

## **Multifunction Coffee Table Inspired by Hexagonal Honeycomb**

**Fatihah Abidin<sup>1</sup>, Juliana Abdul Halip<sup>1,\*</sup> & Mohd Hasni Chumiran<sup>1</sup>**

<sup>1</sup>Department of Production and Operations Management, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, 86400, MALAYSIA

\*Corresponding Author

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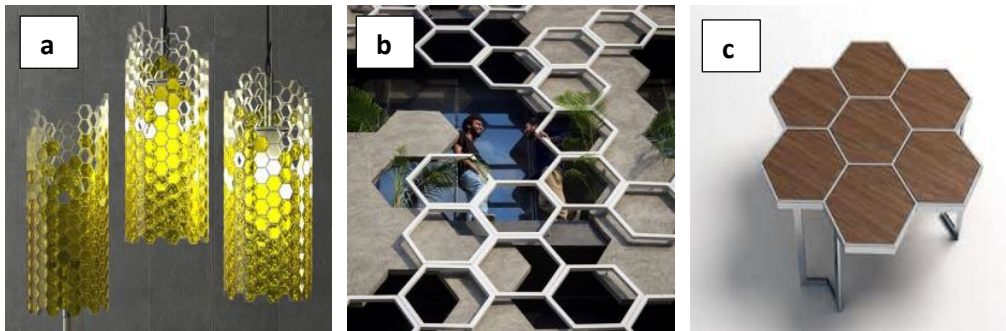
**Abstract:** This study is focused on a coffee table that is commonly found in the living room. The country is today dealing with an increase in population leading to the demand for multifunctional furniture, especially for those living in small residential areas. The objectives of this study are to identify the design criteria for a multifunctional coffee table inspired by honeycomb hexagons, to design a multifunction coffee table inspired by honeycomb hexagons and to develop a prototype of a multifunctional coffee table inspired by hexagonal honeycomb. The questionnaires were developed to identify the design criteria of a multi-functional coffee table inspired by honeycomb hexagons was distributed to a total of 100 respondents live at Seremban. The findings obtained from the questionnaire were used to design the sketches (thumbnails, ideation, idea development and final design). Before the prototype manufacturing, the final design was determined by a design survey, and converted into a mock-up and technical drawing. Findings from the questionnaire revealed that preferred design criteria of a coffee table are multifunction with three types of closed compartments, and three units of stool/seat with a combination material. A total of 39 thumbnails sketches were created after the data of design criteria analyzed, ideation and idea development created to produce prototypes and mock-ups of a multifunction coffee table for a living room set inspired by a honeycomb hexagon with a modern aesthetic design based on the thumbnail and ideation sketches delivered.

**Keywords:** Hexagon, Honeycomb, Multifunction, Coffee table

### **1. Introduction**

Honeycomb is the one of the most inspirational structural forms for the designers as it is the honeycomb system is regarded as the most regular, attractive, and affordable natural construction system. The hexagonal of the of the honeycomb has a wonderful regularity that is regarded as a greatest

design form in balancing (Khalil, 2021). The uniqueness of the honeycomb shows in its design of symmetry, limitless repetition, balance on the one hand, and the greatest levels of functionality and economy. The inspiration of the honeycomb's shapes is coming in two ways which is based on the accordance of honeycomb with identical, regular, and interconnected to with each other in flat shapes, (Figure 1(a)) designed by YarRassadin (Berrones, 2008). The other way is based on the different sizes of the hexagonal shape in the honeycomb.



**Figure 1: (a) Crystal Comp designed (Yankodesign.com, 2020), (b) Hexelace building (Pinterest.com, 2017), (c) Coffee table (Archiproducts.com, 2014)**

