

Conference Paper

Customer Preference of Attributes of Skema Wooden Chair Furniture

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Abstract

The purpose of this research was to find the preferred combination of attributes regarding wooden chair furniture. The subject of this research was Skema Furniture, a Surabaya-based furniture developer since 2016. Variables in this research were acquired through a pre-survey with twenty of Skema Furniture's previous customers. The attributes were form, seat cushion, customization and wood finish. The form attribute had two levels: curvilinear and rectilinear. The seat cushion attribute had two levels: using a seat cushion and not using a seat cushion. The customization attribute had two levels: the ability to customize and otherwise. The wood finish attribute had two levels: natural finish and solid color finish. Conjoint analysis was used. The sample of 134 people were past consumers of Skema Furniture from the age of 25 to 54. The sample needed for this research, using the Slovin formula, with a 0.05 error tolerance, was around 100 people. The research was conducted via an online survey, due to the COVID-19 pandemic. This research concluded that the most preferred wooden chair furniture was that with a curvilinear form, without a seat cushion, able to be customized, and with a solid color finish. The variables that were most important for the consumers were wood finish and form. This study only describes the preferences of the buyer and user of the furniture chair products. The wooden chair furniture in this research is not specified to any function of a chair.

Keywords: customer preference, Skema Furniture, wooden chair furniture

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Published: 22 March 2021

Publishing services provided by
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Selection and Peer-review under the responsibility of the ICOEN Conference Committee.

1. Introduction

Wooden chair furniture poses unique challenges. For one, chair engages more intimately with your body. You will feel poor design in the small of your back. A chair has to be strong to put up with occasional racking forces. A chair has to be light enough to move around easily. To build a good chair, one must understand its engineering and ergonomics [17]. The trend for furniture industry is slowly increasing annually shown in the data as shown in Figure 1.

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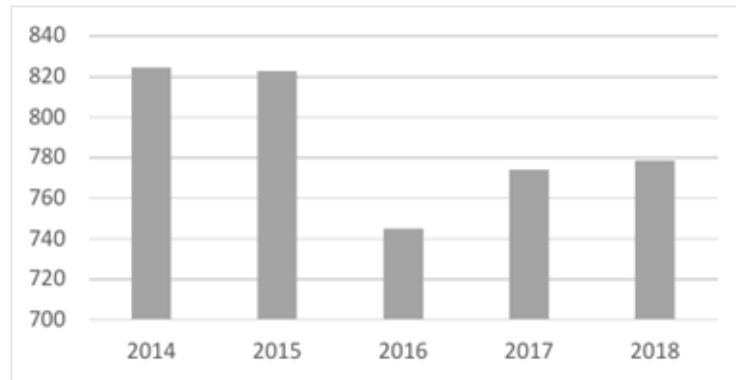


Figure 1: Indonesia's Wooden Furniture Export Rate.

The leader of APMI (Asosiasi Pengusaha Mebel Indonesia) Mugianto Sukadi said that Indonesia's domestic furniture was unable to compete in price, as mentioned on Merdeka.com. The SVLK (Surat Verifikasi Legalitas Kayu) was also hindering the growth for 2016 export rate, as mentioned by Abdul Sobur, the Deputy Chairperson of the Institution & Relations Relations Division for HIMKI, as reported by Kontan.co.id.

The future trends of furniture industry also been verified by Data Industri Research, provided by Bank Indonesia, Badan Pusat Statistik (BPS), and Kementerian Perdagangan. The overall growth rate of furniture industry trend is as shown in Figure 2.

