



Market Analysis for Cold storage Case Study PT Pos Logistics in Bandung City

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Abstract. The use of cold storage has recently been in high demand among businesses, particularly those in the food and beverage industry. As one of the cold storage service providers, PT Pos Logistik wishes to determine the size of this business opportunity. Based on the findings of the survey and research, it was determined that cold storage users in the Bandung metropolitan region may be categorized into three groups: frozen foods, the processed food industry, and pharmaceuticals. As for market share percentage, the findings are as follows: 46% for frozen food, 46% for processed food, and 8% for the pharmaceutical industry. As a subsidiary of PT Pos Indonesia, PT Pos Logistik Indonesia already has a brand image, influencing 39.5% of purchasing decisions, while 60.5% of purchasing decisions are influenced by other variables not analyzed. The figure of 39.5% indicates that the influence of the brand image of Pos Logistik on the choice to acquire cold storage services is minimal.

Keywords: Cold storage, market analysis, Regression.

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1. Introduction

Cold chain service in the logistics industry in Indonesia has experienced rapid development in recent years in line with the increasing population of domestic e-commerce users. Despite the COVID-19 pandemic, the cold chain industry in Indonesia has experienced growth in the last 5 years with an average annual growth rate of 8.6% due to the development of pharmaceutical companies and FMCG (Fast Moving Consumer Goods) companies. In addition, the demand for basic necessities such as fruits, vegetables, processed meat, milk and other products has also increased. The Indonesian logistics cold chain market is dominated by cold storage service providers. Nearly 13.6% of revenue from the warehousing sector in Indonesia is derived from this sector. This is directly proportional to the increasing demand for perishable goods.

With a population of 258 million people, Indonesia has a cold storage capacity of 12.3 million m³ which is divided into several products that require special handling, such as medicines (pharmaceuticals and healthcare industry), vegetables and fruits, frozen food, as well as chemicals (APRI, 2020). The irony is that almost 50% of the total capacity is on the island of Java, especially in Jabodetabek. There are 40 refrigerated logistics service providers in Greater Jakarta, where the total storage capacity of 28 companies is 75,056 tons. As an illustration, the total consumption of food products in the Greater Jakarta area is 441,000 tons per month of which 25.8% or 114,000 tons requires cold storage. However, in reality only 73,800 tons used cold storage facilities (data consult, 2011)

PT. Pos Logistik as a logistics service provider company that has a network of companies throughout Indonesia has a great opportunity to be able to take advantage of an unserved market niche due to limited capacity. Therefore, market share analysis is needed in responding to the opportunities and challenges of PT. Logistics Post to become part of the national logistics cold chain. There are several product classifications that will be used as research objects, namely seafood processing, red meat, poultry chicken,

dairy food, horticulture and pharmacy products.

2. Method

The research that will be conducted on market analysis of cold storage case studies at PT Pos Logistics in the city of Bandung has the aim of mapping market opportunities for the cold storage business. This type of research is a survey, while the method is descriptive-analytic. According to Kerlinger (196) survey research is research conducted on large and small populations, but the data studied is data from samples taken from that population (Adkon, Riduwan, "Methods and Techniques of Compiling Thesis", 2006, p. 49). Descriptive survey method is a research method that takes a sample from a population and uses a questionnaire as a data collection tool. In this study, data and information from business actors in the cold chain service sector were collected using a questionnaire. The results of the data are presented descriptively and at the end of the research will be analyzed and processed data regarding the facts, characteristics and relationships between symptoms with explanatory research.

Surveys are carried out by observing to obtain clear information about certain problems in a study. The research was carried out in a comprehensive manner in order to find results that are descriptive in nature, that is to describe things that contain facts that are used to formulate and describe what happened.

In general, this research went through several stages, namely preliminary study, development of research models and hypotheses, collection and processing of data and conclusions as a result of the interpretation of the analysis.

2.1 Data Analysis Technique

Descriptive Statistical Analysis. Aims to determine the factors that cause problems and then determine the methods used to solve problems found in the field. Presentation of this analysis can be in the form of frequency tables, graphs, or text. In this study, descriptive statistical analysis was used to explain the characteristics of the respondents and the influence of brand image on the decision to purchase cold storage services at Poslog.

Linear Regression Analysis. Aims to analyze 2 variables, namely brand image (independent variable) and purchasing decisions (dependent variable). The first step is to perform a factor analysis of the indicators selected to form a factor score. The second step is to estimate the factor score with linear regression analysis. The result is an F test and the level of significance contained in the ANOVA table.