It aided in the spread of the parametric design simulation approach, which allowed the designer to venture outside the design coordinates in a balanced and graded manner which shows in Figure 1(b) the Hexelace building designed by Studio Ardet (Wang, 2017). Figure 1(c) shows the coffee table that was created by a Spanish design firm and is a small coffee table formed from a metal framework in the shape of beehives that is borne on metal legs and the hexagons are filled with hardwood components that take on the colour of real beehives as a simulation of the concept (Altinox, 2014). Due to the coffee table design, it inspired to do better design that refers to hexagonal honeycomb design coffee tables and make a coffee table that is convenient and suitable for small space areas. Living in a confined place is not a novel experience cause the enormous populations in big cities and people's shift from villages into cities, people have been living in small flats and apartments for many years, such as in China, Asia, and other regions of the world (Beardmore, 1971). According to the United Nations' 2014 industrialization report, the number of citizens in major cities would rise by 66 percent by 2025 (United Nations, 2014). The sense of space in a room may be influenced by furniture. When arranging furniture, several optical tricks can be used to make a place appear much larger than it actually is (Schneider & Till, 2005). Multifunctional furniture refers to pieces of furniture that can adapt to multiple applications by rearranging their spatial connections. Sometimes adjustment necessitates talent; such furniture may be extremely pricey because it adapts to several uses at the same time. There are several sorts of such flexible furnishings on the market; for example, Figure 1(c) displays multifunctional furniture that can function as a table, chair, bookcase, and closet all at the same time (Farjami, 2014).

Nowadays, due to population growth and limited resources, the nation is currently confronted with several critical issues. One of the issues is the design of an apartment's interior area has a significant impact on the residents' comfort (Nasser, 2013). This minimizes the environmental impact of humans (Gentili, 2017). Most societies are struggling with the growing population and urbanization, due to more desire for housing in the cities that lead to the appearance of small apartments (Urist & Beriot, 2013). Hence, to solve the problem statement, multifunctional furniture is one of the best solutions for the continuously growing population and the accompanying reduction in available living space. This overcomes a major issue, particularly in large cities, where a suitable living area may be achieved in a small house by merging two multifunction pieces of furniture. Xie (2016) mentioned that multifunctional furniture is space-saving furniture that can serve more than one function. Due to the design of the multifunction coffee table, the design of the furniture stability should be considered in the hexagonal shape which was inspired by the honeycomb. According to the Origami technology, it

proposed strong and lightweight hexagonal honeycomb cores (i.e. core angles 120) based on the design principle of origami technology. The angle 120 degree determined that could produce a stronger durability than the others based on the various core angles (60, 90, and 120) of hexagonal honeycomb (Adams & Maheri, 1993).

Thus, three research questions of the study are developed following to (1) What are the design criteria for a multifunctional coffee table inspired by honeycomb hexagons? (2) How to design a multifunction coffee table inspired by honeycomb hexagons? (3) How to develop a prototype of a multifunctional coffee table inspired by hexagonal honeycomb? For the research objectives, the study finds two statements are significantly projected some goal attribution such as (1) To identify the design criteria for a multifunctional coffee table inspired by honeycomb hexagons and (2) To design and develop a prototype of a multifunction coffee table inspired by honeycomb hexagons. The scope of the study is focused on a multifunctional coffee table inspired by the hexagonal shape of a honeycomb. The design of the coffee table is based on the element of the honeycomb shape and mainly for household use. Parents from the Seremban region are the target user and Seremban is the ideal place to live since it's close enough to Kuala Lumpur to easily commute into the huge city. The questionnaire is conducted with 100 respondents which range from under 21 years old to above 50 years old and stay at Seremban, Negeri Sembilan. The significance of this study was that it focused on people in Malaysia who have issues in their small living rooms and have problems with their coffee tables with single function. Zhang (2016) mentioned that the plan is to turn the area into a bedroom, a study room, and so on. In this manner, the greatest utilization of a minimum space may be obtained, and people will not feel burdened by the furniture around them. While, residences with multipurpose facilities may create the impression of being packed or even of having insufficient space (Kilman, 2016).

## 2. Literature Review

### 2.1 Malaysia Wooden Furniture Industry

The Malaysian furniture industry's growth particularly its wooden furniture sector, which accounts for about 83 percent of total output. It may be linked to a diverse collection of pull and push forces (Ratnasingam, 2015). Malaysia is a significant producer and exporter of sawn timber, panel goods (plywood, medium density fiberboard, and particleboard), flooring, doors, and other joinery products, and is one of the world's top exporters of tropical timber products. Malaysia is likewise regarded as a leading producer and exporter of furniture on the global market (Mohd Kheiruddin Mohd Rani, 2021). The crisis has revealed that small and medium-sized enterprises (SME) were impacted from all angles of the business, which must therefore be facilitated to increase their resilience, to cope with other future uncertainties. The Malaysian Timber Business Board (MTIB) will continue to enhance Bumiputera participation in the timber-based furniture industry, including the formation of a new subsidiary, CTCS Worldwide Sdn Bhd (CWSB). Mohd Kheiruddin Mohd Rani, director-general of MITB, stated that CWSB was in charge of seeking local and worldwide markets for Bumiputera timber-based furniture producers (Admin, 2019). The government was compelled to take increasingly harsh measures in order to manage the epidemic while preventing the collapse of the overburdened healthcare system. The government has imposed a limited lock-down in the form of a series of MCOs since March 18, 2020.