Sumber: DataIndustri Research, diolah dari Badan Pusat Statistik (BPS), Bank Indonesia (BI), dan sumber lainnya Atas Harga Konstan 2010
*Sampai Q3 2019, Pertumbuhan dihitung terhadap periode yang sama 2018 yang sebesar 19.431,2 miliar rupiah

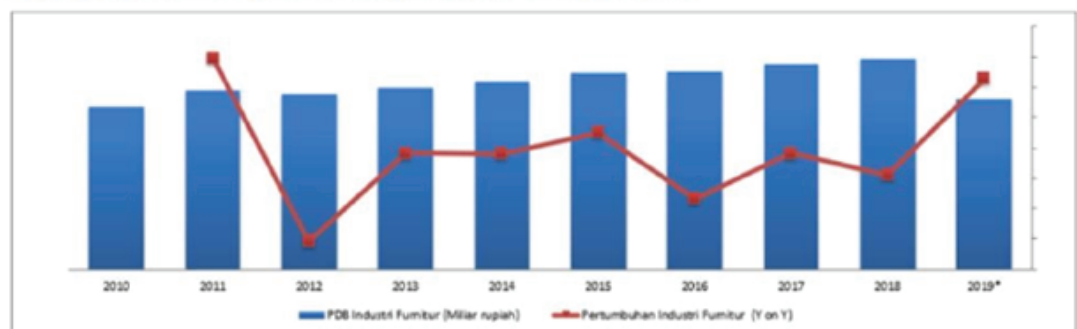


Figure 2: Trend of Growth Rate for Furniture Industry.

Analyzing from the data above, the wooden furniture industry seems to be a promising avenue for business, especially chairs. As a reference to the survey, I asked some customers from my cousin's business, Skema Furniture. The business had started since 2016 and focused on customized furniture for living spaces such as apartments or homes. The business' own performance can be seen in the graph below of the total turnover in the last six months:

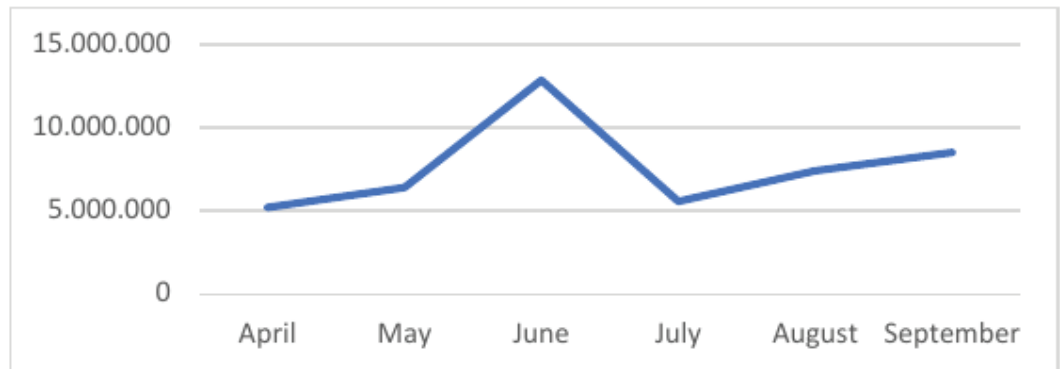


Figure 3: Skema Furniture Six Month's Turnover.

For the purpose of this research, I contacted twenty previous customers of Skema Furniture and gave them survey to determine their preferences on purchasing some wooden chair furniture. The survey tested some attributes on the wooden chair furniture. Below is the result:

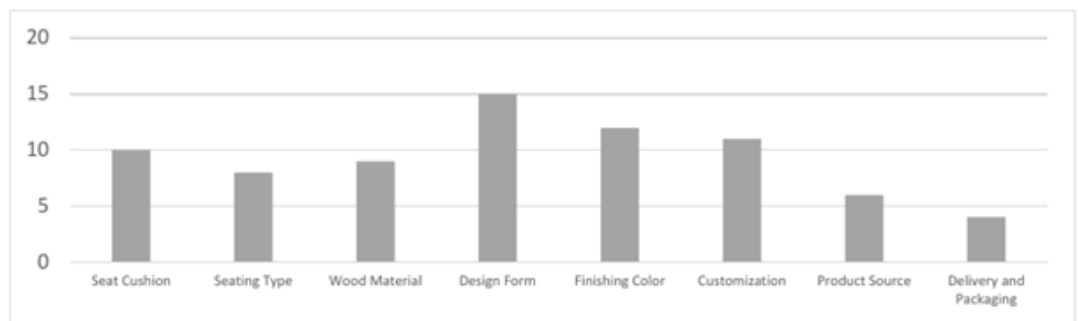


Figure 4: Customer Survey of Preference in Wooden Chair Furniture.

