

THE INFLUENCE OF DISTRIBUTION CHANNEL COST ON SALES VOLUME IN SARANA TANI MANADO

by:

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ABSTRACT

The direction of fertilizer distribution is no longer based on the allocation of the needs of customers but already based on the magnitude of the benefits. This condition is very influenced by the selling price and the cost of fertilizer distribution. The use of distribution channels and pricing are very important, because it can affect the sales volume, the level of capital gains, risks, and the benefits. The general objective of each industry is certain to make a profit, and it will be achieved if the sales activities can be carried out successfully as planned. Cost element in the distribution of activity became an important thing because without the cost, the distribution will not running. This research will explain more about the influence of distribution channel cost on sales volume in Sarana Tani Manado that sell and provide the fertilizers, usually marketed in the field of agriculture in the region. This research method used associative group analysis. From the financial report that was taken from Sarana Tani Manado, there are three independent variables in distribution channel cost (transportation cost, warehouse cost and packing cost) that influence the sales volume. The findings showed that transportation cost and packing cost are the significant variables of distribution channel cost that influence sales volume, while warehouse cost is not the significant variable of distribution channel cost that influence sales volume in Sarana Tani, Manado.

Keywords: distribution channel, sales volume, transportation cost, warehouse cost, packing cost.

INTRODUCTION

Research Background

Since the liberalization of fertilizer markets in early 1999, the distribution of fertilizer no longer a monopoly, but it can be done by various parties in accordance with market mechanisms. Thus market distortions can be avoided, by improving the efficiency of fertilizer marketing. Impact of fertilizer market liberalization policies shortening and fertilizer distribution channels multiply, so that farmers can buy from a variety of sources and are relatively readily available at prices tend to be cheaper. The problem is the condition of the free market encourages intense competition among the actors involved in the distribution, so that the principle of enhanced efficiency for maximum benefit. As a result, the direction of fertilizer distribution is no longer based on the allocation of the needs of farmers in each farming area, but rather based on the magnitude of the benefits. This condition is very influenced by the selling price and the cost of fertilizer distribution. Cost element in the distribution of activity is something that is very important, because without the cost, the distribution will not running. So that the product that ready to sell, cannot be distributed to consumers. Therefore, for companies those have a competitive advantage in the markets, will look at the ability of the company to sell its products in the market that has a great chance with the potential buyer. Thus the company to know the characteristics of the market and the market structure and strive to produce goods and services in accordance with the needs and wants of consumers.

The general objective of each industry is certain to make a profit, and it will be achieved if the sales activities can be carried out successfully as planned. Product, place and price are the important thing to influence the demand for its product. But without promotion, there will be no customer. Promotion helps the company to distribute or deliver the information and the product or service to the customer through advertising, personal selling, sales promotion and public relation (Kotler and Armstrong, 2010:76). Sales activity is the

marketing activities that can reach the company's goal which is to gain the profit. Manufacturers often use intermediaries as distributors. Intermediary (middleman) is a stand-alone business, located between manufacturers and end consumers or industrial users. They provide services in connection with the purchase and or sale of goods from producer to consumer. Income they receive also directly derived from the transaction. Home industry uses intermediaries to sell their products to consumers. Gadde (2001) stated that a good distribution channel is the channel used by the manufacturer to deliver the goods from producer to consumer or industrial user. In doing so, the distribution of goods from producer to consumers by the industry or company should establish the distribution channels that will be pursued their goods into the hands of consumers until the last. The use of distribution channels and pricing are very important, because it can affect the sales volume, the level of capital gains, risks, and the benefits.

The role of distribution channels is crucial in running the company. This is due to the role of distribution channels in the smooth delivery of goods and services from producer to consumer. Distribution channels also creates avail the basis for the realization of the value of a good or service is beneficial for those who use it. Errors in choosing channel the distribution will resulted in disruption of the smooth flow of goods and services from the hands of producer to the hands of consumers or channel distribution who chosen are not effective as a result who achieved does not optimal in meeting the needs of consumers. Broadly speaking, the distribution can be interpreted as a marketing activity or ease the process of trying to expedite the delivery of goods and services from producer to consumer hands, so the consumer as required. Understanding the distribution in other words is a marketing activity that is able to create value-added products through the marketing function can realize the usefulness of utility forms (Blanco and Garza, 2012).

