



9th INDES 2020
LIMITLESS MIND:
EMPOWERING INNOVATION THROUGH VISUALIZATION



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The 9th International Innovation, Invention
& Design Competition
INDES2020

17th May – 10th October 2020

HYBRID COFFEE TABLETOP FROM OFF-CUT TREE BRANCHES AND EPOXY RESIN

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ABSTRACT

A coffee table basically contains two main components namely top and legs. Tabletop is a small or portable enough to be placed or used on a table. A coffee table is suitable to be positioned in front of a sofa for holding the bowls, magazines and others. Nowadays, furniture manufacturers were used the new raw materials to create a coffee table for increase durability, strength, cost effective as well as attractive design. In this study, the hybrid coffee tabletop has been produced by using combination of wood disc from tree branches and epoxy resin as the main raw materials. The methods of this study include product design, manufacturing process and data collection of the product by distributing a set of questionnaires through the Google form application to 150 respondents. The results indicated that most of the respondents agreed for suitability of raw material, design, price and commercialization. Overall descriptive analysis reveals the design factor obtained highest score mean was 4.34. The correlation analysis reveals the positive correlation value for all factors. Therefore, the hybrid concept from off-cut tree branches and epoxy resin were to reduce the waste from logging activities and to reinforce the strength and durability of the tabletop construction.

Keywords: coffee tabletop, off-cut tree, epoxy resin

1. INTRODUCTION

The coffee table is a significant and essential item to have in every living room. It helps to create a flow of circulation through the furniture of residential interiors [1]. Table design should be simple to use in all functions [2]. The design of modern concept also easy to understand by consumer perception [3]. Standard coffee tables are basically a piece of wood on top of four legs, but it has the potential to be so much more than that. According to Sandeva et. al [4], designer or product manager need to understand the nature of raw material which the wood may has unique mechanical properties such as shrinkage, swelling and warping. Therefore, combination of wood and other raw materials in producing a coffee table is necessary such as metal, glass, resin and concrete in order to improve its strength and durability. The important value of strength in design is to increase demand of product by improve product warranties, quality of material with minimal cost and the reliable product [5]. Metal is able to be a raw material for table legs that have enough strength to support tabletop because its high strength, elastic, easy to handle and permanence. Meanwhile, epoxy resin is an adhesive that can be further reacted to form thermoset polymers possessing a high degree of chemical, solvent resistant, low order of shrinkage on cure and good electrical properties [6]. Epoxy resin can be cure at room or accelerated temperature or through photo initiators or ultraviolet light. Therefore, designer must come out with new era, more modern, exclusive furniture and eco-friendly.

The objectives this study was to construct a coffee table using combination of wood discs from off-cut tree branches, epoxy resin and metal, and then further to get the respondent's feedback regarding on knowledge, material, design, marketing and satisfaction factors.

2. MATERIAL AND METHOD

The methods to produce a hybrid coffee tabletop from three branch discs and epoxy resin include the design process and the manufacturing process. The product design process accordance to Rabid Office Monkey for Business [7]. Basically, the size of coffee table is around 16 inches to 24 inches high and this size mostly enough for drink placement [8]. The tree branches were obtained from off-cut tree branches at Forest Reserved Education UiTM Pahang Branch and the coffee table was produced at Wood Industry Workshop UiTM Pahang Branch. A set of questionnaires was distributed to 150 correspondents. Likert scale is used in survey forms [9]. Data analysis was performed using Statistical Package for Social Science (SPSS). Figure 1 shows the process of hybrid coffee tabletop from off-cut tree branches and epoxy resin.



Figure 1. The Process of Making Hybrid Coffee Tabletop

3. RESULTS

Table 1 indicates the demographic analysis of this study. The respondents were female ($n = 103$, 68.7%) and male ($n = 47$, 31.3%). Figure 2 shows overall descriptive analysis. The result revealed the design factor obtained the highest score mean was 4.34. Table 2 shows the correlation analysis. The result indicated that satisfaction has positive correlation to all factors.

Table 1. Demographic Analysis

Demographic	Factor	Frequency	Percentage (%)
Gender	Male	47	31.3
	Female	103	68.7
Age	20 – 30	118	78.7
	31 - 40	15	10.0
	41 and above	17	11.3
Profession	Staff	45	30.0
	Student	105	70.0
Income	< RM 1000	102	68.0
	RM 1001 - RM 3000	23	15.3
	RM 3001 - RM 5000	18	12.0
	RM 5000 and above	7	4.7

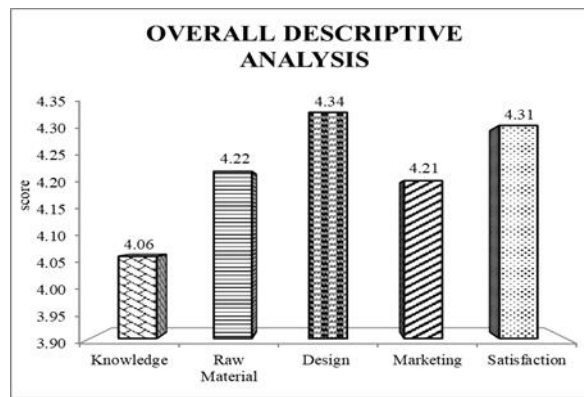


Figure 2. Descriptive Analysis

Table 2. Correlation Analysis

Relationship	Correlation (r)
Satisfaction and Knowledge	0.532**
Satisfaction and Raw material	0.554**
Satisfaction and Design	0.601**
Satisfaction and Marketing	0.697**

** Correlation is significant at the 0.01 level (2-tailed)

4. CONCLUSION AND RECOMMENDATIONS

In conclusion, the construction of hybrid coffee tabletop was successfully produced with combination of off-cut tree branches and epoxy resin as well as the metal legs. Generally, the feedback from the respondents given good mean score above 4.0 for all factors. It was recommended that to avoid bubbles occurred, the off-cut tree branches discs should be dried at least below 10% moisture content with low temperature of 60 °C to and the mixed of epoxy resin and hardener should be stirred in slow motion for 3 to 5 minutes. Lastly, some of respondents suggested to add some pigment into epoxy resin to increase the aesthetic and exclusive values.

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Kelulusan daripada pihak YBhg. Profesor dalam perkara ini amat dihargai.

Sekian, terima kasih.

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