### 2.2 Multifunction Furniture Design

Furniture is designed to make people's lives easier and more comfortable (Astonkar & Kherde, 2015). For centuries, each piece of furniture was meant to serve just one purpose. Wardrobes and cupboards, for example, are designed for storage, while sofas and beds are designed for human relaxation, and tables and chairs are designed for meals. Many types of space-saving furniture goods, such as folding seats and tables, are now accessible. Multifunctional furniture is also known as space-saving furniture, transformable furniture, and multipurpose furniture; furniture that is meant to serve

several activities and functions at the same time. This type of furniture has been created and utilised for many years, but the relevance of these flexible furnishings has not been fully appreciated until now (Canepa, 2017).

### 2.3 Coffee Table

A coffee table is quite beneficial to us since it may be used by family members to chill while watching television. The sizes and styles of coffee tables differ significantly from those of other types of furniture and purposes, with coffee tables often being used in the living room. According to Edward *et al.* (2000), coffee tables also function as and are interchangeable with end tables, Smack tables, which may be situated in front of or to the side of a user. Small coffee tables (750mm × 750mm), big tables (1000mm x 500mm), and round coffee tables (750mm diameter) are the conventional sizes, but take in mind that the average size of a coffee table should not be more than two-thirds the length of your sofa (firstinarchitecture.co.uk, 2020).

### 2.4 Honeycomb

Due to its reduced density, rigidity, deformation-controlling, and high energy absorption qualities, the honeycomb structure, a classic type of cellular structure, has long been recognized as an outstanding light-weight structural material (Dongmei and Zhiwei, 2007). Honeycomb is a magical natural product from which it gets its name. Scientists discovered that the hexagonal structure, which resembles a bee's honeycomb, performs outstanding behaviour with the largest usable space, demonstrating a vast mechanical potential. Paper was used to create the first artificial honeycomb construction in China 2000 years ago. The production of conventional honeycomb items most likely began in the late 1930s (Wang, 2019). The tandem honeycombs always begin deforming from the weakest segment to the strongest one, unlike the single honeycomb block, which performs a steady deformation mode (Wang, Liu, Lu, & Hui, 2017). According to Elisabetta (2016), Karim Rashid emphasized the honeycomb design in the Milan Week 2016 as being connected with modularity and endless repetition. But, while being one of nature's most fundamental geometric forms, it also works in the digital world. The hexagonal design is also one of the most powerful, and it is extensively utilized in a variety of sectors, including aerospace, automotive, and furniture, as well as packaging and logistics. The literature review section describes all relevant literature related to the research and critically discussed. This section can be structured based on the stated objectives and focus of the study or any logical order as deemed appropriate.

## 3. Research Methodology

Research methodology is based on the process flow that is being made. It would make the manufacturing process of the coffee table successful. Figure 2 below shows the process flow of the research.

