

## **The Effect of Product Quality and Product Innovation on Consumer Decisions Using Wood Packaging Material Services**

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### **ABSTRACT**

*This study aimed to determine the effect of product quality on consumer decisions using wood packaging material services at Carsurindo Siperkasa Medan to assess the impact of product innovation on consumer decisions using wood packaging material services at PT. Carsurindo Siperkasa Medan determines the effect of product quality and product innovation on consumer decisions to use wood packaging material services at PT. Carsurindo Siperkasa Medan. The analysis technique used in this study uses quantitative data analysis techniques, namely testing and analysing data. The respondents in the study were 45 people. From the results of this study, it was obtained the significance value of the product quality variable (X1) on the consumer purchasing decision variable (Y) based on the t-test was obtained at  $t_{count} > t_{table}$  ( $8.212 > (2.018)$ ), ( $Sig\ 0.001 < \alpha 0.05$ ) thus  $H_1$  accepted and  $H_0$  is rejected, the conclusion: there is a significant effect of product quality (X1) on consumer purchasing decisions (Y). The significance value of the product innovation variable (X2) on the consumer purchasing decision variable (Y) based on the t-test obtained  $t_{count} > t_{table}$  ( $3.970 > (2.018)$ ), ( $Sig\ 0.001 < \alpha 0.05$ ), thus  $H_2$  is accepted, and  $H_0$  is rejected, in conclusion. There is a significant influence of product innovation (X2) on consumer purchasing decisions (Y). Therefore the results of this study state that the two independent variables support the hypothesis. Based on the results of the F test, it was obtained that the  $F_{count} > F_{table}$  was ( $34.068 > 3.21$ ), ( $Sig\ 0.001 < \alpha 0.05$ ); thus,  $H_3$  was accepted, and  $H_0$  was rejected. The conclusion: Product quality and innovation have a significant effect on consumer purchasing decisions. It shows that if the company can improve product quality and innovation, consumers will be interested in buying these products, increasing consumer purchasing decisions.*

**Keywords :** *consumer purchase decisions; product quality; product innovation*

### **INTRODUCTION**

In the current era, companies must increase creativity to compete in a very tight business competition. Consumer decisions in using services/goods are determined by the quality of goods and services customers desire. Product quality assurance is a top priority for every company, primarily used as a benchmark for the company's competitive advantage. Good product quality is a product provided by customers that is of better quality than its competitors. Good product quality is a product supplied by customers that is better or higher in quality than its competitors. The way to achieve this is to meet or even exceed the product quality expected by customers.

PT Carsurindo Siperkasa is a company located in the city of Medan which is engaged in the business of making wooden pallets. Originating from wood (coniferous) or other plant parts (raw wood), including wood packaging materials, namely by using any type of wood such as wood from Rambung trees, fruit trees such as mango trees, rambutan trees, durian trees and so on evenly-On average, to produce one pallet uses as much as 0.03/ton, to improve product quality and have a high selling value so that it attracts consumers not only locally but even to outside the region. Good product quality will fulfil the desires and needs of consumers for a product.

In this case, the company must first process raw materials through the production process into goods ready for sale. To obtain good production results and maximum profit, this company must continue to innovate and maintain product quality to fulfil consumer satisfaction. Wooden pallets produced with raw wood materials are marketed to various companies in North Sumatra. The development of existing companies resulted in the demand for pallet products also growing. PT.

Carsurindo Siperkasa Medan is the first company declared to have met the requirements of the Agricultural Quarantine Agency's Audit Scheme.

It is necessary to do good packaging; the primary function of the packaging itself is to protect the product from various kinds of damage so that the quality of the product is maintained in the hands of consumers. In addition, good packaging is also an attraction for consumers. Constraints experienced in the manufacture of wooden pallets for packaging can have an impact on product damage, for example, such as the quality of the resulting product being powdery or insecticidal. It is necessary to supervise the quality control department so that product quality is maintained.

