USER ACCEPTANCE: THE USABILITY OF EMPTY FRUIT BUNCHES FOR TEXTILE CRAFT PRODUCT

Siti Rohaya Yahaya 1*, Sabzali Musa Kahn 2, Maithreyi Subramaniam 2, Rusmawati Ghazali 3 and Zamrudin Abdullah 3
1 School of The Arts, Universiti Sains Malaysia
2 Akademi Pengajian Melayu, Universiti Malaya, Malaysia
3 Faculty of Art and Design, Universiti Teknologi Mara, Malaysia
* Corresponding author: ysrohaya@gmail.com

ABSTRACT

This study refers to the user acceptance towards the use of natural fibre from Empty Fruit Bunches (EFB). This study aims to measure the level of user acceptance in order to develop textile craft products. Malaysia has been endowed with rich forest, riverine and coastal vegetation, all of which provide abundant supplies of material for crafts made of grass and plant fibres. Many objects are made from a combination of fibres, from jungle creepers, reeds and other vegetable fibers. However, the study on the user acceptance towards natural material particularly EFB fibre is still below par of the craft development. The user sensitivity toward usability and functionality of EFB need to be study thoroughly. For specific research formation, additional advancements are organized in capturing the acceptance outcome from respective respondent commitment. This initiative is geared to meet the needs of design innovations of textile craft products and in respecting the natural resources that available in Malaysia. The result, implication and development of textile craft products in this research may significantly benefit various stakeholders, especially crafters, designers, art and design students, and art and craft industries in Malaysia.

Keywords: oil palm, fiber, natural, material, usability, innovation, art and design.
INTRODUCTION

The use of fibers from natural plants in the manufacturing products such as yarn, fabric, mats, baskets, bags, shoes and some local craft products often receive encouraging demand both from local and international consumers. Lately, some of the issues and constraints pertaining to natural resources acquisition has a lot of complains by craftsmen and craft designers. Materials from natural plants like bamboo, rattan, screwpine leaves and ‘ribu-ribu’ are mostly found in the Malaysian forests. Nevertheless, these forests are mostly gazetted as government-owned reserves, which, limits the use and consumption of natural materials for arbitrary use (Patricia., et al 1994, ). In addition, the extinction of screwpine trees also one of the factors that cause the production of mats, ‘tudung saji’ and other products are decreasing (Patricia., et. al 1994, Muhamad., et.al 1994, Noor Hafiza, 2013). The screwpine trees are difficult to find because of weather and increasingly explored soil condition are factors have reduced the habitat of the trees (Patricia., et. al 1994, Noor Hafiza, 2013). These factors create difficulties for craftsmen who are entirely dependent on natural resources in producing the handicraft products. Also, the demand for handicrafts from natural or eco-friendly and sustainable products are rising. The increased development for biocomposites from natural resources used for producing products such as composite boards, furniture, pulp and paper shows that this alternative material is increasingly widely accepted worldwide (Handfield, et al 1997). The use of sustainable and environment friendly materials in manufacturing products can serve as one of the strategies towards the growth of green products that meet the needs of the global market. Therefore, studies on consumer acceptance need to be carried out to ensure the use of materials from natural resources are accepted. In fact, this study also can help to reduce the dependence of craftsmen and designers towards natural resources alone. The use of empty fruit bunches from oil palm is found to be an alternative material from wasted natural resources to be sustainable and environmentally friendly products.

THEORETICAL FRAMEWORK USED IN THIS STUDY

The theory, Meanings of Materials developed by Karana (2010) aims to show the various aspects that have been considered by designers in user interaction with the material. Other than that, it is also seeking to create certain meanings through the material. The researcher explains that the meaning in material is based on interactions between users with materials and products. Material are a key factor in product design, not only for improving use and function, but also for contributing to the meanings that people attribute to products.

In meanings of materials, types of material and sensorial properties can affect the overall impression of the product. This includes the aesthetic response from user on how they perceived the meaning of the material and products. The sensorial properties may lead user to evaluate the appearance, shape, texture, balance in selecting the material and
product. Therefore, material and sensorial aspects are the important elements in making aesthetic valuation products.

EMPTY FRUIT BUNCH FIBER AS AN ALTERNATIVE MEDIUM IN PRODUCT CREATION

The focus of the study is to measure the level of user acceptance of the use of Empty fruit bunches as an alternative material in the manufacturing of textile craft products. Some of the literature studies have found there are potentials for fibers used widely in various fields, including its tree trunks by Forest Research Institute Malaysia (FRIM)’s research team. Bernama (2005) reports, a research conducted by the FRIM research team has succeeded in producing innovative products like layered veneer wood for furnishings and wall panels. Oil palm tree trunks are very solid and suitable for furniture manufacturing. Rushdan Ibrahim, a researcher from FRIM also shared his knowledge, experience and success of his new innovation, paper-making from palm oil bunches (Reuters, 2003). Many private companies in Malaysia also adopted biomass to process biocomposites. Most of these companies are involved in manufacturing pulp, papers, panel boards, mattresses and tire components. Among these companies are Stable Win Sdn. Bhd. based in Segamat, Johor. This company has been in a joint venture with the Hangzhou Institute of Electrical and Electronic Projects and Research Institute (HPRIEMLI), China for pulp and paper production projects from oil palm waste (Reuters, 2003). Such joint ventures can directly strengthen trade relations between countries, while highlighting the concept of sustainability by using natural resources.

