CONVERTURE; SPACE-SAVING FURNITURE DESIGN WITH CONVERSION CONCEPT THROUGH KNOCK-DOWN SYSTEM

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Abstract

Nowadays, more residential buildings are built with small interior spaces, but the average size of the furniture remains constant; large enough. This can trigger such problems like limited area of a space, so it could restrict some activities of users of that space. The purpose of this research is to create a furniture with the concept of convertible furniture to overcome these problems. This study also focuses on business opportunities that apply convertible furniture sales with the unique concept of using used or recycled materials. The method used in this research is a qualitative research method and a descriptive method accompanied by the distribution of questionnaires to collect empirical data as part of the qualitative research method. The results of the study concluded that furniture with 'convertible furniture' concept through knock-down technique may solve the problem of limited space, and has the potential to grow a 'convertible furniture' business with some portion of the materials containing recycled material(s).

Keywords: Convertible Furniture, Knock-down Technique, Space-saving Furniture.

Introduction

Household furniture is an important part in completing parts of every houses. Furniture can be considered as a long-term investment in a residential lot. This can be seen from its long-lasting function and usage. In general, furniture serves as a thing that supports an activity, a 'place' to store or put some things and so on. Examples of furniture that are often found everyday are tables, chairs, and cabinets. The furniture itself is available in various sizes, shapes, and materials that can be chosen easily, such as made of wood(s), iron, glass, and many more. The size of the furniture if calculated average is quite large so that the area usage in the room for furniture sometimes becomes excessive and not optimal according to the function of the space. This problem will also trigger the increasing of production costs as the material(s) volumes per unit are also increased, making the product price slowly getting expensive. Therefore, comes up the term "convertible furniture". In general, convertible furniture can be interpreted as furniture, especially household furniture, designed to change from one form to another (Zhou & Chen, 2018) so that it can support many activities and minimize the use of a small or limited area (Natalia et al., 2021).

Literature Review

At the beginning of the development of furniture in supporting some activities, furniture can only support one activity, such as chairs as the seat, tables as a place to put goods with light-medium weight above it, and various cupboards as a place to store goods. These things make some rooms in apartments, houses, or any residential

places full only because there is too much furniture that supports only one particular activity (Pintono et al., 2018) so that the room's remaining space will be so little and may cause inefficiency of using area of the room(s).

Contemporary homes which are labeled *tipe 36*, which means that the real (usable) area of the house is 36 m2, are also something that needs to be considered when planning the placement of rooms and furniture(s). This also applies to apartments with any type of room, one example is the bedroom. Ivan (2018, in Salsabila et al., 2021) states that almost 80% of daily activities are performed in the bedroom other than sleeping, namely studying, exercising, working from home and so on. From those data mentioned, it is necessary to plan as efficiently as possible in order to not to disrupt the activities and comfort of room users.

Research Methods

The explanation of this introduction leads to the purpose of this research. The purpose and benefit of this research are to overcome problems related to the inefficient use of space (area of certain rooms) by creating a product of multifunctional furniture with the concept of convertible furniture which can be abbreviated as "*CONVERTURE*" in this study. This research uses a qualitative and descriptive research methods. The qualitative research method mentioned is the collection of research data by conducting interviews in the visual text form (Rachmawati, 2017) by filling out *Google Forms*, while the descriptive method is a method that explains a situation without the need to test the hypothesis for real (Nazir, 1988). The product design of the research is simulated through the digital application *SketchUp* to provide an overview of the design. *SketchUp* is an application software used to create 3D models as visual samples. This application has no user limitations, so it can be used by almost everyone, especially architects, city planners, interior designers, and certain types of engineers to help them visualize their ideas (Schreyer, 2015). Furthermore, the empirical data obtained from filling out *Google Forms* will be used as an evaluation or consideration in research discussions, especially in the business-type SWOT analysis section.

Results and Discussion

Consideration in making furniture with market analysis is part of the proposal to be researched. Researchers intend to make an innovation of furniture product with the concept of convertible furniture to support activity implementations in small or limited rooms and as part of the activity of recycling waste to become a functional finished product. In addition to just being considered practical, the proposed furniture will also have an aesthetic value with recycled materials, as well as an affordable price if compared to other products.In the process of making a product, several parts will be explained at the product design section. The product described earlier is a modern chair-type piece of furniture that can be converted into a small table and floor chair. It is divided into 3 parts, namely 2 parts of chair leg, 'seat and backrest' board, and 2 parts of armrest. On the 'seat and backrest' part, there are folding hinges that can tilt or straighten the board so that the backrest can be parallel to the seat and form a flat plane.

Figure 1. Folding hinge
Source: *Google Images*

Chair legs can be installed as supporting legs for a small table. To complete the small table that is composed of a seat, backrest, and chair legs, a floor chair inspired by Japanese chairs was designed as shown below. Typically, Japanese chairs are divided into 2 parts, namely the backrest and the seat. The proposed furniture is formed from an armrest mounted on the back as a backrest and given a connection of iron bars beneath so that it can be connected to the armrest which will be displayed in the product design section.