Innovations made by PT. Carsurindo Siperkasa Medan carries out the treatment (treatment) and certification (marking) of wood packaging according to ISPM No. 15. ISPM Standard No. 15 contains wood packaging material in international trade which regulates export and import procedures and procedures. ISPM Standard No. 15 is a guideline that governs the treatment of wood packaging materials in international trade. Phytosanitary regulatory standards are a series of processes of plant quarantine measures carried out by Plant Quarantine Officers (PKT) for agricultural commodities to be exported in the context of issuing plant health certificates, the published phytosanitary aims to reduce the risk of importation of plant-disturbing organisms (OPT) associated with wood material for packaging, including dunnage made of wood (coniferous) or other plant parts (raw wood), including wood packaging material, namely wood or products of wood origin, paper products used to support, protect or wrap commodities, including supports wood (dunnage). PT Carsurindo Siperkasa produces based on orders (job orders). Table 1 shows before and after applying the International Standard For Phytosanitary Measures (ISPM) to products.

**Table 1**  
**Differences Before and After ISPM Implementation**

No.	Before ISPM Implementation	After ISPM Implementation
1.	Not bark free	Bark free
2.	Moldy	Not moldy
3.	Not clean from soil or animal waste	Clean from soil or animal waste
4.	Porous or not free from insect friction holes with a diameter of more than 3 millimetres	Not porous or not free of insect chafing holes more than 3 millimetres in diameter
5.	Raw materials come from unknown and illegal sources	Raw materials come from clear and legal sources
6.	There is no heat treatment or fumigation with Methyl Bromide	The presence of heating treatment (Heat Treatment) or fumigation with Methyl Bromide

Source: PT. Carsurindo Siperkasa Medan year 2020

Based on the problems above, this study aimed to determine the effect of product quality on consumer decisions to use wood packaging material services at PT. Carsurindo Siperkasa Medan, to assess the impact of product innovation on consumer decisions using wood packaging material services at PT. Carsurindo Siperkasa Medan and to determine the effect of product quality and product innovation on consumer decisions to use wood packaging material services at PT. Carsurindo Siperkasa Medan.

### *Literature Review*

#### *Product*

A product is a set of attributes, both tangible and intangible, including colour issues, price, shop selling reputation, and factory services and seller services received by buyers to satisfy their desires (Alma, 2011). A product can be offered to a market to satisfy a want or need. Products marketed include physical goods, services, experiences, events, people, places, properties, organizations, information, and ideas (Kotler & Keller, 2012).

#### *Product Quality*

Kotler & Keller (2012) define product quality as the capability of an item to produce relevant results or performance that exceeds the customer's expectations. According to Kotler & Armstrong (2011) product quality is the capacity of a product to accomplish its intended function. It encompasses the product's durability, usability, and repairability, among other values.

#### *Dimensions And Product Quality Indicators*

Quality encompasses all aspects of product offers that provide consumer advantages (Tjiptono, 2008). Measurements determine the quality of a product, whether it be a physical good or a service. The following are the rates of a product (Tjiptono, 2008): 1) efficiency (performance); 2) durability (endurance); 3) conformity with specifications; 4) features (features); 5) reliability (reliability); 6) aesthetics (aesthetics); 7) perceived quality (impression of quality); and 8) practicability.

#### *Product Innovation*

Innovation is defined as an economic success brought about by introducing new ways or new combinations of old ways of transforming inputs into outputs (technology) (Fontana, 2011). These new ways or new combinations of old ways produce significant or drastic changes in the ratio between the use values prepared by consumers for the benefits of a product. The manufacturer determines products and prices.

#### *Product Innovation Dimensions and Indicators*

In this study, the dimensions of innovation that will be used are product, process, and market innovation (Soleh, 2014). For each size of innovation used, several indicators will clarify this dimension. Based on this research, the hands that will be used for the dimensions of innovation are as follows: 1) product innovation; 2) process innovation; and 3) market innovation

#### *Consumer Decisions*

Setiadi, (2011) explains, the process of integration that combines knowledge to evaluate two or more alternative behaviours, and choose one of them.