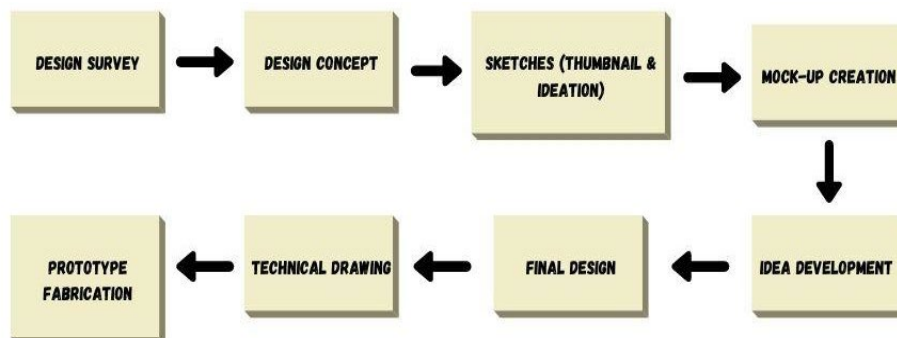


Figure 2: Research methodology flowchart

### 3.1 Development of Questionnaire

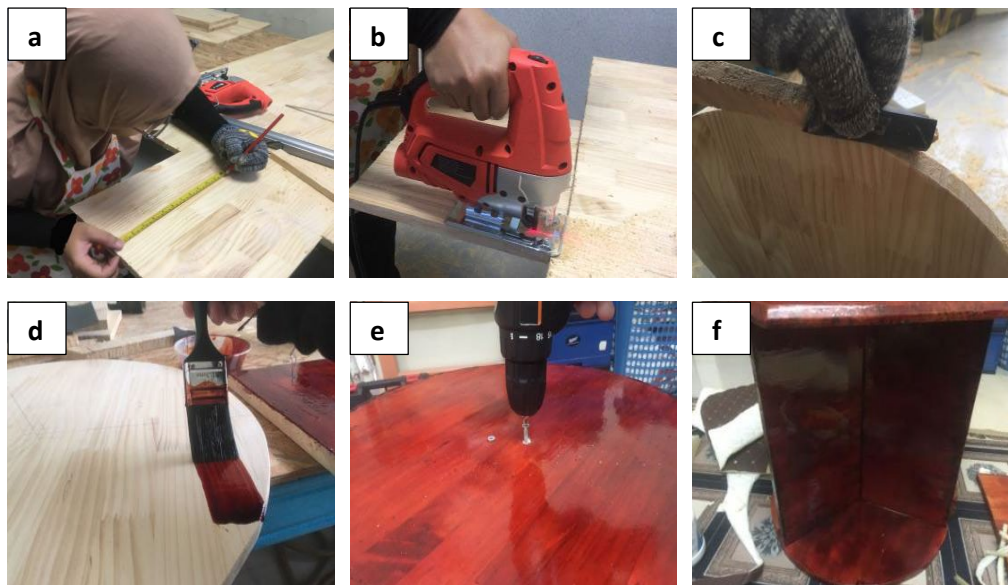
This study begins with the formation of a design survey based on the purpose of the multifunction coffee table inspired by hexagon honeycomb. The design survey was conducted using Google Form using a set of questionnaires with 100 responses. This questionnaire is divided into three sections: A (demographic information), B (opinion respondents), and C. (design criteria of the coffee table). Since the coffee table employed specifications that were appropriate for everyone, the questionnaire was distributed to everyone. The visual research approach was then utilised to improve the researcher's understanding in developing the coffee table. The most significant aspect of this visual investigation is to locate a coffee table design that meets the criteria that can be utilised by individuals of all ages.

### 3.2 Sketches

Based on the survey results, create thumbnail sketches based on the concept supplied by the survey, which demonstrate the sketches in 2D drawing for the design of the multifunction coffee table inspired by hexagon honeycomb. The thumbnail sketches, ideation and idea development were using manually hand sketches using pencil and pen onto A3 paper. sketches drawings that contain 74 thumbnails, 14 ideations, 14 idea developments, and 1 final design based on the specifications required by the data. The following stage was to develop a mock-up. The mock-up was made with mounting board and a wood grain sticker. Next, after enhancing the final design, the technical drawing will be generated after receiving some feedback and suggestions from the panel. AutoCAD software is used to construct the technical sketch. Then comes the manufacturing of the prototype.

### 3.3 Prototype Manufacturing

Figure 3 demonstrates the manufacturing process in which Figure 3(a) pine wood boards are measured with a measuring tape and ruler. The pine wood boards are then Figure 3(b) cut into 590mm x 590mm for the top table and 300mm x 300mm for the base table and other components. The hexagon shape is utilised for the table top, while the circular shape is used for the bottom section, as well as the stool and compartments. After that, Figure 3(c) sand the edges of the cut pine wooden boards. To minimise injuries when handling the pine wood planks, the edges or sides of the wood pieces should be sanded smoothly. To smooth up the edges of the wood boards, 240 grit sandpaper is used. The wood planks are sanded again before being stained with 500 grit sandpaper.



