Do Customers Will Accept Seaweed Packaging Innovation?

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Abstract. World nowadays is suffering from a lot of environmental issues and one of the causes is plastic waste. Plastic causes hazardous negative impact on environment due to its non-biodegradable nature. The use of plastic majority is for the purpose of packaging. Whereas, there is packaging innovation using seaweed based which is more environmental friendly but the companies that use it are almost nonexistent. This research investigated the customers acceptance if their basic packaging material change from plastic to seaweed and focused on edible food packaging. Methodology used for this research is quantitative method with simple linear regression and SPSS for the data analysis. The purpose of this research is to encourage the company to start changing their packaging material if the customers itself also willing to accept it, and along with to inform customer about the packaging innovation and cooperate to reduce the use of plastic. The result of this research is customers do will accept the seaweed packaging innovation.

1. Introduction
Environmental issues have been a concern for some time worldwide. It affects every level of life [1]. The major cause of environment pollution is plastic waste which its disposal are hazardous and give countless negative impact [2].

Mostly, the use of plastics are for packaging and based on the data, it has increased worldwide with an estimate at 280 metric tones [3]. The packaging industry is the largest user of plastics; more than 90% of flexible packaging is made of plastics, compared to only 17% of rigid packaging [3].

Even though there is a packaging innovation available using seaweed based that could play a big part in the future of disposable packaging, but many companies and customers have not known about it yet. This paper has done a research of do customers will accept to this kind of innovation and the purpose to encourage the companies to take an action to change their packaging based with more environmental friendly material. This research focused on edible food packaging only for the survey of customers acceptance of seaweed packaging innovation.

2. Literature Study
2.1. Customer Acceptance
Customer acceptance is important for a business to understand it in order to become more efficient in their development efforts, processes and or innovation [4]. Knowing the customer acceptance is to have better understanding about the customer itself and their behaviour [5]. Customer acceptance to a new product or innovation has been studied in the previous research that 7 out of 10 will affect to its success [6].
2.2. Seaweed Packaging Innovation

Innovation is defined as something new or changes that usually helps companies or businesses to differentiates them among the competitors [7]. Another definition of innovation is as an introduction of goods or services that are new or had been sharply improved regarding their characteristics or uses [8]. Packaging innovation is an innovation in the packaging or changes to something new to the packaging, based on the two above definitions.

From [9] stated that changes in consumer preferences have led to innovations and developments in new packaging technologies. Packaging innovation also one of the factors influence competitiveness [10]. The existence of an edible packaging innovation is showed in [11] and also stated that the demand on edible food packaging is increasing in on the go consumption.

Seaweed packaging innovation is one of edible packaging which studied is well compatible and its properties are required for it to package the food [12]. There is also another study that suggests that the edible packaging could be used as novel materials in food industry as sachet/pouch/bag for instant coffee, breakfast cereals drinks, seasoning powder, candies etc; as wrapper for seasoning cube and chocolate [13].

3. Research Methodology

This research used quantitative method with simple linear regression. Survey had been done by spreading questioners, the data collected from 86 respondents and the data processed and analysed by using SPSS. Simple linear regression surveys a general approach to research that focuses on assessing the variability among variables that appear naturally using questioner [14]. Accidental sampling is carried out based on a survey. Accidental sampling is a sampling procedure that will give chance to all elements to be included in the study sample and will not bid a basis for any opinion of probability [15].

4. Result and Discussion

This research aims to analyze the customers acceptance of seaweed packaging innovation. This research has collected data from 86 respondents with accidental sampling by distributing questioners. Researchers divided the characteristics of the respondents by ages and occupation. From the data, 51.7% are 21-30 years old, 21.8% are 20 years old and under, 13.8% are 41-50 years old and 9.2% are 51 years old and above, and 3.5% are 31-40 years old. From the same data, 67.8% are students, 12.6% are workers, 3.5% are entrepreneurs, and 16.1% are the others occupation not identified.