#### *Factors Influencing Consumer Decisions*

Understanding consumer behaviour is an essential task for marketers. It is necessary to know the factors that influence consumers in the purchasing decision stage (Kotler & Keller 2016) : 1) cultural factors, culture, sub-culture, and social class influence buying behaviour; 2) other than cultural factors, social factors such as reference groups, family, and social roles and status affect buying behaviour; and 3) personal characteristics also influence personal factors in buying decisions. marketers need to follow them carefully to accept the products offered by marketers.

#### *Purchasing Decision-Making Process*

The purchasing decision-making process (Kotler, 2012), suggests that there are five stages that consumers go through in the decision-making process, as shown in the following figure: 1) recognizing a need; 2) information search; 3) alternative evaluation; 4) buying decision; and 5) post-purchase behavior

#### *Dimensions and Consumer Decision Indicators*

Tjiptono (2012) explains that the consumer's decision to purchase a product includes five decisions as follows: 1) product selection; 2) brand selection; 3) selection of dealers; 4) time of purchase; and 5) number of purchases

#### *Service*

Service is any action or practice offered by one party to another which is intangible and does not result in a transfer of ownership (Supranto, 2011).

## **METHODS**

This research was conducted in September 2022 at PT Carsurindo Siperkasa Medan Jl. Sumbawa Island II No. 4 LOT.5-B Medan Industrial Area II Mabar Medan-20242. In this study, the population is 45 consumers of PT. Carsurindo Siperkasa Medan. From the results of a population of 45 consumers, the sample size is set at 45 respondents because of consumers of PT. Carsurindo Siperkasa Medan is a regular customer who makes repeated purchases, so the sample used in this study uses saturated sampling. Sources of data in this study were obtained from respondents by

distributing questionnaires. The questionnaire contains several statements designed to get answers from respondents regarding the variables studied. The data collection method in this study used a questionnaire, which is a technique that is efficient or saves time in obtaining answers from respondents, which predetermined score criteria can measure. The statements arranged in the questionnaire are related to the problems studied. (1) questionnaire; (2) interview; and (3) documentation. The data analysis technique used in this study uses a quantitative method: testing and analyzing data by calculating numbers and then drawing conclusions from the test.

According to Sujarweni (2015), The coefficient of determination ( $R^2$ ) is used to determine the percentage change in the dependent variable (Y) caused by the independent variable (X). If  $R^2$  is more significant, then the percentage change in the dependent variable (Y) caused by the independent variable (X) is more important. If  $R^2$  gets smaller, the percentage change in the dependent variable (Y) caused by the independent variable (X) is lower. Multiple regression analysis is an analysis that connects two or more independent variables with the dependent variable. Multiple regression analysis measures the intensity of the relationship between two or more variables (Bahri, 2018). The general equation of multiple linear regression is as follows:

$$Y = a + b_1X_1 + b_2X_2 + e$$

Information:  $Y$  = Consumer purchase decision;  $X_1$  = Product quality;  $X_2$  = Product innovation;  $a$  = Constant;  $b_1, b_2$  = Regression coefficients  $X_1$  and  $X_2$ ;  $e$  = Error term, namely the error in estimating the variables that have been observed in the study

The t-test, as described by (Ghozali, 2016), demonstrates how much the influence of a single independent variable contributes to an overall explanation of the dependent variable. The testing was done with a significance threshold of 0.05, which was randomly chosen. The hypothesis is evaluated based on the following criteria to either be accepted or rejected: (a) if the t count is more significant than the t table, the null hypothesis  $H_0$  is rejected, and the alternative null hypothesis  $H_a$  is accepted. It indicates a relationship between the independent variables and the dependent variable; and (b) if the t count is less than the t table, the null hypothesis  $H_0$  is accepted, and the alternative null hypothesis  $H_a$  is rejected. It indicates that there is no relationship between the independent variables and the dependent variable.