**Figure 3: Manufacturing processes of coffee table (a) measuring using tape, (b) cutting using jigsaw, (c) sanding using sandpaper, (d) coating using brush (e) installing screw using hand drill**

## 4. Results and Discussion

### 4.1 Section A: Demographic

Table 1 shows the demographic section, the number and percentages of respondents classified as female or male. According to the table, the number of male respondents is 55 and 55%, while the number of female respondents is 45 and 45%. The respondent who are aged 21 to 30 years old has the highest number of respondents which is 51 people and the percentage is 51%, followed by respondent who are aged 41 to 50 years old, 20 people, 20% and above 50 years old has the number of respondent 16 people which is 16%, while the respondent who are aged under 21 years old has the lowest number of respondents which 13 people, 13%. The number of respondents according to the type of race which is Malay, Chinese, India, Kadazan, Melanau and Bumiputera Sarawak. Kadazan, Melanau and Bumiputera Sarawak have the lowest percentage which is 1% of respondents for each. The highest percentage is Malay which is 43% and has 43 members followed by Chinese, 30%, 30 people and India, 24% and has 24 members. The data indicate that single has the highest number of respondents which is 56 people and the 56%, the lowest is married has 44 number of respondent and get 44% only. From the table, the occupation status that has a higher percentage is Student which is 41% and 41 people followed by Employed which is 32% and 32 people, Self-Employed with 15% and 15 people and retired with 7% and 7 people. The lowest percentage is the Part-Time, which is 5 people and 5%. From the table, the education level that has a higher percentage is from Degree which is 49% and 49 people followed by Diploma which is 28% and 28 people, Upper Secondary and Lower Secondary have the same number with 7% and 7 people and the Primary or Lower with 4% and 4 people. The lowest percentage is the SKM and SKM 3 has the same number of respondents which is 2% and 2 people.

**Table 1: Demographic information**

Question	Category	Frequency	Percentage (%)
Gender	Male	55	55
	Female	45	45
Age	Under 21	13	13
	21-30	51	51
	41-50	20	20
	Above 50	16	16
Ethnic	Malay	43	43
	Chinese	30	30
	Indian	24	24
	Kadazan	1	1
	Bumiputera Sarawak	1	1
	Melanau	1	1
Marital status	Single	56	56
	Married	44	44
Occupation status	Employed	32	32
	Part-Time	5	5
	Self-Employed	15	15
	Retired	7	7
	Student	41	41
Education level	Primary or lower	4	4
	Lower Secondary	7	7
	Upper Secondary	7	7
	Diploma	28	28
	Degree	49	49
	Master	1	1
	PhD	-	-
	SKM	2	2
	SKM 3	2	2



#### 4.2 Section B: Respondent Opinion

Table 2 shows the respondent opinion section B in questionnaire. The number of respondents who have the coffee table in the house is 85 people and the percentage is 85%. Next, the number of respondents who do not have a coffee table in the house is 15 and the percentage is 15%. Most of the respondents are satisfied with the existing coffee table with 64%, 64 people, while 21%, 21 people are not satisfied with their existing coffee table. The number of respondents often use a coffee table in a day mostly for more than 5 hours about 31%, 31 members, followed by respondents spending 2 to 4 hours in a day with 35%, 35 people. Furthermore, the lowest number of respondents that often use a coffee table in less than 1 hour is 19% which is 19 people. Majority of respondents (43%) do not face any accidents because of the coffee table. There are only a small number of respondents (42%) that have accidents due to the coffee table in their house. The most common problem of the existing coffee table is too low (50.6%), 43 people, sharp edges (41.2%), 35 people followed by less storage (37.6%), 32 people, less function (32.9%), 28 members, too small (21.2%), 18 people and none problem existing coffee table respondent (14.1%), 12 people. Large furniture with a little table in the centre is unusual from a visual sense. A well-decorated space will be balanced, which means that none of the furnishings will seem excessively tiny. If your table is too small in comparison to the rest of your furnishings, the space will feel off-kilter (anonymous, 2021). The lowest number of respondents had a common problem which was a too big coffee table (8.2%), 7 people and a fragile coffee table (7.1%), 6 people. The highest number of respondents of the main factors of the injuries based on the coffee table is size of the coffee table (50.6%), 43 people and followed by sharp edges (41.2%), 35 members, and the height of table (5.9%), 5 people. Most of the respondents willing to have a coffee table with more than one function (97.6%), 83 people and respondents that are not willing to have a coffee table with more function (2.4%), 2 people.