Distribution problems here to be a very important consideration in the absence of a good distribution then the product will be sold by the company to the hands of consumers. The following table will presented the data of distribution channel cost and sales levels from 2008 to 2012 (5 years) are contained in the Sarana Tani, Manado per December.

Table 1. Distribution Channel Cost

Year	Distribution Channel Cost Diver			Sales
	Transportation	Warehouse	Packing	
2008	Rp. 23,169,680.00	Rp.1,350,000.00	Rp. 4,210,000.00	Rp. 320,006,700.00
2009	27,391,500.00	1,400,000.00	4,880,000.00	397,147,500.00
2010	34,019,202.00	1,400,000.00	5,780,000.00	441,998,200.00
2011	31,213,475.00	1,510,000.00	5,670,000.00	461,811,984.00
2012	34,696,700.67	1,540,000.00	6,200,000.00	498,317,045.33

Source: Sarana Tani, Manado.

Research Objective

This research formulates the objective to be investigated as follows:

1. To analyze the influence of transportation cost partially on Sales Volume in Sarana Tani Manado.
2. To analyze the influence of warehouse cost partially on Sales Volume in Sarana Tani Manado.
3. To analyze the influence of packing cost partially on Sales Volume in Sarana Tani Manado.
4. To analyze the influence of Distribution Channel Cost simultaneously on Sales Volume in Sarana Tani Manado.

THEORETICAL FRAMEWORK

Theories

Production Operation Management

Production operations management is concerned with creating, operating and controlling a transformation system that takes inputs of a variety of resources and produces outputs of goods and services needed by customers (Naylor, 2002:5). The main important in production is to reduce a cost is based on a distribution

channel that drives all of the inventories from upstream to downstream (Webb, 2002). In other words, the distribution channel is very important to study in order to gain the profit of the company.

Distribution Cost

Distribution is an activity that should be done by the employer to dispense, distribute, transmit and deliver the goods marketed to consumers. Most producers today do not sell their goods directly to consumers. Various marketing entities act as intermediaries; they bear a variety of names such as wholesalers, retailers, brokers, facilitators, agents, vendors or simply distributors (David, 2011:137). The function of distribution is a marketing activity that requires expenditure, such as information, promotion, contact, matching and negotiation (Segetlija et al, 2010). Dannielis et al. (2010) investigated the factors that influence the choice of distribution channel and two of them are cost and sales volume. Seller or trader should pay attention to costs, profits, sales volume and everything that related to the price. Price is the most decisive factor in the purchasing and the amount paid by the buyer for the goods and services offered by the seller. Price is also referred to as value. But the measures the value of goods or services used in the exchange of money (Cohen and Dupas, 2010). Mills (1927) found that there are four factors that influence price level which are cost, demand, competition and sales. Price as a weapon in the competition requires the existence of effective policy and can be used as a basis for competition. Each institution must implement the marketing channel effectively on certain wisdom. Prices will affect the other strategies. By knowing the price level then one can communicate with other people. For example, manufacturers offer goods at a certain price to wholesalers, or retailers who want to look for items with a specified price on a great trader (Dimitri et al, 2003).

Transportation Cost

Transportation problems are part of the operations research that discusses the minimization of transportation costs from one place to another place. The term of transport or distribution meaning that the displacement contained or flow of goods from one place to another. We know that the distribution of goods from one place to other place or some require equipment and transportation costs (Hesse and Rodrigue, 2004).

Warehouse Cost

Good management involved warehouse functions play an important role in the success of a company. Storage and handling of goods is effective and efficient warehouse functions need to be understood in order to be further improved. This training will discuss the elements of warehouse management, the importance of warehousing functions, creating effective business warehousing. In the barn there are various activities that can add to the cost of production or reduce production costs. Thus, it means that critical warehousing needs attention particularly on costs caused by the activity that occurs in the process of warehousing (Chow et al, 2006).

Packing Cost

Packing is a part of activity inside the warehouse management. But Chow in his research argued that it is important to separate Packing from warehouse management. Packing is take importance role in order to deduct an operational cost (Chow et al, 2006).