The F statistical test reveals whether or not all of the independent variables accounted for in the model collectively impact the variable being tested (Ghozali, 2016). The testing was done with a significance threshold of 0.05, which was randomly chosen. The following are the additional conditions that must be met to try the F test: (a) if the F count exceeds the F table, the null hypothesis  $H_0$  is rejected, and the alternative hypothesis  $H_a$  is accepted. It indicates that all of the independent factors have a considerable influence on the dependent variable; and (b) if the F count is less than the F table, then the null hypothesis  $H_0$  is accepted and the alternative null hypothesis  $H_a$  is rejected. It indicates that none of the independent variables substantially affect the dependent variable.

## RESULT

**Table 2**  
**Test Results for the Coefficient of Determination Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.787	.619	.600	2.54829

Source : processed data

Based on Table 2, it is known that the R Square value is 0.619 in this case the contribution of the product quality variable ( $X_1$ ) and the product innovation variable ( $X_2$ ) to the consumer decision variable using wood packaging material services (Y) is 61.9% while 38.1% is determined by other factors. Based on Table 3 above, the multiple linear regression equation is obtained as follows:  $Y = 11.523 + 0.743 X_1 + 0.110 X_2 + e$ . In this equation, it can be explained that:

1. A constant of 11.523 with a positive parameter indicates that all variables do not change in consumers' decision to use wood packaging material services.
2. Regression coefficient ( $X_1$ ), namely product quality, shows a positive coefficient of 0.660. Thus, product quality can increase consumer decisions to use wood packaging material services.

- The regression coefficient (X2), namely product innovation, shows a positive coefficient of 0.427. Thus, product innovation can increase consumer decisions to use wood packaging material services.

**Table 3**  
**Multiple Linear Regression Test Results Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	11.523	3.002		3.839	<.001
Product Quality	.660	.080	.781	8.212	<.001
Product Innovation	.427	.108	.518	3.970	<.001

Source : processed data

Based on Table 3 above, it is known that the product quality variable (X1) has a significance value smaller than the probability value of 0.05 or 0.001 <0.05. The product quality variable (X1) has a t count value of 8.212 > t table 2.018, so it can be concluded that H1 is accepted and H0 is rejected. A significant influence exists between product quality (X1) and consumer decisions to use wood packaging material (Y) services at PT. Carsurindo Siperkasa Medan. It is known that the product innovation variable (X2) has a significance value smaller than the probability value of 0.05 or 0.001 <0.05. The product innovation variable (X2) has a t count value of 3.970 > t table 2.018, so it can be concluded that H2 is accepted and H0 rejected, which means there is a significant influence between product innovation (X2) on consumer decisions to use wood packaging material (Y) services at PT. Carsurindo Siperkasa Medan.

Table 4 below shows that the calculated F value is 34.068, while the F table value is 3.21. It can be concluded that F counts 34.068 > F table 3.21. It shows that the independent variables, namely product quality (X1) and product innovation (X2), simultaneously affect the dependent variable, namely the consumer's decision to use wood packaging material services (Y). Based on this, a sig F value of 0.001 <0.05 is obtained, so it can be concluded that the hypothesis is accepted, meaning that product quality variables (X1) and product innovation (X2) have a significant effect on consumer decisions using wood packaging material services (Y).

**Table 4**  
**F-Test Results**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	442.461	2	221.231	34.068	<.001 <sup>b</sup>
Residual	272.739	42	6.494		
Total	715.200	44			

Source : processed data

#### *The Influence of Product Quality on Consumer Decisions to Use Wood Packaging Material Services*

The findings of the study that researchers carried out demonstrate that product quality (X1) influences consumer decisions to use wood packaging material (Y) services. These findings were proven by the research that was carried out. This conclusion was reached through statistical analysis using a determined t value higher than the t table, precisely 8.212, more than 2.018, with a significance level of 0.001 0.05. Thus, product quality has a significant influence because the company has a product quality with international standards. The quality of the pallet (wood packaging material) has good resistance because its primary function is to protect goods from various damages during the delivery process so that the condition the goods inside are still in good condition and consumers trust the results of pallet quality more than using another ordinary packaging, so product quality influences consumer decisions to use wood packaging material services at PT. Carsurindo Siperkasa Medan. The findings of this study are consistent with the results of a survey carried out by Kurniawan (2020). Its findings were similar to the results of this study. The findings indicated that the quality of the product has a beneficial impact on the decisions made by customers. This indicates that product quality (X1) has a positive link to purchasing decisions made at PT Astra Honda Motor (Consumer Case Study North Bekasi Honda Motorcycles).