Figure 2. Japanese-style chair
Source: *Google Images*

Before starting to create a 3D model in *SketchUp*, it is important to know the dimension of the chair furniture that are applied according to any universal standards or self-design standards that have ever been implemented in the market as a reference for measuring the furniture to be designed.
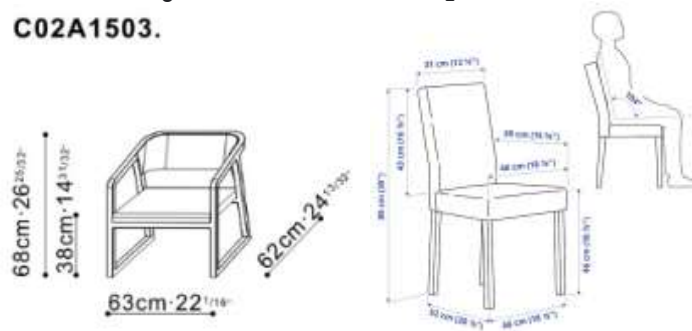

Figure 3 & 4. References found in the internet: *CameRich* on the left and IKEA on the right
Source: https://www.camerichmx.com/range/Sillas/Ming.html
https://www.ikea.com/nl/en/p/vangsta-kaettil-table-and-4-chairs-white-knisa-light-grey-s69428764/

From the explanation above, with the help of the digital application *SketchUp*, researchers were able to visualize the product design of *CONVERTURE* planned in this research. The product design can be seen in the pictures below:

Figure 5 & 6. *CONVERTURE* chair model converted into a small table and a floor chair
Source: Research documentation, 2022

Figure 7. Components of *CONVERTURE*
Source: Research documentation, 2022

Figure 8. Situated condition of *CONVERTURE*'s combined form when in use.
Source: Research documentation, 2022

Not only based on the product design, this research also pays attention to the market potential that is suitable for *CONVERTURE* or something like that; disassemble/reassemble furniture. This product marketing analysis begins with an analysis of the overall respondent of Google Forms filled out as an interview interaction in a form of visual text or questionnaire.

The result of the questionnaire via *Google Forms* shows 51 respondents from people throughout Indonesia. For a brief explanation of all respondents:

1. 38 out of 51 votes agreed that the problem of limited space can hinder the activities of each person and is certainly a very undesirable event.

Figure 9. A room with small space availability
Source: Real Estate Japan, 2020
https://resources.realestate.co.jp/rent/tokyo-area-apartments-offering-one-month-free-rent-for-july-2020-on-real-estate-japan/

2. 26 out of 51 votes want the price to still be kept 'fixed' (Rp.700.000 in this study) because it makes sense to market it. Some of the 26 votes suggested setting a price of Rp.699.000 as the implementation of a general product pricing strategy to attract more customers.

3. 25 out of 51 votes stated that the *CONVERTURE* should be made of waste / used wood and metal with as much as 31% - 45% of the total production of the product planned. For this context, since the article was being written in Indonesia, CONVERTURE can use the material such as coconut shells (for the seat part of the floor chair) because they are easy to find in Indonesia and can be used to make composite materials (Darianto et al., 2019).

Figure 10. A table made of coconut shell
Source: Tokopedia, -
https://www.tokopedia.com/jendela-ku/meja-batok-kelapa

4. For the concept of the marketing stage of this product, the majority of the 51 votes suggested that the product should be marketed through the social media, one of which is advertising it via *Instagram* in any form.

After knowing the conclusions from 51 respondents regarding the design concept and marketing strategy of *CONVERTURE*, the next step is to do a SWOT analysis based on the results of the interviews described in the following table:

Table 1. SWOT Analysis of *CONVERTURE*

Elements of Analysis	Analysis Results
Strength	• A multifunctional product. • Shape-changing furniture with some raw materials made from used materials can create a unique value or impression for the product. • Furniture with an affordable price. • Can solve the problem like limited space of a room, etc. • Can be disassembled and reassembled, as well as be stored and carried anywhere.
Weakness	• Because it is made dominantly from waste / used materials, there are few defect points that cannot be seen and have the potential to destroy the product.
Opportunity	• Not many manufacturers create multifunctional furniture with used materials as their product's ingredients, so it gets a unique impression with this concept.
Threat	• Furniture(s) from well-known brands is currently promoting and mass-producing 'multifunctional and minimalist concept' furniture accompanied by the lower prices than this product project.

Source: Research documentation, 2022

Conclusions

Convertible furniture or *CONVERTURE* in this study can overcome the limited space problem. This can be seen from its digital simulation design which visually can be disassembled and converted into one. With this disassembly technique, the furniture can be carried and stored anywhere without having to "eat up" the area of the room that is going to be used for the long term.

Because it is a study that does not test hypotheses in a real place, there are suggestions from this study for future research. Suggestions in this research include:

1. Try the concept of this type of product to find out the efficiency of space-saving,
2. Test multifunctional products with the concept of material portions which are partially made of waste / unused materials, to determine the effectiveness of the product, especially in terms of strength.
3. Improving this research so that it can complement the detected deficiencies.

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