Acceptance Model to Use Household-Furniture of Scrap Wood Material

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Abstract

Indonesia is in the top ten country with the largest forest around the world in 2020. Based on information, the total production of logs in Indonesia is 64.42 million. The development of the wood industry is increasing along with the increasing population. The presence of waste from the production can not be used optimally. the production of furniture made from wood waste has basically been carried out. However, it have not known yet for the acceptance of these products in consumers. This research aims to model the acceptance of the use of household furniture made from wood scrap using SmartPLS. The indicators used in this research have not yet focused on consumer assessment of the characteristics of each product, both those using solid wood and products using wood scrap. So that the acceptance model in this research only focuses on consumer ratings of the two products in general perceived..

Keywords
Consumer behavior, Acceptance model, Wood Scrap, and Reuse.

1. Introduction
According to information from Forestry Statistics of Indonesia, In 1997-1998, total sawn timber production reached 2.6 million cubic meters per year. In 2020, total production nearly reached 2.6 million cubic meters, which means that the need for original wood is still very high, while the total forest area in Indonesia continues decrease. The results of quarterly forestry data collection shown, total log production in Indonesia is 64.42 million meters cubic. All types of logs have increased every quarter. In total, log production in Indonesia increased from the first quarter (14.24 million) to the fourth quarter (18.06 million).
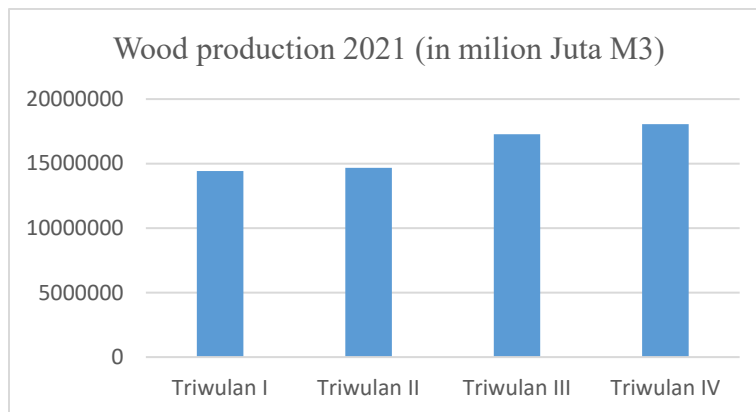

Figure 1. Total production in 2021

Existence of production waste generating problem to handling. A solution that it can be solve is optimizing utilize it to be a product with value. The wood waste can be divided into several types, including bark, small pieces and wood chips from sawing and cutting, as well as sawdust and wood dust (Figure 1).

The presence of a mixture of other materials in household furniture products made from scrap wood causes the product's durability to be different from that of solid wood. Although household furniture products made from scrap wood have poor resistance compared to whole wood, household furniture products made from scrap wood have a relative lower selling price.

Humans and the environment are two things that interact and affect each other. Previously, a lot of plans did not start with human behavior survey and in the end the user did not feel it as a pleasure. In addition to the basis for planning activities, human behavior is also an important benchmark in making policies. This research aims to see a modeling consumer acceptance and see the factors that consumers affect towards household furniture products made from wood scrap.

2. Literature Review

As in previous research conducted by Sulaeman, Rudianda and Defri Yoza (2010) using a type of sawn timber, stated that, when compared to existing standards, particle board from wood waste is still below the Indonesian national standard. So that particle board can only be used for needs that do not require high strength, such as absorbing sound and children's toys. Other research was also carried out by Ngadianto, Agus, et al (2019) who used waste from mahogany and sengon wood, concluding that the physical and mechanical properties of particle board met the standards only on the parameters of internal bonding firmness.

The presence of a mixture of other materials in processed wood waste products results in the durability of these products being different from that of whole wood. In addition to testing the physical and mechanical properties of processed wood waste products, there is also research that has carried out economic calculations. In his research, (Mulyadi, Rizwanda Tezakumala, 2021) identified alternatives to managing wood waste by reusing it as a raw material for the production of lounge chairs using the cost plus pricing method with the aim of knowing the cost of all the components needed. This research provides a statement that wood waste is very likely to be used as raw material again for production. In addition to taking less time due to the shorter stages, processed wood waste products have lower cost and have the potential to earn higher profits.

Even though a lot of research has been done in an effort to look at the characteristics or strength of processed wood planks, it is also necessary to consider consumer acceptance in their willingness to use household furniture products made from scrap wood. In addition to identifying factors that influence consumers in accepting products, behavioral research is conducted to identify their views. So that research can potentially provide benefits to researchers in the field of particle board and see market potential that is beneficial to producers of household furniture with processed wood. Meanwhile, to model consumer acceptance, a review was carried out on previous research related to consumer behavior in accepting certain products. Such as research that has been conducted by (Polyportis., et al 2022) on consumer acceptance of recycled products. Where research is carried out on the basis of seeing good consumer views of recycled products, but in the end they don't buy these products. The research was conducted by reviewing 46 articles published between 1995 to March 2022 which has the same research focus and shows that environmental benefits, perceived product quality, safety in using products, risks, emotions are factors that differentiate each individual in receiving the product. Other research was also carried out by looking at consumers' willingness to accept and evaluating the market potential of food products obtained from olive oil by-products (Perito et al., 2019) which identified that consumers were concerned about the production process of these foods. (Eom et al., 2021) also conducted research on social acceptance in accepting and willingness to pay for smart toilets, by reviewing several aspects of social behavior, and the results showed that the majority could accept well.