**Table 2: Respondent opinion**

Question	Answer	Frequency	Percentage (%)
Do you have a coffee table in your house?	Yes	85	85
	No	15	15
Do you feel satisfied with the existing coffee table?	Yes	64	75.3
	No	21	24.7
How often do you use a coffee table in a day?	Less than 1 hour	19	22.4
	2-4 hours	35	41.2
	More than 5 hours	31	36.5
Did any accident ever happen at your house because of the coffee table?	Yes	42	49.4
	No	43	50.6
What is the common problem of your existing coffee table?	None	12	14.1
	Less Storage	32	37.6
	Less Function	28	32.9
	Too Small	18	21.2
	Too Big	7	8.2
	Too Low	43	50.6
	Too High	1	1.2
	Sharp Edges	35	41.2
In your opinion, what is the main factor of the injuries based on the coffee table used?	Fragile	6	7.1
	Height of table	5	5.9
	Size of table	43	50.6
	Sharp edges	37	43.5
Are you willing to have a coffee table with more than one function?	Yes	83	97.6
	No	2	2.4

### 4.3 Section C: Design Criteria of Multifunction Coffee Table

Table 3 shows the design criteria of the multifunction coffee table section. The coffee table size that the most preferred by respondents in medium size (59cm [length] x 59cm[width] x 45cm [height]), 90% which 90 respondents, followed by the large size (120cm [length] x 120cm[width] x 35cm [height]), 9% which 90 people and the small size (59cm [length] x 59cm[width] x 35cm [height]), 1% which 1 respondent. The coffee table should be around two-thirds the length of your sofa. For reference, a 96-inch sofa should seek for a coffee table that is 64 inches long (Gabrielle, 2018). The most preferred bottom part respondent needed for their coffee table is with leg (41%), 41 people, while without leg (cover with wheel) (33%), 33 people. The lowest number of respondents without legs (with pad protector only) (26%), 26 people. The type of legs selected by the most people is bun wooden legs (39%), with 16 people responding, followed by footstool legs (39%), with 16 people responding. While the cone angle legs account for 22% of the total, or 9 persons. The most popular form of leg (with wheel) is with lock, which is favoured by 100% of those polled, or 33 persons. The most popular coffee table with a closed compartment (81.3%) was chosen by 74 individuals, while the most popular coffee table with an open compartment (18.7%) was chosen by 17 people. Respondents preferred closed compartment is the drawer (89.2%), with 66 persons, followed by the door close compartment (10.8%), with 8 people. The majority of respondents (82.4%) supported the number of compartments, with 75 persons voting. Following that are one compartment (9.9%), 9 individuals, and three compartments (7.7%), 7 people. Other elements selected by respondents include stool/seat (61%) and 61 individuals, display feature (22%), 22 people, and shelf/storage (17%) and 17 people. Respondents selected two stools/seats (93.4), 57 people, and one stool/seat (6.6), 4 people for the stools/seats they needed for the coffee table. The most popular material for the coffee table was a combination of materials (63%), 63 people, solid wood (24%), 24 people, and wood based (11%), 11 people. Metal (2%), 2 persons, is the least needed material among responders.

**Table 4: Summary of design criteria of a multifunction coffee table**

Criteria	Response
Size of Coffee Table	Medium (59cm [Length] x 59cm [Width] x 45cm [Height])
Bottom Part of Coffee Table	Leg: Bun wooden Leg or Footstool Leg
Compartment Needed	Closed Compartment (Drawer)
Quantity of Compartment	2 Unit
Other Feature	Stool/Seat
Quantity of Stool/Seat	2
Type of Material Used	Combination Material

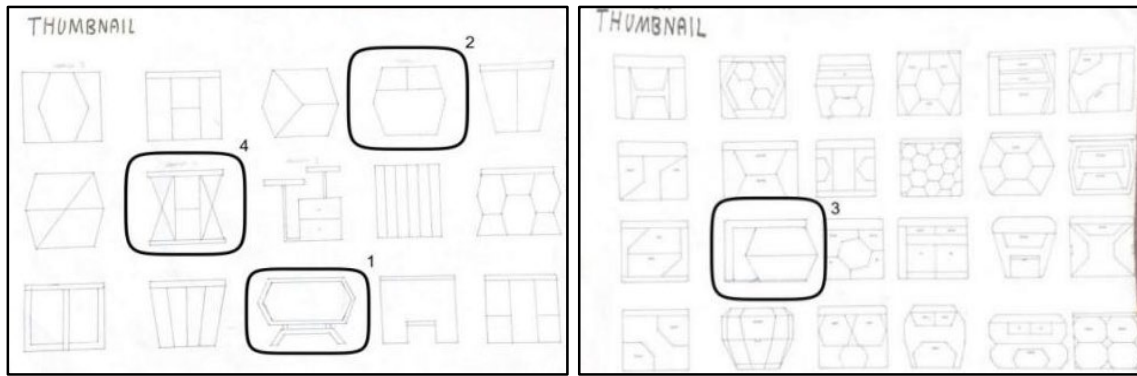
### 4.4 Sketches

A sketch is a brief and basic drawing that provides a short overview or rough outline of. Sketches are simple free hand drawings that are not normally intended to be finished work but are a great tool for designers since they allow them to rapidly exhibit numerous design concepts. Sketch flow involves both ideation and the idea development among those concepts.

