

# Multifunctional Storage with Table and Chair

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## Abstract

Nowadays, people seek for furniture that has many functions. Function, design, space, price and material used are important features that need to be considered by customers. Lack of space is the limitation for people who are living in small houses; hence, there is a need for multifunctional furniture. This study is conducted to overcome those problems by designing multifunctional storage with table and chair. The main concept is designing not only multipurpose furniture, but also can be sold in an economical price. In this study, the storage can be switched to a coffee table and chair. Furthermore, modern and contemporary design was applied. Blockboard was used as the main material, as they have excellent properties, cheap and good appearance. A set of questionnaires were distributed to hundreds of respondent which consists of students and UiTM staff and outsiders. Then the data was analysed by using SPSS to acquire the result. Results show that the correspondent gives a positive feedback regarding on the material used, multifunction and suitable for limited space. Overall, this multifunctional storage with table and chair is suitable to commercialize in market.

Keywords: multifunctional, table, chair

## 1. INTRODUCTION

Furniture is the product that people use in daily live. Nowadays, people all over the world need furniture. Furniture can be describe as movable object that are assemble or built in order to support human activities like when we are sleeping, seating, eating and many. Every day we are using furniture to be more comfortable in doing work or resting. It is also an essential element that makes a space functional. Without it people cannot work, customers cannot be served, and the equipment and tools of the business cannot be housed. There are many types of furniture such as chairs, tables, drawers and many (Winkler, 2003). Design could be viewed as an activity that translates an idea into a blueprint for something useful, whether it's a car, a building, a graphic, a service or a process. The important part is the translation of the idea, though design's ability to spark the idea in the first place shouldn't be overlooked. Scientists can invent technologies, manufacturers can make products, engineers can make them function and marketers can sell them, but only designers can combine insight into all these things and turn a concept into something that's desirable, viable, commercially successful and adds value to people's lives. Good design begins with the needs of the user (Khan, 2007).

### 1.1 Problem statement

Nowadays, people are realizing about the problem regarding on lack of space. Mostly furniture is built not for multifunction use. So people are seeking of the ideas on

how to build or create furniture that can use for multifunction purpose. People who lived in the small house need furniture that is multifunction. For example futon sofa that is suitable for multifunction purpose. According to Kayne (2014), a futon serves as furniture during the day and can convert to a sleeping space at night. It can take the form of a bed, couch, or chair that provides a comfortable and sturdy space for sitting or sleeping.

## 2. METHODOLOGY

### 2.1 Materials and Preparation

The material that is use in the production is block board. It is suitable for making multifunctional furniture because of their characteristic. It has no grain it can be cut, drilled, machined and filed without damaging the surface.

### 2.2 Manufacturing Process

On manufacturing process include cutting block board into specific sizes. Before cutting process the material (block board) should be measure to get the desired size and then cutting into each component of a product. The machine that involve in the cutting process is Tilting Arbor Sliding Panel Saw. After getting each component screw is used to assemble the parts become furniture. Other than screw, edge bending also used to cover the end of the block board surface. Edge bending is glue together by using contact adhesives (CA).

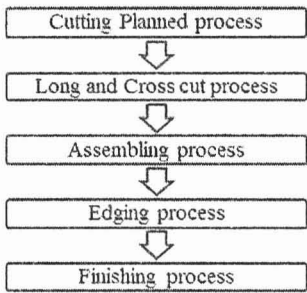


Figure 1: Manufacturing process

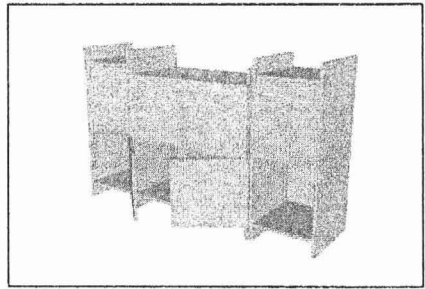


Figure 2: Finish product

### 2.2.1 Cutting Planned process

This lists every part in your project with its description, width, thickness and length. Be sure to include and practice pieces might need to use for setting up jigs, setting bit heights and the like. It is much easier to prepare these along with the actual parts than to try to duplicate them exactly later.

### 2.2.2 Long and Cross cut process

Cutting methodology of the material included long cut and cross cut. The both of these slice is to verify that the part that will be sliced meet the precision as indicated by their size and measurements. The need of this methodology is to guarantee all parts are fit as a fiddle. The machine that been used in this process is 'Tilting Arbor Sliding Panel saw'.

### 2.2.3 Assembling process

Assembling process is the process where all the parts of blockboard are joining together by using driller. Drilling is to produce the hole on the surface of blockboard to fill in the screw. The screw must be longer than the width of blockboard to make sure all parts are assembling properly.

### 2.2.4 Edging process

Edging or edge bending is the process to cover the edge of the blockboard to look more attractive and increase the durability. There are many types of edge banding which is PVC, ABS, acrylic, melamine, wood or wood veneer. In this process PVC was using as edge banding. The advantage of this edging it can protect from water vapour that can cause damage on the edge of blockboard other than valuable.

