster program during flood

event because the lack of staff can result in issues so that they may not accept the aid in faster speed and make the movement of good delay. Hence, sufficient goods must be provided because sometimes the huge flood disaster can block the path between village and city. In addition, some children may need adequate diapers and formula milk.

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