#### (a) Thumbnail & Ideation

Figure 4 shows a thumbnail in the form of a 2D coffee table with different shapes and forms. There are 39 thumbnail sketches which in front appear in a 2D configuration. The ideas selected in the black box indicate the ideas selected from the thumbnails further developed for the next stage, which is in ideation form.



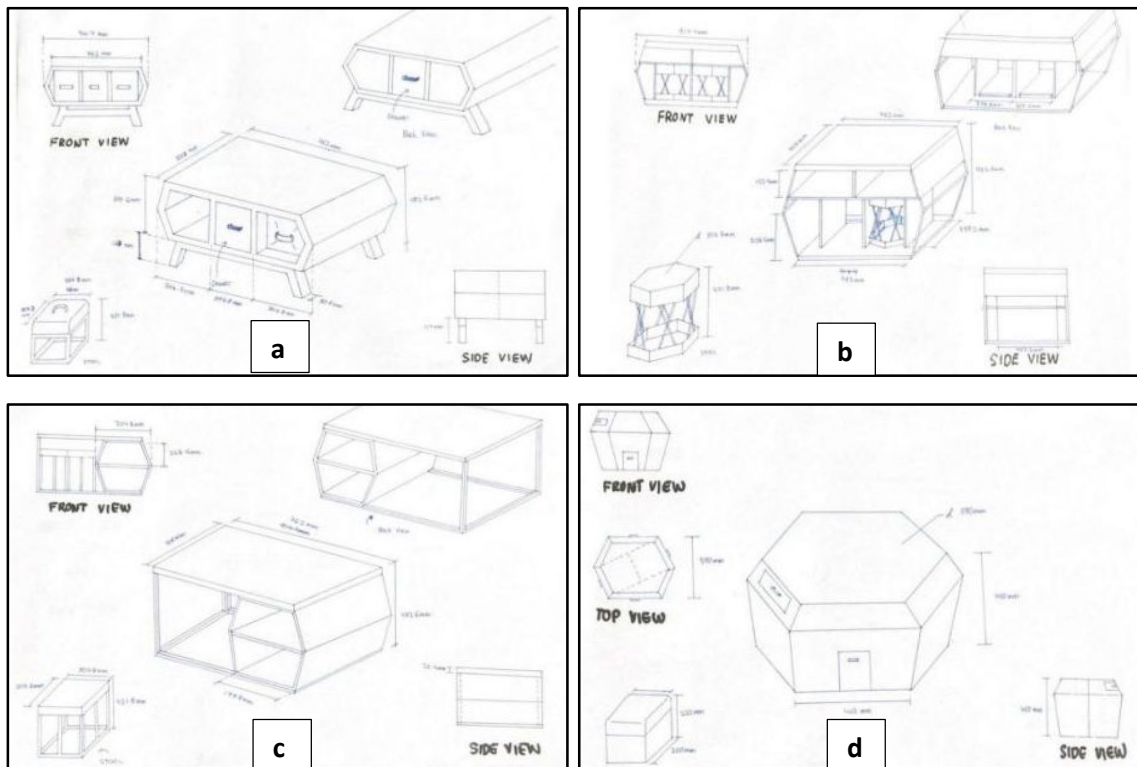


(a)

(b)