## 3. RESULTS AND DISCUSSIONS

The results were obtained from the questionnaire survey and then were analysed. Total correspondents were about 100 people consist of UiTM Pahang staff, students and others which is outsiders. Each question given was ranked from 1 to 5, as shown in Table 4.1.

Table 1: Ranking in Questionnaire

Number of rank	Rank
1	Poor
2	Moderate
3	Good
4	Very Good
5	Excellent

### 3.1 Statistical analysis of a multifunctional storage with table and chair

A multifunctional storage with table and chair was evaluated based on various characteristics by UiTM Pahang staff, students and others. The correspondent comes from the different type of gender, age and profession. Questionnaires that were distributed to the correspondent focusing on material used, concept, design, space, multipurpose, commercialize and price.

Table 2: Analysis variance

	DI	Material	Concept	Design	Space	Multipurpose	Commercialize	Price
GENDER	1	0.00**	0.17**	0.00**	0.00**	0.00**	0.00**	0.00**
AGE	1	0.11**	0.01**	0.11**	0.21**	0.07**	0.47**	0.84**
PROFESSION	1	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**

Note: no significant difference  
 (\*) Significant difference  
 (\*\*) Highly significant difference

Table 2 shows analysis variance (ANOVA) on the effects of gender, age and profession on the product rating (evaluation) which have been obtained from questionnaire survey. The results show that there is no significant

different regarding the material used, design, ergonomic, colour, function, portability, commercialization and the price of product. A simple storage chair is accepted by most of the correspondent based on its characteristic. It can be concluded that a simple storage chair is suitable for all range of gender, age and profession.

to all gender. A huge different shows in age group which is higher vote 4.8 which is 18 – 21 and the lowest vote is 3.9 which is 30 and above. It can conclude that again elderly not suitable for multifunctional product and may be they prefer product from solid wood that have only 1 function.

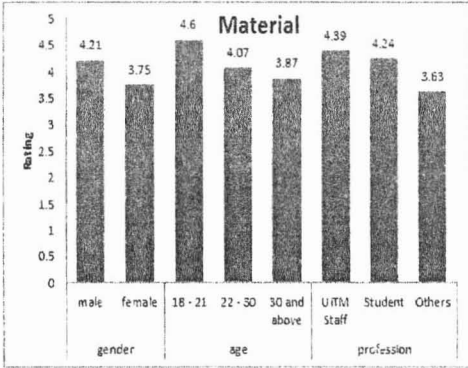


Figure 3: Material used is suitable (blockboard)

Figure 3 shows that the correspondents have decided the suitability of the material that is utilized as part of this item. Based on the graph above it shows that everybody can accept the material from blockboard. It might be because of lighter weight. Blockboard is lighter in weight but the strength is high compared to other wood composite like particleboard or medium density fibreboard. Mostly age 18 – 21 is voted higher than 22 – 29 and 30 and above. Perhaps elders prefer solid wood than wood composite material. Second higher shows that UiTM staff which is 4.39. There are many characteristic of blockboard which is students not familiar with it. Staffs maybe know or expose with the blockboard other than students and outsiders.

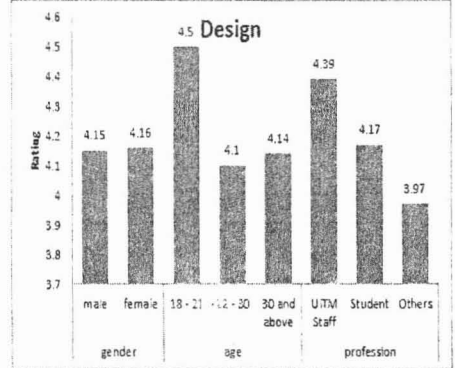


Figure 5: Design is simple and suitable for all users

Figure 5 show that correspondent has chosen design is simple and suitable for all users are different and not consistent. The higher voted for the design is 4.5 which is in group age 18 – 21, and lowest voted is 3.97 which is from group profession, others. Perhaps, others do not agree with the design simple and suitable for all users. Maybe outsiders are from different profession and not suitable for this simple design. The remains vote is not giving a huge different.

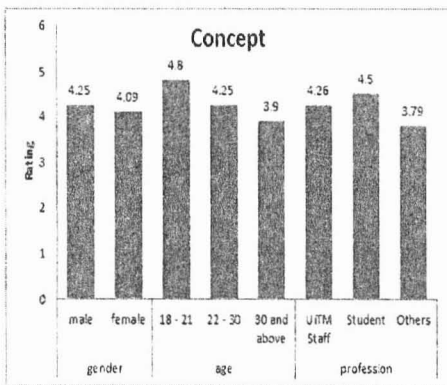


Figure 4: Foldable concept is the main concept

Figure 4 shows that the correspondent has determine the foldable concept is main image of this product. From bar chart above most of the correspondent are voted 4 for foldable concept. Male and female gender gives a minor different so it shows that the foldable concept can accept