Previous Research

Oburai and Baker (2004) found the possibility of an alternative channel by investigated a grounded exploration of sales and distribution channel structures in thirteen industries in India that attempt to understand and explain the sales and distribution channel structures. Demitri et al. (2003) found the changes in the produce market affect the relative market influence of producers, retailers, and consumer that examined the dynamics of produce marketing and shipper-retailer relationship. From a policy perspective, it is vital to determine whether fees, services, and other trends like supply chain management as the result of the desire to gain distribution efficiency. Gallagher (2002) explained about the role of e-commerce in restructuring channels by examining a variety of scenarios where collapse, shift, and expansion of channels has occurred. The undulating distribution channel can expand the complex interactions of value delivery (transportation), the quality of product offering, characteristics and market power (sales volume).

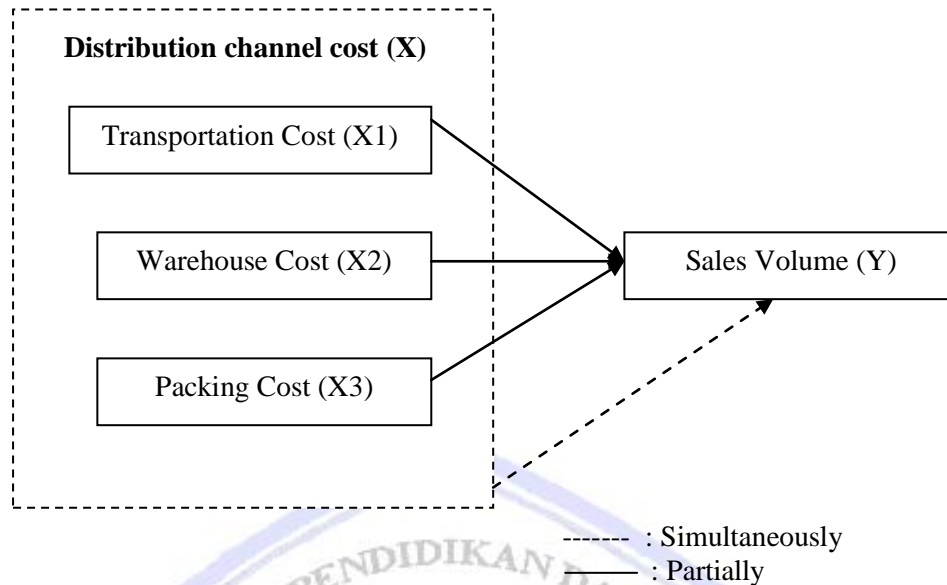


Figure 1. Conceptual Framework

(Source: Data Processed 2013)

Distribution Channel Cost (X) has three indicators, which are Transportation Cost (X1), Warehouse Cost (X2) and Packing Cost (X3) that will influence the Sales Volume (Y). The line shows its influences in partial and simultaneous.

Research Hypothesis

There are four hypothesis of this research:

- H₁ : Transportation Cost has significant influence on Sales Volume in Sarana Tani Manado.
- H₂ : Warehouse Cost has significant influence on Sales Volume in Sarana Tani Manado.
- H₃ : Packing Cost has significant influence on Sales Volume in Sarana Tani Manado.
- H₄ : Distribution Channel Cost has significant influences on Sales Volume in Sarana Tani Manado.

RESEARCH METHOD

FAKULTAS EKONOMI
DAN BISNIS

Types of research

This research method used associative group analysis. The financial report was taken from Sarana Tani Manado as the object to process the data. This research determines if one variable causes another variable to occur or change. The purpose of this research was to investigate The influence of distribution channel cost on sales volume in Sarana Tani, Manado.

Place and time of research

This research object is Sarana Tani, which is running the business with selling the fertilizers that marketed in the field of Agriculture in Manado, between June – July 2013.

Population and sample

The research object is Sarana Tani, Manado that provides and selling the fertilizers and marketed in the field of agriculture of the region. Object of research is used to support the measurement technique variables in the study. The population in this study is the financial document and some information about the related cost and sales in Sarana Tani, Manado - Sulawesi Utara for the last five years (2008 – 2012).