The potential of this fiber is also noted in the Journal of Oil Palm Research entitled Thermal Properties Of Oil Palm Fiber, Cellulose and Its Derivatives. Rosnah et al (2006) found that palm kernel fiber is rough, flexible and fibrous, has a thick and long texture that is inconsistent. It has a good sustainability and can be processed as one of the material for textile products (Rosnah, M.S.et.al., 2006; Siti Rohaya, 2012). The improvement in the development of biocomposite innovation in various industries, especially in the furniture industry has led to the need for a comprehensive study, mainly a users’ point of view. Application of this material in the arts and crafts industry should also be explored to ensure it is accepted by the consumers. Therefore, this study was built to meet the demand for sustainable eco-friendly products with an emphasis on users’ acceptance studies on the use of empty fruit bunches in textile craft products. User acceptance should be taken into account in order to increase the economic value of the local craft market using materials from this oil palm fiber. User acceptance plays an important role in the development and success of a product. Laros and Steenkamp, 2005; McDonagh, et al, 2002 established the success of a product depends on the response of users towards the product. In fact, effective product development lies in product creation that seeks to benefit customers and to meet their needs (Pujari, 2010). Through the use of such materials, the properties of the local craft products can be preserved and maintained. The characteristics of craft traditions made from plant, culture or beliefs and eco-friendly products can showcase the aesthetic value of the materials and products produced.
RESEARCH METHODOLOGY

In this study, a survey through questionnaire was conducted to obtain the views and acceptance of the users on EFB craft products. The acceptance of this user refers to the measurement of the acceptance level of the user in terms of aesthetic point that can be applied in the manufacturing of EFB craft products. Why is it necessary to see this aesthetic acceptance? Aesthetic acceptance is greatly appreciated to improve the design of textile crafts products design. Desmet (2008) suggests that to ensure the success of a product, product design must be acceptable, fun and provide satisfaction to users. Hence, this design emphasizes aesthetic value involving formalistic features in art. Before conducting this study, firstly, a material preparation process involving the fiber extraction process involving cleaning and selection was carried out. (See Diagram 1.1 Fiber Extraction Process). The purpose of this process is to facilitate the process of making EFB craft products. Once the fiber is selected, it is then twisted into strings. Later, the strings are woven according to the desired product design.

Diagram 1.1 Fiber Extraction Process

The bunch was cut into two

The cut FEFB were washed

Fibrous EFB Fibres

The selected spikelets were pounded to obtain the fibres
The textile craft product that were produced were then exhibited during the National Innovation Competition Through Exhibition (iCompex 2017) held at Polytechnic Sultan Abdul Halim Shah, Jitra, Kedah. During the exhibition, survey forms were distributed to all the respondents. A total of 150 respondents from various universities were participated in this research. The questionnaires were aimed at gaining an aesthetic view and acceptance of appearance of the EFB craft products in accordance with the formalistic features of visual art.

![Figure 1.1 A bundle of EFB yarn](image1.jpg)

![Figure 1.2 EFB Craft Product](image2.jpg)

This aesthetic acceptance is based on how the product appearance can affect the aesthetic response of the respondents. This aesthetic response is a valuation of the artwork or product, produced evaluated by the respondents. In this valuation, a combination of thoughts and emotions in a form of experiencing and interpreting the structure of work or products in terms of semantic patterns, textures and etc. (Berlyne,
The formalistic aspect involves integration of textures, shapes, colors and a combination of woven techniques, are used as an indicator for valuation of aesthetic acceptance by respondents towards the EFB craft products. The appearance of the product is not only aimed at giving a sense of beauty, but also includes valuation of its function, social and economic aspects. These eight items are used as an indicator or guidelines for acceptance or rejection of respondents towards EFB craft materials and products, in addition to create a better handicrafts.

**FINDINGS AND DISCUSSION**

Overall, the results of descriptive analysis use frequency and percentages for the acceptance of the aesthetic value of loose EFB fiber and EFB craft products are at a high level. The percentage is shown in table 1.1 below with almost all items in aesthetic acceptance scored a high responds from the respondents. This indicated that the respondents are positive and optimistic because they accept EFB craft products. Based on the eight items, only 2.5% of respondents not agree meanwhile 97.5% of the respondents agree. The respondents respond towards each item according to the aesthetic elements are reported below:

<table>
<thead>
<tr>
<th>Aesthetic Elements</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Texture</td>
<td>4%</td>
</tr>
<tr>
<td>• Styling design</td>
<td>2%</td>
</tr>
<tr>
<td>• Technique integration</td>
<td>1.3%</td>
</tr>
<tr>
<td>• Combined material</td>
<td>3.3%</td>
</tr>
<tr>
<td>• Combination of tradition and contemporary</td>
<td>2.7%</td>
</tr>
<tr>
<td>• Form and shape</td>
<td>3.3%</td>
</tr>
<tr>
<td>• Colour</td>
<td>0%</td>
</tr>
<tr>
<td>• Neatness</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>2.5%</strong></td>
</tr>
</tbody>
</table>