Derived from the data above, the four highest attributes chosen by customers are form, seat cushion, customization, and finishing color. These factors are considered important by the customer, as they allow them to receive product that is unique to their own preference and is suitable for their space, while also still utilizing the comfort for the function of the chair.

A seat cushion provides benefits well beyond comfort, including pressure management and positioning that can reduce fatigue and enhance seated balance, which is important for customer who sits in long hours [1]. A great cushion also demands a great inner material. Inner cushion materials are used in tandem to provide the four characteristics of high-quality cushions: support or firmness, compressibility, resilience, and loft [19]. The form attributes constitute the physical structure and spatial order that is required for furniture design [2]. Even the most basic chair must be strong enough to take lots of rocking and rolling and be able to support a body comfortably [18]. The

customization aspect allows customer to either customize the measurement and style of the chair, or to just buy what is available. Customization refers to representing a streamlined approach to the design of furniture products and carried out with methodologies and technologies enabling to let them directly ready to be manufactured, which is in line with what the customer needs [3], while furniture design model based on mass customization is intended to provide personalized products and services meeting customer demands using the cost and time of mass production [21]. Finishing color refers to the outmost layer of the wood, which is really important to help keep it clean, to help stabilize it, and to finish it. These steps are important to make a piece of furniture last longer [4].

2. Methods and Equipment

2.1. Methods

2.1.1. Quantitative research

This research uses descriptive quantitative method. Quantitative method is a method based on the philosophy of positivism, to examine a population or sample, with certain sampling and data collection techniques, with the aim of testing the hypothesis set [5]. This research were held in Surabaya, due to the current location of the business, Skema Furniture. Most of the customers and suppliers are also based in Surabaya. The wooden chair furniture will also be sold around Surabaya. This research were conducted within 2 months, around April 2020 – May 2020.

Population is a region of generalization and compiled by the subject or object [5]. The subject or object has special characteristics according to what was determined by the researcher, to be examined. The population in this study were all consumers of wooden chair furniture ranging from the age of 25 to 54. Based on the data provided by Badan Pusat Statistik Kota Surabaya (2019), the number of this population is estimated at around 1.352.602 people out of 2.896.195 people (around 47%). Sample is a part of population [5]. In this study, the calculation of the number of samples using the Slovin formula is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Information:

n = number of samples

N = Total Population

$e = \% \text{ error tolerance}$

This study uses a population of 1.352.602 people with error tolerance of 10%. Based on the formula above, the following calculation is obtained:

$$n = \frac{1352602}{1 + 1352602(10\%)^2} = 99.99 = 100$$

From the calculation above, obtained a sample of at least 100 respondents. The method for determining the sample in this research uses non-probability sampling method. According to Sugiyono (2015:81), non-probability sampling method is a sample determination method which is done by taking the sample intently / not random. The use of non-probability sampling method is chosen by the researcher to help focus the research, since in furniture industry, the purchasing behavior is not repeatable (one-time purchase only). The sampling technique used in this research is Purposive Sampling. According to Sugiyono (2012:83), Purposive Sampling is a technique to determine sample in certain condition. In this research, the researcher uses certain criteria to select specific respondents in the hope to acquire better accuracy of the result. The criteria are as follows:

- Respondents are male or female who are within 25 to 54 years old.
- Respondents live in a space in which they personally owned or family owned.
- Respondents live in a space in which they have a choice to decorate on their own.

The analysis of the data in this study is using conjoint analysis. Conjoint analysis is a special multivariate technique that is useful for understanding the preferences of a respondent to a product. This is based on the premise that consumers value products / services by combining the amount of value from each separate attribute [6].

Conjoint analysis can be expressed in models:

$$Y_{\text{non-metric or metric}} = X_1 + X_2 + X_3 + \dots + X_n$$

non-metric

Notes:

Y = utility from the combination of attributes that is the preference of consumer.