### *The Influence of Product Innovation on Consumer Decisions to Use Wood Packaging Material Services*

The results of the research conducted by the researchers proved that there was an influence of product innovation (X2) on consumer decisions using wood packaging material (Y) services. Based on processed statistics, the t count > t table is  $3.970 > 2.018$  with a significance level of  $0.001 < 0.05$ . Thus it can be concluded that product innovation influences consumer decisions to use wood packaging material services because the innovations carried out use the treatment and certification of wood packaging according to ISPM No. 15, which contains wood materials, as well as consumer demand for products produced which are always in the same product form according to need, product innovation influences consumer decisions to use wood packaging material services at PT. Carsurindo Siperkasa Medan. This study's results align with research conducted by Tuwisna (2020). The results of the study show that product innovation has a positive effect on purchasing decisions for Epson brand printers. Which means that product innovation (X2) has a positive relationship to purchasing decisions for Epson brand printers in stores.

### *The Influence of Product Quality and Product Innovation on Consumer Decisions to Use Wood Packaging Material Services*

The findings of concurrent studies performed on product quality (X1) and product innovation (X2) demonstrate that there is a considerable influence on consumer decisions employing wood packaging material (Y) services. These findings are based on the results of the studies. It indicates that product quality (X1) and product innovation (X2) jointly affect consumer decisions at PT. Carsurindo Siperkasa Medan to use wood packaging material (Y) services. The findings of this research were derived from the results of the F test, which revealed an F count of  $34,068 > F$  table 3.21 with a significance level of  $0.001 < 0.05$ . These findings were based on the findings of the study. This research aligns with prior research by Hardianto (2019). This research was carried out in Indonesia. According to the study's findings, a consumer's decision to purchase plant fertilizers is significantly impacted by the product's price and quality concurrently, this indicates that both the price variable (X1) and the product quality variable (X2) have a positive relationship to the decision to purchase plant fertilizers (Y) on the CV. Jaya Award.

## **CONCLUSION**

The following conclusions can be drawn as a result of the findings of the research, the analysis of the data, and the discussion: (1) If the t value of the variable representing product quality (X1) is 8.212 and the t table is 2.018, then the t count is more than the t table if 8.212 is more significant than 2.018. It is what the findings of this research show. Consumer choices regarding utilizing wood packaging material services (Y) are highly impacted by PT's product quality variable (X1). Carsurindo Siperkasa Medan; and (2) If the t value of the product innovation variable (X2) is 3.970 and the t table is 2.018, then the t count > t table is  $3.970 > 2.018$ . It is because the t value of the product innovation variable (X2) is greater than the t value of the t table. Consumer choices regarding the utilization of PT's wood packaging material (Y) services are partly impacted by the variable known as product innovation (X2). Carsurindo Siperkasa Medan. According to the findings of this investigation, the computed F value is 34.068, and the F table is 3.21; hence, the F count is greater than the F table when it is 34.068 rather than 3.21. The product quality variable (X1) and the product innovation variable (X2) concurrently or together significantly affect consumer decisions at PT Carsurindo Siperkasa Medan regarding utilizing wood packaging material services. In addition, the R-Square value is 0.619, which equals 61.9% of the total. It indicates that product quality variables (X1) and product innovation variables (X2) contribute 61.9% to consumer decisions regarding the use of wood packaging material services (Y). In contrast, 38.1% of the outcome depends on other factors that were not examined.

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