The significance test was obtained from the ANOVA table for SPSS data processing. The main hypothesis and the coefficients table for the derivative hypothesis refer to the t table values of each dimension in the independent variable and the significance values contained in the coefficients table. If the calculated t value in the coefficients table is greater than the critical t value and the significance value in the coefficients table is below 0.005 then the hypothesis is accepted. Besides that, to find out the magnitude of the relationship between the two variables, the value of r will be interpreted based on the magnitude of the value of the relationship between variables, a correlation test is carried out. If the value given is more than 0.5, it indicates a strong correlation between the independent variable and the dependent variable.

3. Results

3.1 Market Share Analysis

Bandung, which is the most populous city in West Java with 2.53 million inhabitants, is a potential market share in the development of cold chain logistics in Indonesia. There are several pharmaceutical companies and the processed food industry around Bandung, as well as the mushrooming trend of frozen food. There are 40 Micro, Small and Medium Enterprises (MSMEs) and frozen food importers, 10 pharmaceutical companies, 4 processed food companies and 4 cold storage service companies spread across 30 districts.

From the distribution of cold storage consumers, it is known that the average age of business actors in the cold chain industry in Bandung is men aged 35 to 45 years. In addition, monthly income for each

category and funds allocated for cold storage needs per month to determine market share in the city of Bandung, along with data on the number of respondents and the absorption value of cold storage funds for each district.

Table 1. Total Absorption of Funds.

District	Type of Business	Number of Respondents	Total Income per Month (Rp)	Absorption of Funds (Rp)
Andir	Frozen Food	3	22.250.000.000	52.500.000
Antapani	Industri Makanan Olahan	1	200.000.000	27.000.000
Astana Anyar	Frozen Food	1	150.000.000	10.000.000
Bandung Kulon	Frozen Food	5	875.000.000	23.000.000
	Industri Makanan Olahan	3	737.200.000	71.000.000
Bojongloa Kaler	Industri Makanan Olahan	3	13.200.000.000	85.000.000
Cibeunying Kaler	Frozen Food	3	1.150.000.000	58.000.000
	Industri Farmasi	2	200.000.000	-
Cibiru	Frozen Food	1	1.000.000.000	39.000.000
Gedebage	Industri Makanan Olahan	1	10.000.000.000	39.000.000
	Industri Farmasi	2	50.000.000	37.500.000
	Frozen Food	1	75.000.000	5.000.000
Lengkong	Frozen Food	1	200.000.000	20.000.000
Mandalajati	Frozen Food	1	250.000.000	8.000.000
Sukajadi	Frozen Food	1	250.000.000	15.000.000
Ujung Berung	Frozen Food	1	150.000.000	27.000.000

Source: Author, 2022

From the total income and absorption of funds, it can be concluded that the cold storage market share is divided into 3 segments, namely frozen food, processed food industry and pharmaceutical industry, along with market segmentation for the three types of businesses based on the total income and absorption of funds.

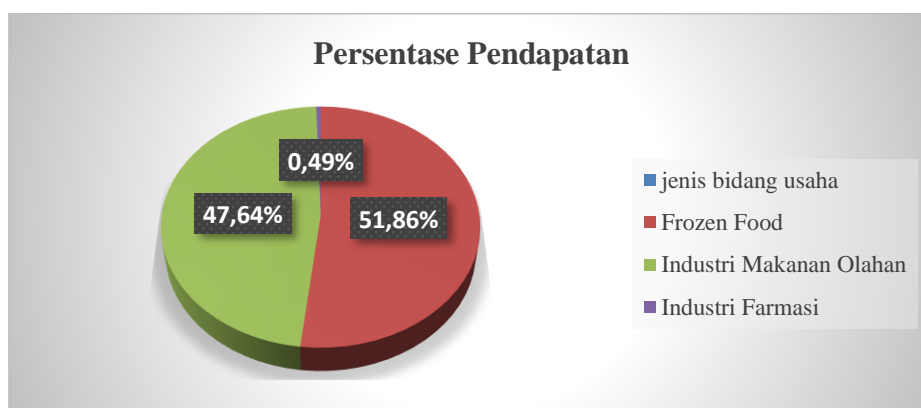


Fig 1. Market Share of Cold storage Bandung City (Source: Author, 2022).