This research used quantitative method with simple linear regression, processed and analysed using SPSS. The validity test, reliability test and normality test of the data need to be done. The validity test of this research is valid with a result is 0,000. Reliability test result for this research is 0,964 where the terms for reability test is if up to 0,60, it means this research is reliable. For normality of this research, the result of the test is 0,373 means that the distribution of the data is normal.

After knowing the data is valid, reliable and normal, the next discussion is about the analysis of the simple linear regression test. The following tables are the important information table related.

| Table 1. Model Summary |
|------------------------|
| Model | R | R. Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | 0.981* | 0.962 | 0.961 | 3.306 |
| a. | Predictors: (Constant) x |
| b. | Dependent Variable: y |
Table 2. Coefficient

| Model       | Unstandardized Coefficients | Standardized Coefficients | t     | Sig. |
|-------------|-----------------------------|---------------------------|-------|------|
|             | B                           | Std. Error                | Beta  |      |
| 1 (Constant)| -0.248                      | 1.065                     | -0.233| 0.816|
| X           | 2.162                       | 0.047                     | 0.981 | 46.059| 0    |

a. Dependent Variable: y

T table 80= 1.990

Table 3. ANOVA

| Model       | Sum of Squares | Df | Mean Square | F      | Sig. |
|-------------|----------------|----|-------------|--------|------|
| 1 Regression| 23190.733      | 1  | 23191       | 2.12E+03 | .000a |
| Residual    | 918.255        | 84 | 10.93       |        |      |
| Total       | 24108.988      | 85 |             |        |      |

a. Predictors: (Constant) x
b. Dependent Variable: y

Table 4. Residuals Statistics

|               | Minimum  | Maximum | Mean  | Std. Deviation | N  |
|---------------|----------|---------|-------|----------------|----|
| Predicted Value | 17.05    | 71      | 45.99 | 16.518         | 86 |
| Residual      | -7.675   | 12      | 0     | 3.287          | 86 |
| Std. Predicted Value | -1.752 | 1.5 | 0     | 1              | 86 |
| Std. Residual | -2.32    | 3.6     | 0     | 0.994          | 86 |

a. Dependent Variable: y

In general, the simple linear regression equation is \( y = a + bX \). To find out the value of the regression coefficient, guided in Table 2. In this research, the constant number is -0.248 and the regression coefficient number is 2.162 which means the packaging innovation value that will increase from the 1% additional of the customer acceptance. As a result, the simple linear regression equation of this research is \( y = -0.248 + 2.162 \). Because the coefficient number is plus, it means that the customer acceptance of the seaweed packaging innovation is positive.

The discussion of the hypothesis test in this simple linear regression analysis is to know if the coefficient is significant or not.

Ho: Customers will not accept seaweed packaging innovation
Ha: Customers will accept seaweed packaging innovation

In this research, the hypothesis test is done by comparing the significant value (Sig.) with probability 0.05. By seeing the Table 2 above, the Sig. is 0. Because the Sig. value is less than 0.05, means that Ho is rejected an Ha is accepted or customer will accept seaweed packaging innovation.

Researchers also want to know how much the customer acceptance of seaweed packaging innovation after knowing the acceptance result is positive. Guided in Table 1, the R square is 0.962 which means the acceptance to seaweed packaging innovation is 96.2%.

5. Conclusion

The availability of edible seaweed packaging innovation is still lack of recognition. Most of companies and manufacturers are still using plastics for their packaging especially for food packaging, even though the use of plastic is hazardous and brings negative impact to the environment. This research’s purpose is investigate the customers acceptance of the edible seaweed packaging innovation which has a bigger mission to encourage companies and manufacturers to change their packaging based from using plastic to more sustainable materials.

The result of this research shows that customers do will accept this kind of packaging innovation. Customers acceptance plays a big roll of a success of packaging innovation. From a survey of 86 respondents from accidental sampling with simple linear regression and processed using SPSS data analysis, 96.2% proves that they will interestingly accept this edible seaweed packaging innovation.

The limitation of this research is that only focused on food packaging. Further research need to be done for wider population, other packaging purpose, and deeper analysis and understanding of factors of the content.

6. References

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