Data collection method

The source of data that used is from the financial document of Sarana Tani Manado and by studying the relevant literature in order to obtain a theoretical overview about the influence of distribution channel cost on sales volume.

Operational Definition and Measurement of Research Variables

These definitions below will show the measurement of each variable in this research.

1. **Transportation Cost** (Variable X_1) that incurred by Sarana Tani to distribute the fertilizers to the customers.
2. **Warehouse cost** (Variable X_2) that incurred by Sarana Tani for the warehouse before the product is delivered to the customers.
3. **Packing Cost** (Variable X_3) that incurred by Sarana Tani to pay the packaging process include for labor in making the product package.
4. **Sales Volume** (Variable Y) is the sold out product by Sarana Tani for the last five years (2008 – 2012)

Data analysis method

Test of classic assumption

- a. Normality Test
To test whether the regression model, the independent variable has a normal distribution or not on dependent variables.
- b. Multicollinearity Test
To test whether there is a correlation between the independent variables. The test is done by looking at the value of tolerance and the variance inflation factor (VIF). If the value is higher than the tolerance value of 0.10 or VIF smaller than 10, it free from multicollinearity.
- c. Autocorrelation Test
To find a free autocorrelation regression model. Autocorrelation performed using Durbin-Watson test (DW), with a confidence level of $\alpha=5\%$.
- d. Heteroscedasticity
To test whether the regression model variance occurs in equality. A good regression model is free from the case of heteroscedasticity. If there is no clear pattern, and the point spread above and below the number 0 (zero) on the Y axis, it does not occur heteroscedasticity.

Multiple regression analysis models

The method of analysis used in this study is multiple regression models to approach the return. To find out the influence of dependent variable with independent variables used multiple linear regression (Sekaran, 2003:92) with the formula:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3$$

Whereas:

- Y : Sales Volume
- X_1 : Transportation Cost
- X_2 : Warehouse Cost
- X_3 : Packing Cost

RESULT AND DISCUSSION

Result

Classical assumption test

There is no established pattern, in other words the plot spread above and below the number 0 (zero) on the Y -axis. This proves that the independent variable of Transportation Cost (X_1), Warehouse Cost (X_2) and Packing (X_3) on Sales Volume (Y) are free of heteroscedasticity. The tolerance value of Transportation cost is

0.137, Warehouse cost is 0.066 and Packing cost is 0.032. The VIF value of Transportation cost is 7.282, Warehouse cost is 5.212 and Packing cost is 3.185, which are less than 10. So, the result of the tolerance and VIF value show that this research is free from multicollinearity. The result of Durbin Watson value is 1.98, which is in the rate of free area autocorrelation. So, the regression model of the influence of Transportation Cost (X_1), Warehouse Cost (X_2) and Packing (X_3) on Sales Volume (Y) are free from autocorrelation. The points spread around the diagonal line in the direction diagonal lines. This proves that the model regression of The Influence of Transportation Cost (X_1), Warehouse Cost (X_2) and Packing (X_3) on Sales Volume (Y) in test normality assumption was met.

Multiple regression analysis

In calculating the regression between Transportation Cost (X_1), Warehouse Cost (X_2) and Packing Cost (X_3) on Sales Volume (Y) as the independent and dependent variables, used a computer program package from the statistical software SPSS Version 19.0. The table of the result from the data processing on the attachment is as follows:

Table 2. Multiple regression result

Model		Understandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	1.442E8	2.379E8	
	X1	6.682	2.507	.414
	X2	69.719	226.406	.069
	X3	49.872	29.802	.538

Source: SPSS Data Analysis, 2013

The equation is as follows:

$$Y = 1.442E8 + 6.68X_1 + 69.71 X_2 + 49.87 X_3$$

The multiple linear regression above is to inform the interpretation as follows:

1. Constant value of 1.442E8 means that if Transportation Cost (X_1), Warehouse Cost (X_2) and Packing (X_3) are increased, it will increase the Sales Volume (Y) at 1.442E8 point.
2. Coefficient value of 6.68 means that if Transportation Cost (X_1) increased, it will improve and increase Sales Volume (Y) at 6.68.
3. Coefficient value of 69.71 means that if Warehouse Cost (X_2) increased, it will improve and increase Sales Volume (Y) at 69.71.
4. Coefficient value of 49.87 means that if Packing Cost (X_3) increased, it will improve and increase Sales Volume (Y) at 49.87.