The first item of aesthetic acceptance is evaluated from the angel of fiber’s texture. Based on the findings, a total of 144 respondents agreed with the uneven structure of EFB fiber. EFB fiber used in this study has been fabricated using two techniques, namely weaving and ordinary woven. The weaving and ordinary woven results have highlighted the uneven strain effect with surface structure being high and low on the external design of EFB craft products. This effect can be seen and felt through sense of touch and respondents’ views. The second item refers to minimal product design styling elements. The results of the analysis found that about 2% of the respondents disagree, while 98% of them supported the EFB fiber requirements to be designed with minimal design. In this item, the design of a product affects the acceptance of users where the experience of the
form and function of the product becomes a form of understanding of the user’s emotions (Yue Zhang & Yuan Ren, 2015).

Furthermore, the acceptances of aesthetic values are measured through two items, namely the integration of techniques in weaving and combination of different fiber materials. The findings show that only 4.6% of the respondents disagree with both aspects and the rest agreed on the integration of weaving techniques and combinations of materials. These two aspects can indirectly highlight the uniqueness and ability of fiber as a sustainable material for handicrafts. In fact, the combination of materials not only enhances creativity, but also creates unity and diversity of materials in the production of more innovative oil palm craft products.

![Graph 1.1 Acceptance of Aesthetic Values](image)

Besides looking at the combination of materials. This study also incorporates a combination of traditional and contemporary designs in manufacturing and production of handicrafts. The purpose of this fifth item is to highlight and showcase the identity and aesthetic values of Malay handicrafts. In view of the modernization of the country, the arts and culture of a society should be taken into account so that the aesthetic value of a nation will continue to be appreciated and studied by other nations and the younger generation. Hence, in this analysis, the findings from the data showed that respondents not at all agreed with the integration of traditional and contemporary design. This is because only 126 respondents agreed, while 24 respondents disagreed. (See graph 1.1 ). The integration of traditional and modern designs has advantages and disadvantages,
especially from the perspective of international markets. But what can be seen in this study is a combination of tradition and contemporary need to have a balance in terms of suitability of design and consumer demand. The design of a product is a reflection of nation and society. Hence, innovation of traditional and contemporary design applications need to be in line with market needs by not affecting the aesthetics of art and local craft designs.

The sixth item that emphasizes diversity of forms and shapes looks at the need to assess the acceptance of the respondents towards the products. The results of the analysis show that over 145 respondents accepted well and optimistic about the need to produce palm craft products with various designs. The diversity of oil palm craft product designs through the use of new ideas that are more contemporary, but emphasizing on traditional values is a good step for traditional product designs continued to be appreciated while fullfilling the current requirements and demands.

Colour is an element of design that plays an important role in terms of visual and psychological aspects. Therefore, selection of colours can meet users demand is one of the element of measurement in this study. The findings showed a total 150 respondents, agreed the selection of contemporary colours should be in line with demand for trendy colours (block colours, monocromatic colors so on) in order to give the user a sense of beauty. The use of contemporary colours can add value to the palm craft products. In fact, the presence of colours in a product becomes one of the factors in product interaction with the users. This explained by Karana (2016), colour is an element of aesthetics that plays a role in interacting between materials and products with users. Akin to Karana, Rui Gong (2012) emphasized the two important features of colour and emotion in product design determines users’ preferences. From the views of these two researchers, good selection of colours creates a sense of aesthetics for users to make decisions of a product selection.

Finally, neatness is the most important aspect to meet the user’s satisfaction. The findings showed that the 150 respondents, indicated neatness is needed in the manufacturing of a product. The integration of design and technical aspects that are good, provision of functionality and consideration of user needs should be taken into consideration in order for the product is accepted fully by users. Mike Asby and Kara Johnson (2003) explained, users are not only looking at the function of a product, but also more holistic by looking at the usability of the product depend on the visual properties and the touch of the material in delivering information.

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CONCLUSION

This paper aims to analyze the descriptive statistics of user acceptance towards EFB craft products. The findings of this study, provides some implication, especially using sustainable materials in creating oil palm craft products. The use of EFB as a new ingredient in the manufacture of craft products can reduce the dependence of craft makers with other natural plants. Other than than, aesthetic reactions element is the main thrust measurement of user acceptance towards the craft products also requires other aspects that involve the usability and functionality of the product. This is because the EFB craft product’s function is not solely for home decoration but can be used in daily activity. In conclusion, a study involving aesthetic acceptance through wasted materials from EFB fibers shows that this fiber can provide added value to existing craft products. The use of this fiber is not only focused on the biocomposite industry but, it is also widely used in the craft and textile industries. This study proves that remnants of oil palm plantations and mills can be recycled as new materials in producing useful and attractive weaving fabrics and crafts. Aesthetic elements that emphasize the design, color and diversity of techniques and materials are able to highlight competitive EFB craft products to meet users demand.

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