X1 = value from form

X2 = value from seat cushion

X3 = value from customization

3. Results

In this study, to find out information about the characteristics of respondents, the data is processed and grouped based on each aspect so that it is easily understood. The characteristics of the respondents are as follows:

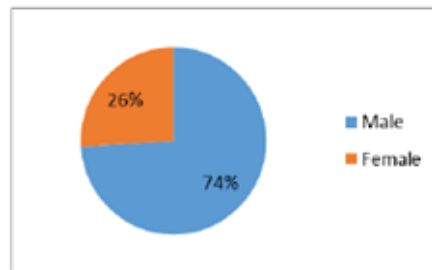


Figure 5: Gender graph.

Based on Figure 5, we can see that the gender for the research’s respondents is dominated by male with 74 people (74%) and the female respondents with 26 people (26%) out of 100 total respondents.

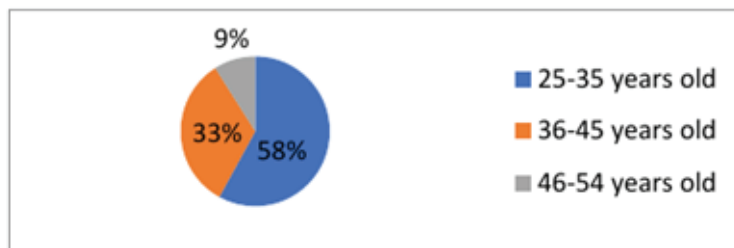


Figure 6: Age graph.

Based on Figure 6, we can see that the age group for the research’s respondents is dominated by 25-35 years old. Respondents age 25 – 35 years old are 58 people (58%). Respondents age 36-45 years old are 33 people (33%). Respondents age 46 - 54 years old are 9 people (9%).

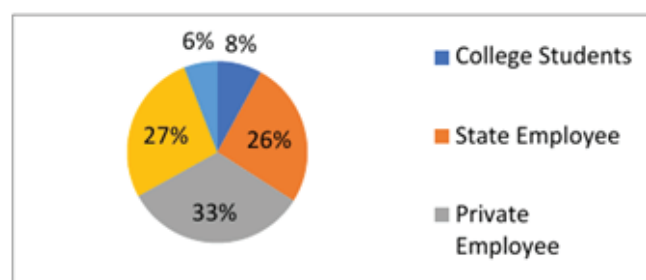


Figure 7: Occupation graph.

Based on Figure 7, we can see that the occupation for the research's respondents is dominated by private employees, with the total of 33 people (33%). Respondents working as a businessman are 27 people (27%). Respondents working as a state employee are 26 people (26%). Respondents as college students are 8 people (8%). Respondents as a housewife are 6 people (6%).

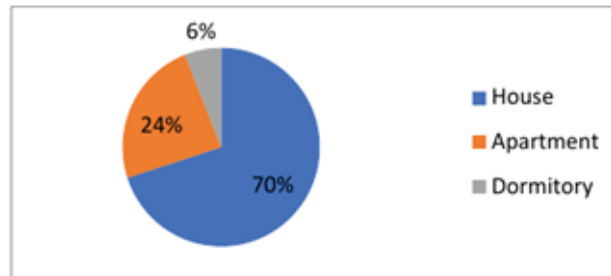


Figure 8: Residence graph.

Based on Figure 8, we can see that the residence for the research's respondents is dominated by house, with the total of 70 people (70%). Respondents living in an apartment are 24 people (24%). Respondents living in a dormitory are 6 people (6%).

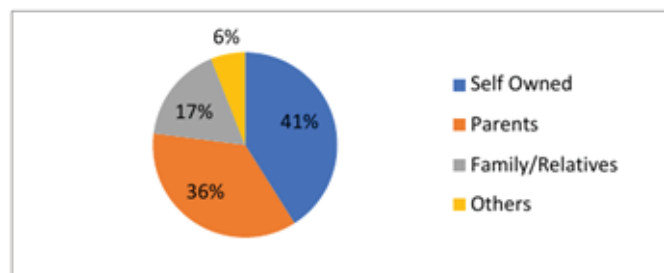


Figure 9: Residence ownership graph.