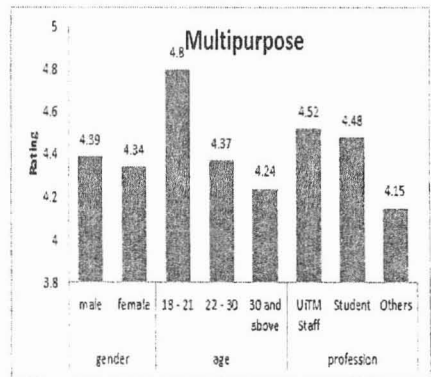


Figure 6: This product is adjustable and multipurpose

Figure 6 shows that correspondent are voted 4 is the highest rank for the product is adjustable and multipurpose. Age 18 – 21 gives a higher vote for multifunctional which is 4.8. Gender group which are male and female are not giving a huge different. For the profession group, others give a lowest rank which is 4.15. Others are comes from the different profession. May be they not expose or familiar with the multifunctional product. If they come from an executive person so they will not prefer multifunctional product.

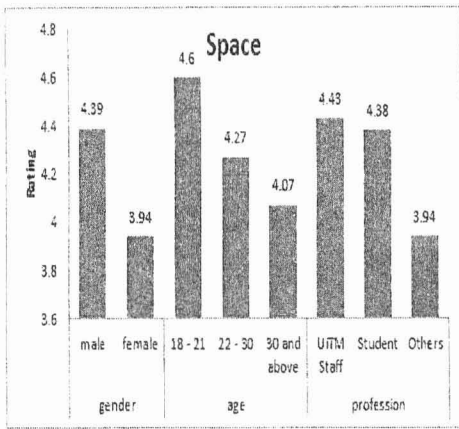


Figure 7: This product is totally save space

Figure 7 show that correspondent who chooses this product is totally save space is not consistent. Great different shows in gender group which is male and female. Male are voted higher than female which is 0.45 different. It can conclude that female do not agree that the product is totally save space may be because of the product is big and need a huge space to place it. Others give the same voted as female. Perhaps others are mostly comes from the female. The remains vote is not giving the huge different which 4 and above.

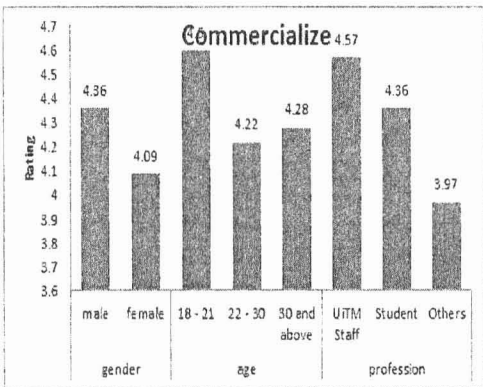


Figure 8: This product can be commercialize

Figure 8 show that correspondent is picking 4 as the rank for the product should be commercialize. The higher show on bar chart above is from age group which is 18 – 21 and from profession group which is UiTM staff. Both mean 4.6 and 4.57. The remains voted is completely same and consistent which is above 4. So the product is suitable for commercialize because people voted 4 which is very good rank. Perhaps this product or design is not well known and still new to the user but accepted.

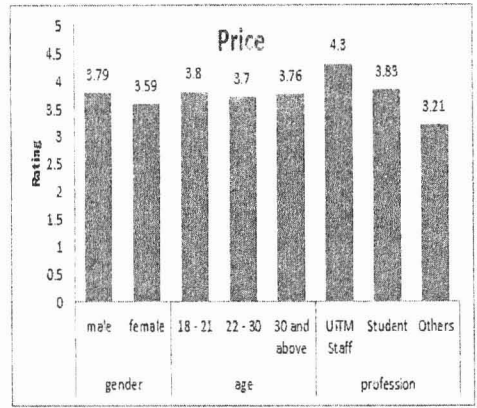


Figure 9: The price of the product

Figure 9 shows that the price of the product which is between rm300 – rm350 is accepted by the most correspondent. Most of them which are from group gender, age and profession are agreeing with the price. There is no huge different between all three groups. This is may be because of the material that they compare and also the function is acceptable with the price. But the higher vote is UiTM staff, they strongly agree with the price.

#### 4. CONCLUSIONS AND RECOMMENDATION

##### 4.1 Conclusion

The results show that the correspondent gives a positive feedback regarding on a multifunctional storage with table and chair. Mostly correspondent is agreeing with the multifunctional characteristic. It shows that the product is suitable for limited space. Other than its multifunctional characteristic, it is also can be folded into chair and table that are accepted from correspondent. So the foldable concept is suitable for all correspondents with different gender, age and profession. Overall, this multifunctional bookshelf with table and chair is suitable to commercialize in market.

##### 4.2 Recommendation

From the survey that has been conducted, there are varying recommendations from the correspondent about a multifunctional storage with table and chair. Firstly the paint should be applied on the product to look more attractive. The product is white in colour that is naturally from blockboard. So it should be painted or put fomica which is laminated layer to covered the surface other than look elegant. Next, the product should be tested before commercialize. Run furniture testing is important to see whether it is suitable to commercialize or its follow the standard of furniture.

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