Those independent variables of this research, which is Transportation Cost (X_1), Warehouse Cost (X_2) and Packing Cost (X_3) have the influence on Sales Volume (Y).

Table 3. Table R and R²

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.973 ^a	0.947	0.937	2E+07	1.982

a. Predictors: (Constant): X1, X2, X3

b. Dependent Variable: Y

Source: SPSS Data Analysis, 2013

The value of coefficient correlation (R) is equal to 0.973 it is indicating that the Correlation of Transportation Cost (X_1), Warehouse Cost (X_2) and Packing (X_3) on Sales Volume (Y) in Sarana Tani Manado has a strong relationship. The value of R² is 0.947. This means, the contribution of Transportation Cost (X_1), Warehouse Cost (X_2) and Packing (X_3) on Sales Volume (Y) is 94.7 % while the remaining 5.3% is affected by other variables not examined in this study.

Hypothesis testing

Table 4. Simultaneously test (F – test)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.18E+17	3	3.93E+16	95.072	.000 ^a
	Residual	6.62E+15	16	4.14E+14		
	Total	1.25E+17	19			

Source: SPSS Data Analysis, 2013

The simultaneously influence of Distribution Channel Cost, the table shows that the value of F_{count} is 95,072 significant 0.000. Because the $\text{sig} < 0.05$ means the confidence of this prediction is above 95% and the probability of this prediction error is below 5% which is 0.000. Therefore H_0 is rejected and accepting H_a . Thus, the formulation of the hypothesis that The Influence of Transportation Cost (X_1), Warehouse Cost (X_2) and Packing Cost (X_3) on Sales Volume (Y) simultaneously make H_4 accepted.

Table 5. Partial Test Analysis (t-test)

Model	t	Sig.
X1	2.665	0.017
X2	0.306	0.762
X3	2.673	0.0114

Source: SPSS Data Analysis, 2013

The partial influence of Distribution Channel Cost, the table shows that the t_{count} for Transportation Cost (X_1) 2.665 greater than the value of 2.086 t_{table} means Transportation Cost (X_1) has significant influence partially on Sales Volume (Y). The sig. value at 0.017 means that prediction of Transportation Cost (X_1) influence on Sales Volume (Y) doing errors is 1.7 %, thus the confidence of this prediction is above 95%. Therefore, H_1 is accepted. t_{count} for Warehouse Cost (X_2) 0.306 smaller than the value of 2.086 t_{table} means Warehouse Cost (X_2) has no significant influence partially on Sales Volume (Y). The sig. value at 0.762 means that prediction of Warehouse Cost (X_2) influence on Sales Volume (Y) doing errors is 76.2 %, thus the confidence of this prediction is below 95%. Therefore, H_2 is rejected. t_{count} for Packing Cost (X_3) 2.673 greater than the value of 2.086 t_{table} means Packing Cost (X_3) has significant influence partially on Sales Volume (Y). The sig. value at 0.114 means that prediction of Packing Cost (X_3) influence on Sales Volume (Y) doing errors is 1.1 %, thus the confidence of this prediction is above 95%. Therefore, H_3 is accepted

Discussion

The influences of Transportation Cost, Warehouse Cost and Packing on Sales Volume are simultaneously significant in Sarana Tani, Manado. The financial documents that taken from Sarana Tani Manado showed the cost that they spent for transportation cost as an indicator of distribution channel is always increased for the last five years (2008-2012). Even the financial document about the transportation cost was not steady every month, but it increased in yearly. Sarana Tani distributes their products (fertilizers) to the customers using distribution channel. They keep the transportation process going well, so the products can arrived on time. Compared to another indicators of distribution channel that using by Sarana Tani which is Warehouse and Packing, Transportation is the channel that have spent the most cost from 2008-2012 (5 years) which is Rp. 518,027,318.00 because Sarana Tani distribute the fertilizers not only inside Manado. Variable cost of transportation partially has a significant relationship to sales and related to Oburai and Baker (2004) stated that the warehouse that increased costs will increase the amount of sales due to transportation costs have

continued to rise from year to year. In addition, if Sarana Tani can use the transportation costs for its products, it can be delivered faster to customer. Means that the higher transport costs will affect the pricing of production goods delivery performance and condition upon arrival at the destination will affect the sales volume.