Based on Figure 9, we can see that the residence ownership for the research's respondents are dominated by self owned with 41 people (41%). Respondents living in a parent's owned residence are 36 people (36%). Respondents living in family/relative's owned residence are 17 people (17%). Respondents living in other's owned residence are 6 people (6%).

Based on Figure 10, we can see that all of the research's respondents of 100 people (100%) agreeing that they can decorate their place as their will. Based on the results of the questionnaire, as seen on Figure 11, there are almost equal results for the preference between the two forms attributes, with 52 people choosing Curvilinear (52%) and 48 people choosing Rectilinear (48%).



Figure 10: Decoration freedom graph.

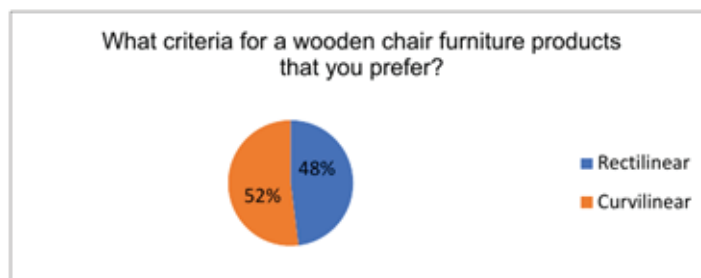


Figure 11: Form attribute graph.

Based on the results of the questionnaire, as seen on Figure 12, there is almost equal results between the two seat cushion attributes, with 54 people chose to not use seat cushion (54%) and 46 people chose to use seat cushion (46%).

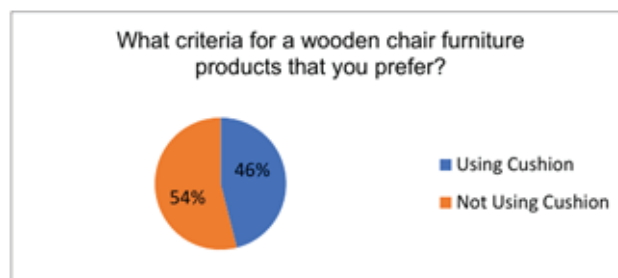


Figure 12: Seat cushion attribute graph.

Based on the results of the questionnaire, as seen on Figure 13, 55 people (55%) shows a tendency towards the choice to not be able to customize and 45 people chose to customize the wooden chair furniture (45%).

Based on the results of the questionnaire, as seen on Figure 14, 46 people shows a tendency towards the choice for a solid color finish (46%) and 54 people chose a natural wood finish for their wooden chair furniture (54%).

In addition, from the results of the conjoint analysis of all respondents, also obtained the Importance Value as follows:

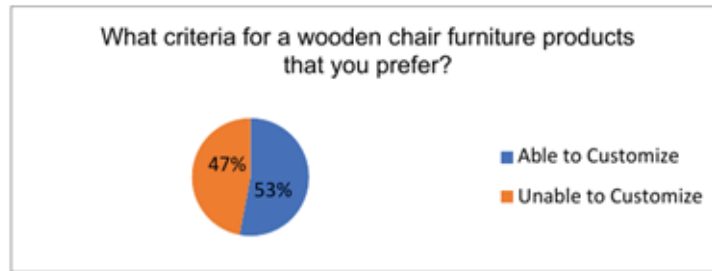


Figure 13: Customization attribute graph.

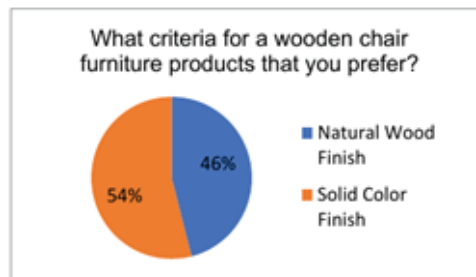


Figure 14: Wood finish attribute graph.