While the absorption of funds for the use of cold storage services which reflects the market share of cold storage in the city of Bandung can be seen in the following figure:

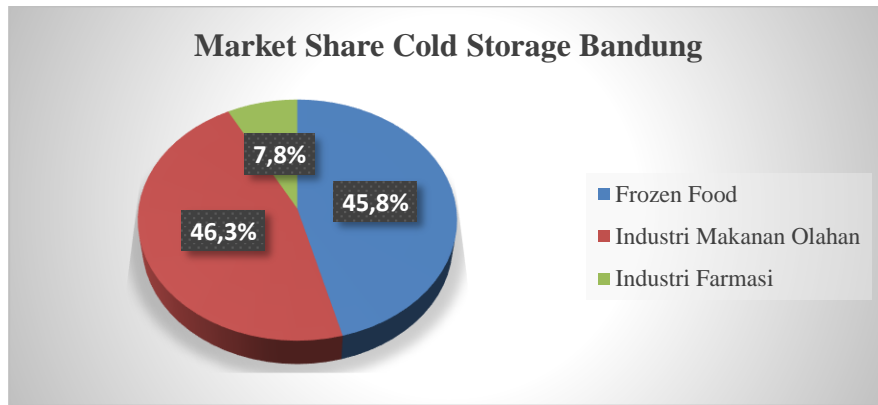


Fig 2. Market Share of Cold storage Bandung City (Source: Author, 2022).

The market segmentation is controlled by 2 types of businesses, namely frozen food and processed food industry each with 46%, while the pharmaceutical industry only has a market share of 8%. This shows that the development of cold chains in Bandung is more dominated by the frozen food sector.

3.2 Purchase Interest of Consumers for Logistics Postal Services

Consumer buying interest can be seen from the results of the questionnaires that have been distributed to respondents. Descriptive data will describe the average score of brand image and purchasing decisions. While the quantitative variables on brand image and purchasing decisions include instrument tests (validity and reliability), normality tests, linearity tests and heteroscedasticity tests, and data tests (tests of simple linear regression analysis).

Validity test to measure whether or not a questionnaire instrument is valid. The results of the validity test used the Pearson product moment correlation technique. In the validity test, the criterion for a value is said to be valid if the test results are $r_{\text{count}} > r_{\text{table}}$. In this study the validity test was carried out using 30 questionnaires distributed to respondents. It is known that $N = 30$ and $\alpha = 5\%$, then $r_{\text{table}} = 0.361$. Each statement item can be said to be valid if $r_{\text{count}} > 0.361$. The results of the data validity test are as follows:

Table 2. Brand Image Validity Test.

Variable	Question items	r_{count}	r_{table}	information
Brand Image	X1	0.694	0.361	Valid
	X2	0.510	0.361	Valid
	X3	0.836	0.361	Valid
	X4	0.832	0.361	Valid
	X5	0.771	0.361	Valid
	X6	0.962	0.361	Valid

Source: Analysis Results, 2022

Table 3. Purchase Decision Validity Test.

Variable	Question items	r_{count}	r_{table}	information
Purchase decision	X1	0.662	0.361	Valid
	X2	0.992	0.361	Valid
	X3	0.836	0.361	Valid
	X4	0.653	0.361	Valid
	X5	0.625	0.361	Valid
	X6	0.457	0.361	Valid
	X7	0.596	0.361	Valid

Source: Analysis Results, 2022

Based on the table above, it states that all question items on the brand image variable and purchasing decisions have $r_{count} > r_{table}$, so all statement items are declared valid.

The reliability test in this study is the Cronbach Alpha analysis technique by looking at the Reliability Statistics, so you can find out the value of Cronbach Alpha and statement items. In this study, 30 questionnaires were distributed to respondents. It is known that $N = 30$, $\alpha > 0.60$. Each statement item can be said to be reliable if $\alpha > 0.60$. The data reliability test is as follows:

Table 4. Brand Image Reliability Test.

Reliability Statistics	
Cronbach's Alpha	N of Items
.825	6

Source: Analysis Results, 2022

Table 5. Purchase Decision Reliability Test.

Reliability Statistics	
Cronbach's Alpha	N of Items
.787	7

Source: Analysis Results, 2022

Based on the table above, it states that the reliability test for brand image variables and purchasing decisions has a value of 0.825 and 0.787, which means that the two values are greater than 0.6, it is stated that the questionnaire is reliable.

The Normality Test is to find out whether the distribution of data is normally distributed or not. Normal or not the data distribution is done by looking at the significance value in the Kolmogorov-Smirnov table. If the significance value is greater than 0.05 ($\text{sign} > 0.05$) it means that the data is normally distributed. The normality test is shown in the following figure:

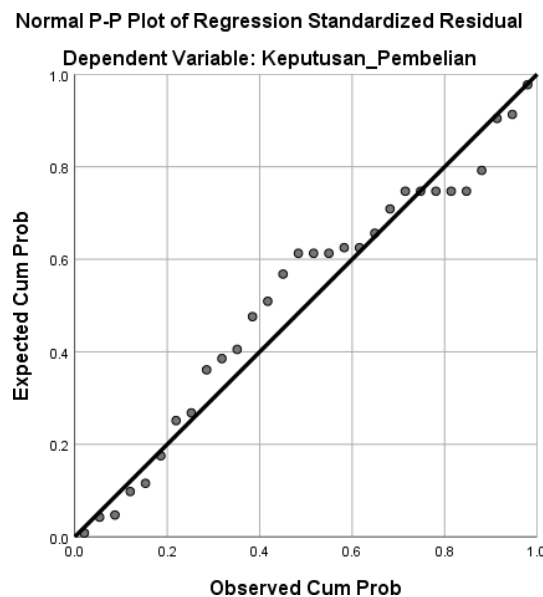


Fig 3. Normality Test Chart (Source: Analysis Results, 2022).