While partially warehouse cost doesn't have a significant influence. From partially test (t-test), the significant value of warehouse cost is 0.762 and it means the prediction of warehouse cost (X2) influence on sales volume (Y) doing errors is 76.2%. The confidence of this prediction is below 95%, that's why H_2 is rejected. The situation can be caused by external factors which are beyond Sarana Tani's control such as fuel price hike because the warehouse at Bitung so it needs more gasoline and risks to reach the warehouse, travel rates and maintenance. Considered necessary to add physical distribution expenses to be able to increase sales volume and achieve the desired level of service. The strategic use of physical food distribution costs (cost efficiency of distribution channels can provide more). Mostly warehouse cost diver tent to be an overhead cost and become a fix cost. So, the overhead fix cost should same over the time. Subscriber satisfaction because of the savings the cost of physical distribution can be reassigned to the subscriber in the form of lower prices due to the increase in sales. Thereby increasing the cost of distribution channels will result in the increase of prices of goods resulted in a decrease in the number of sales.

The partial test analysis (t-test) by variable cost of packing also has a significant influence on sales volume. Sarana Tani marketed their products in the field of agriculture. Fertilizers made from organic and inorganic material of natural or synthetic origin and because of that Sarana Tani very careful in doing the packing to make sure the customer feel satisfied with the fertilizers. In doing the right way of packing the products, automatically it keeps a quality of fertilizers being good. Sarana Tani did the packing process exactly because it is not easy to pack the fertilizers that sometimes did not have a good smell and most of them are not good looking. The significant value of packing cost from partially test is 0.114 and it means the prediction to doing errors is only 1,1%. Warehouse cost and packing cost may be put in the same channel because it is almost same, but Chow stated even packing is a part of activity inside a warehouse management, but in his research it is important to separate packing from warehouse management because packing is take importance role in order to deduct an operational cost (Chow et al, 2006). The result shows there is a differences influence between warehouse cost and packing cost partially.

The hypothesis that distribution channel cost has significant influence simultaneously on sales volume (Y) in Sarana Tani Manado is accepted from the testing by comparing the number of significant level of calculation result. The value simultaneously test (F-test) from the influence of distribution channel cost in Sarana Tani is 95.072 means the confidence of this prediction is above 95% and the significant 0,000 of F_{count} makes the probability of this prediction doing error is below 5%. Beside there is a significant influence of distribution channel cost on sales volume in Sarana Tani Manado, pricing also become the other reason of increased the sales volume from year to year (2008-2012). The law of demand could be the reason because if the price of a product increase, quantity demanded lowers; and if the price of a product decreases, quantity demanded increases. Sales volume of Sarana Tani is increased, could be the demand of fertilizers increases because of the price still can be reached by the customers or low price that offered by Sarana Tani Manado.

CONCLUSION AND RECCOMENDATION

Conclusion

This research concludes findings as follows:

1. There is a significant influence of transportation cost partially on Sales Volume in Sarana Tani, Manado.
2. There is no significant influence of warehouse cost partially on Sales Volume in Sarana Tani , Manado.
3. There is a significant influence of packing cost partially on Sales Volume in Sarana Tani, Manado.
4. There is a significant influence of Distribution Channel Cost simultaneously on Sales Volume in Sarana Tani, Manado.

Recommendation

There are some recommendation to make a better changing:

1. In managerial role in Sarana Tani Manado, should more care about the Distribution Channel. They should focus on the cost of each variables which is Transportation Cost, Warehouse Cost and Packing Cost because from the results of the analysis can be seen that there is the influence of Distribution Channel Cost on Sales Volume in Sarana Tani Manado, but not every variables has a significant influence. The use of distribution channels and pricing is very important, because it can give the impact in sales, marketing, the level of capital gains, risks, and so on.
2. Recommended for the next researcher to analyze the other factors that influence the sales volume or make a survey to decide which one that is important in distribution channels.

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