Form	36,224
Seat Cushion	4,795
Customization	20,529
Wood Finish	38,452

Figure 15: Overall Result of Respondent's Importance Value.

From Table 15 it is known that the first priority attribute (considered the most important) is wood finish (with importance value of 38.45%). The second priority attribute is form (with importance value of 36.22%). The third priority attribute is customization (with importance value of 20.53%). Also, the fourth priority attribute is seat cushion (with importance value of 4.80%). In addition, the total utility of each combination of stimuli is known as follows:

4. Discussion

Characteristics of the respondents in this study which is 100 respondents illustrate that the wooden chair furniture consumers are dominated by men. There are 74 men and 26 women, making it 48% more men than women. This is also consistent with the fact

No.	Stimuli Combination				Utility Value				Utility Total	Ranking
1	Rectilinear	Seat Cushion	Able to Customize	Natural Finish	.299	.112	-.015	.065	.461	15
2	Rectilinear	No Seat Cushion	Able to Customize	Natural Finish	.299	-.112	-.015	.065	.237	11
3	Rectilinear	Seat Cushion	Unable to Customize	Natural Finish	.299	.112	.015	.065	.491	16
4	Rectilinear	No Seat Cushion	Unable to Customize	Natural Finish	.299	-.112	.015	.065	.267	12
5	Rectilinear	Seat Cushion	Able to Customize	Solid Color Finish	.299	.112	-.015	-.065	.331	13
6	Rectilinear	No Seat Cushion	Able to Customize	Solid Color Finish	.299	-.112	-.015	-.065	.107	9
7	Rectilinear	Seat Cushion	Unable to Customize	Solid Color Finish	.299	.112	.015	-.065	.361	14
8	Rectilinear	No Seat Cushion	Unable to Customize	Solid Color Finish	.299	-.112	.015	-.065	.137	10
9	Curvilinear	Seat Cushion	Able to Customize	Natural Finish	-.299	.112	-.015	.065	-.137	7
10	Curvilinear	No Seat Cushion	Able to Customize	Natural Finish	-.299	-.112	-.015	.065	-.361	3
11	Curvilinear	Seat Cushion	Unable to Customize	Natural Finish	-.299	.112	.015	.065	-.107	8
12	Curvilinear	No Seat Cushion	Unable to Customize	Natural Finish	-.299	-.112	.015	.065	-.331	4
13	Curvilinear	Seat Cushion	Able to Customize	Solid Color Finish	-.299	.112	-.015	-.065	-.267	5
14	Curvilinear	No Seat Cushion	Able to Customize	Solid Color Finish	-.299	-.112	-.015	-.065	-.491	1
15	Curvilinear	Seat Cushion	Unable to Customize	Solid Color Finish	-.299	.112	.015	-.065	-.237	6
16	Curvilinear	No Seat Cushion	Unable to Customize	Solid Color Finish	-.299	-.112	.015	-.065	-.461	2

Figure 16: Utility Value Total for All Respondents.

that furniture chair consumers are heavily male- dominated who tend to be interested in shopping for furniture in general.

In general, in terms of age, the furniture consumers are dominated by the age of 25-35 years old with 58% overall. According to WHO [7], the age classification of a person begins with the toddler age of 0-5 years, childhood 6-11 years, adolescents 12-17 years, adulthood 18-40 years and 41-65 year sold. The adult category means having a productive age, financial independence, and generally having full control over their money, a full control over what to buy and what not to.

In terms of occupational characteristics, it is dominated by three main jobs, namely 33 private employees, 27 entrepreneurs, and 26 state employees. The difference in the amount of these three jobs is not so significant, which means that these three types of work has a major contribution to the sale of wooden chair furniture. Therefore, how the products are sold and marketed can be adjusted so that they are effective for these three occupations.