Table 6. Normality Test.

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		30
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	2.59234154
Most Extreme Differences	Absolute	.148
	Positive	.116
	Negative	-.148
Test Statistic		.148
Asymp. Sig. (2-tailed)		.092 ^c
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Source: Analysis Results, 2022

From these results it can be seen that the sig. on the Kolmogorov-Smirnov section of 0.092 > 0.05. So, all variables in this study are normally distributed.

Linearity test (F test) to determine whether the two variables have a significant linear relationship or not. Following are the results of the linearity test:

Table 7. Linearity Test Results.

ANOVA Table			Sum of Squares	df	Mean Square	F	Sig.
Keputusan_ Pembelian *	Between Groups	(Combined)	233.492	10	23.349	5.020	.001
		Linearity	126.980	1	126.980	27.300	.000
Brand_Imag e		Deviation from Linearity	106.512	9	11.835	2.544	.041
Within Groups			88.375	19	4.651		
Total			321.867	29			

Source: Analysis Results, 2022

From the results of the F test it is known that the deviation from linearity value is 0.041 < 0.05, so it can be concluded that there is no significant linear relationship between the brand image variable (X) and the purchasing decision variable (Y).

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance (variation) from the residual value of one observation to another. If the variance from the residual value of one observation to another observation is fixed, then it is called homoscedasticity, but if the variance from the residual value from one observation to another observation is different then it is called heteroscedasticity. Following are the results of the brand image variable heteroscedasticity test with purchasing decisions:

Table 8. Heteroscedasticity Test Results.

		Coefficients^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.566	3.940		2.428	.022
	Brand_Image	.695	.163	.628	4.271	.000

Source: Analysis Results, 2022

Based on the output above, it is known that the significance value (sig.) for the brand image variable is $0.0 < 0.05$, so there are symptoms of heteroscedasticity in the regression model.

Simple linear regression analysis discusses the effect of Poslog's brand image (independent variable) on purchasing decisions (dependent variable) for the services offered. From the results of processing the questionnaire data as many as 30 respondents from frozen food businesses, the processed food industry and the pharmaceutical industry, it shows that there is an influence from brand image (X) Poslog on purchasing decisions (Y). This effect is shown by the value of tcount in the following simple linear regression analysis:

Table 9. Simple Linear Regression Analysis.

		Coefficients^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.566	3.940		2.428	.022
	Brand_Image	.695	.163	.628	4.271	.000

a. Dependent Variable: Keputusan_Pembelian

Source: Analysis Results, 2022

The table above shows that the tcount value is $4,271 > 2,048$ from the ttable value. This shows that there is an influence between Poslog's brand image on purchasing decisions. To find out how much influence brand image has on purchasing decisions, it can be seen in the following R square table:

Table 10. Calculation of R Square.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.628 ^a	.395	.373	2.638

a. Predictors: (Constant), Brand_Image

Source: Analysis Results, 2022

The R square value shows the number 0.395, which means that there is an influence of the Poslog brand image as a subsidiary of PT Pos on purchasing decisions of 39.5%, while 60.5% of purchasing decisions are influenced by other variables that are not examined. The value of 39.5% means that the influence of the Poslog brand image on the decision to purchase cold storage services is weak.

4. Conclusion

Based on the research and surveys that have been carried out, it is concluded that cold storage users for the Bandung city area can be mapped into 3 (three) parts, namely frozen food, processed food industry and pharmaceuticals. As for the percentage of market share, the following results are obtained:

1. Frozen food by 46%
2. Processed food industry by 46%
3. Pharmacy by 8%

PT Pos Logistik Indonesia already has a brand image as a subsidiary of PT Pos Indonesia so that it has a percentage of 39.5% of purchasing decisions, while 60.5% of purchasing decisions are influenced by other variables not examined. The value of 39.5% means that the influence of the Pos Logistik brand image on the decision to purchase cold storage services is weak. This is reasonable because there are still many cold storage business actors in Bandung who do not know that PT Pos Logistik Indonesia is one of the cold storage service providers.

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