3. Methods

In social and behavioral science, generally theories and models are formulated using theoretical concepts that cannot be directly measured and observed. However, it is still possible to find indicators that can be used in studying these theoretical concepts. The Structural Equation Modeling (SEM) method is a model developed from path analysis and multiple regression, both of which are forms of multivariate analysis models. The SEM method is superior because it can analyze data more comprehensively when compared to path analysis and multiple regression. This is because the

two methods only analyze at the latent variable level (unobserved), while the analysis using the SEM method can analyze more deeply because the analysis is carried out on each question value contained in each research instrument variable.

4. Data Collection

This research data collection was carried out within one week, then the survey data adequacy test was carried out according to the Structural Equation Modeling method. The lowest ratio per observed variable, namely 5 respondents, will be sufficient for a normal distribution when there are several indicators for each variable (Gunanti, 2010). This statement is also found in several other references, such as the statement (Memon, et al, 2020) that the minimum ratio cannot be less than 5 for each statement. This research has 21 observable variables that explain 6 latent variables. So that the minimum number of samples needed is 105 (5 x 21 = 105). The number of samples in this research was 216, so this number was considered sufficient for this research.

The results obtained from distributing the questionnaires showed that man and woman respondents were almost equal, namely 51% for men and 49% for women. This is because the criteria specified in the filling are respondents who have experience buying furniture or are married. So that the resulting data is distributed fairly balanced.
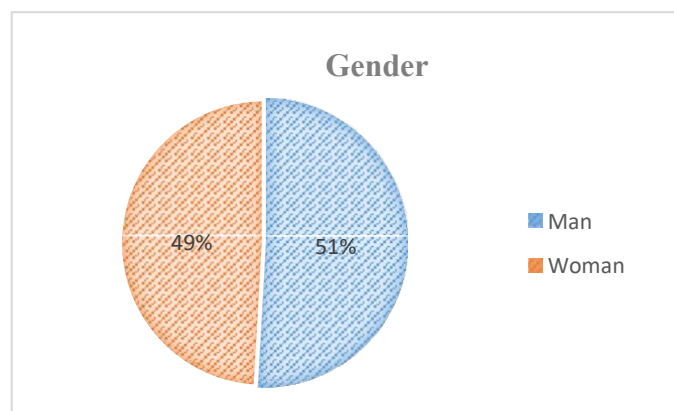

Figure 2. Respondent demography (gender)

The respondents who filled out this questionnaire had a fairly diverse age range, namely 35% (Figure 2) were in the age range 25-35 years, 26% were in the age range 36-45 years, 25% were in the age range 46-55 years (Figure 2), and there were respondents with an age range under 25 years and over 55 years. This is because, the experience of buying furniture does not require that someone is married and or someone who is married is not always in the same age range.

5. Results and Discussion

The specification of the structural model is the definition of the correlation between one latent variable and another latent variable. Meanwhile, path diagram is a combination of measurement model and structural model. In the model specification, the initial step is to specify the measurement model. This model consists of latent variables and observed variables, as well as the correlation of the two types of variables. specifications of the SEM model in research as explained in the previous chapter which explains the variables and indicators. In this case, the indicators in the table are the observed variables and the variable column is the latent variable. In this research there are 21 variables were observed. The following is an initial research model on the factors that influence the acceptance of household furniture made from scrap wood.
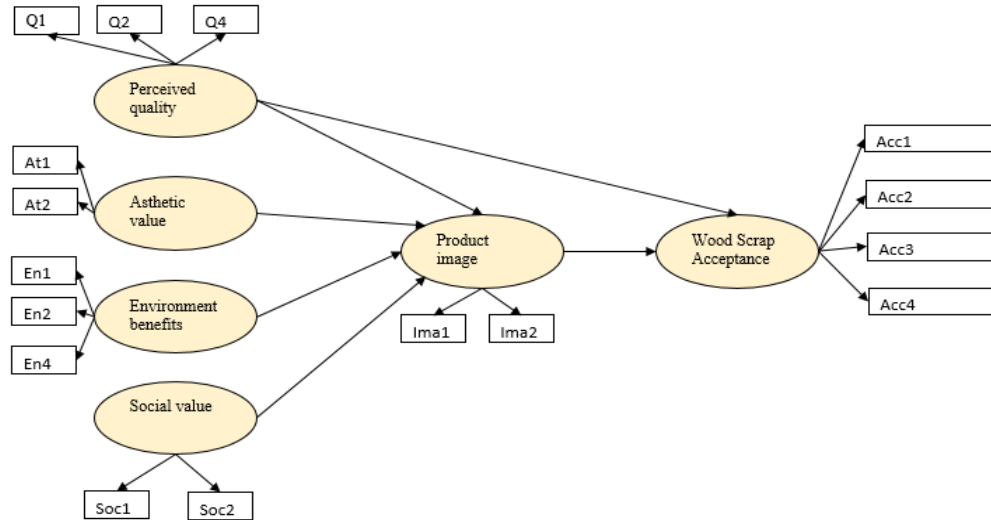
Figure 3. Model consumer acceptance

Based on the results of processing with smartPLS, it was found that the asthetic value variable is a factor that does not affect consumers in determining a product to be used, this is indicated by the bootstrapping T-Statistic value < 1.96 as in the Table 1.

Table 1. T-Statistic Bootstrapping result

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics
Asthetic value -> Product image	0,117	0,115	0,061	**1,930**
Environment benefit -> Product image	0,156	0,160	0,050	3,101
Perceived quality -> Product image	0,619	0,618	0,037	16,630
Perceived quality -> Wood Scrap Acceptance	0,394	0,400	0,062	6,393
Product image -> Wood Scrap Acceptance	0,458	0,455	0,064	7,212
Social value -> Product image	0,151	0,151	0,048	3,173

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