In addition, the next question shows that the majority of the respondents resides at home with 70 people (70%). Respondents living in apartments are 24 people (24%), and the ones living in dormitory is 6 people (6%). This shows that in general, consumers

buy chair furniture to meet the needs of home owners. The next question is related to the ownership of the residence, which is mostly privately owned totaling 41 people (41%). 36 people (36%) also lives with their parents, and 17 people (17%) lives with their family/relatives. This shows that consumers decide to buy furniture chairs to meet the needs of private residences. The thing that supports the willingness to purchase wooden chair furniture is the question of the freedom to decorate, which in this case the answer is all Yes (100%). The answer Yes means that all of the respondents (100 people) has the control and freedom to decorate the space that they currently inhabit.

From the results of the analysis, the attribute that is considered most important by consumers is wood finish attribute (with an importance value of 38.452%) which is followed closely with the form attribute (with an importance value of 36.224%). The third priority attribute is the customization attribute (with an importance value of 20.529%). The last attribute that is considered least important is the seat cushion attribute (with an importance value of 4.795%). This is in accordance to reality that the wooden chair furniture is generally judged and preferred from its overall color and shape design. The shape of a furniture tells a more inherent idea of the furniture's structure, materials, function, social use, and technical considerations [2]. Furniture color is a really important aspect when it comes to interior design [8], showing the ability of the furniture to blend in with its environment. The ability to customize also becomes a factor for certain customers who chooses efficiency over specific details, which ultimately gives the customer much more involved in the production process [9]. Unfortunately, the seat cushion attribute falls as the least important attribute. Even when on average, we sit around 9.3 hours per day [10], and the availability of seat cushion affects support contact and improve pressure distribution and relief [11].

From the results of the analysis, the combination of stimuli that is most preferred by the respondent is a wooden chair furniture with curvilinear form, without a seat cushion, able to customize, with a solid color finish (utility value -0.491).

Typically, creating a wooden chair with curvilinearity in its design takes far more craftsmanship than a regular rectilinear design, which translates to a better wooden chair quality that customer can appreciate. This also supports the initial theory that curvilinear design promotes happiness, calmness, and relaxation [12], while rectilinear and angular forms will be perceived by both men and women with masculine qualities [20]. Curved lines in design send the unspoken message "comfort," while straight lines signal efficiency. Meaning that seats featuring curvy lines are good options for family rooms or other places where you want people to relax and refresh [13].

The ability to customize chair furniture is a feature that is imperative to the real business situation, since all of Skema Furniture clients mostly desire furniture that are customized based on desire or existing space, which will lead to a higher income [9]. Solid color finish is also a resemblance to the current business situation, since a lot of clients want their wooden chair to appear in one solid color. Although natural wood color which is shades of brown tones is mostly preferred, the wood finish seems to always cover the natural grains of the wood.

Most customer also prefers wooden chair furniture without a seat cushion, although the attribute itself has the lowest importance value with 4.795%. This is actually different from the initial theory, which stated that sitting habitually for a long time in a cushion-less chair will damage muscle tissue in the long run [14]. Although wooden chair furniture is not commonly used for office chairs. Seat cushions can also be bought separately and added to the wooden chair to help alleviate the muscular problem [15].

Prediction is a process of estimating systematically about something that is most likely to occur in the future based on the past and present information that is owned. The amount of deviation forecasting results can be caused by the magnitude of unexpected factors (outliers) where there is no forecasting method that is able to produce accurate forecasting, or it can also be caused by forecasting methods used that are indeed not appropriate [16]. The results showed a very precise description of preferences with actual theories and conditions in terms of form, seat cushion, customization and wood finish. The conjoint analysis does match with the overall analysis for every attributes. In conclusion, four out of four attributes are predicted very precisely, then the accuracy of the overall predictions in this study can be concluded as fairly accurate.

5. Conclusion

Based on the result of this research, here are some conclusions found:

1. The combination of attributes that are the consumer's preference in the purchasing decision for wooden chair furniture products, namely furniture chairs that have curvilinear shape, without seat cushions, able to be customized and with solid color finish.
2. The wooden chair furniture product attributes that are considered important for consumers are the wood finish attribute and the form attribute.

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