**Figure 4: Thumbnail sketches (a) Thumbnail 1 and (b) Thumbnail 2**

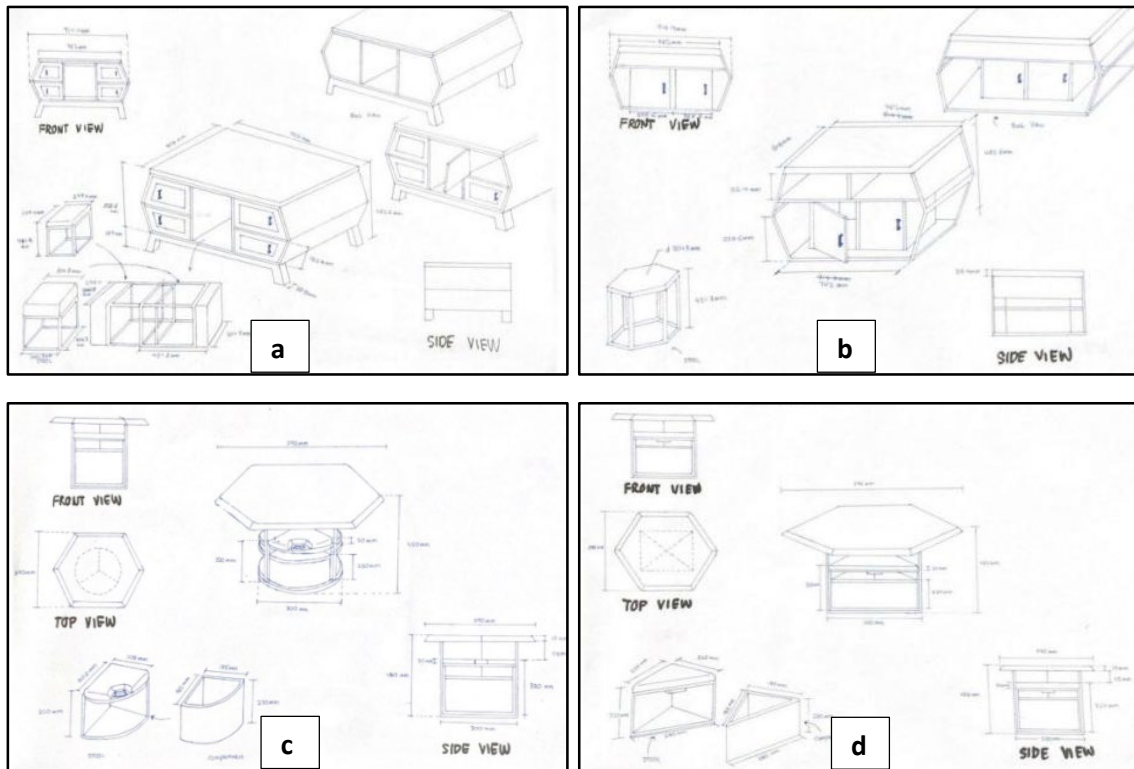
Ideation is the phase of the design process in which you focus on idea generating. Designing ideas derived from inspiration of existing coffee tables, storage furniture, and stools, that satisfying the aims of a multifunction coffee table inspired by honeycomb hexagons. Figure 5 illustrate 4 ideations with different design of hexagonal honeycomb but still fulfill the design criteria.



**Figure 5: Ideation sketches (a) ideation 1 and (b) ideation 2 (c) ideation 3, and (d) ideation 4**

*(b) Idea Development*

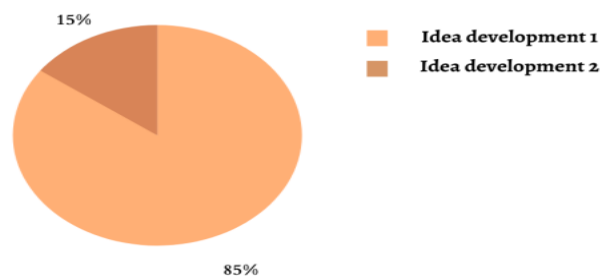
Idea development is the process of gathering input, visual elements, compositions, and methods from the initial work (ideation) and applying them in new ways. Based on the ideations, four ideations were chosen to provide idea development. The development of ideas is done through hand drawing. Figure 6 shows that idea development 1 refers to ideation 1, idea development 2 refers to ideation 2, while idea development 3 and 4 relate to ideation 4.



**Figure 6: Idea development sketches (a) idea development 1, (b) idea development 2, (c) idea development 3, (d) idea development 4**

#### 4.5 Design Survey

After completing a design survey, 60 respondents were reported as participating in this design survey for a multifunction coffee table inspired by honeycomb hexagons. Figure 7 shows that with 51 responders, idea development one was the most popular choice (85%). When it comes to concept development two less respondents with 9 respondents were selected (15%).



**Figure 7: Preference design by the respondents**

#### 4.6 Final Design

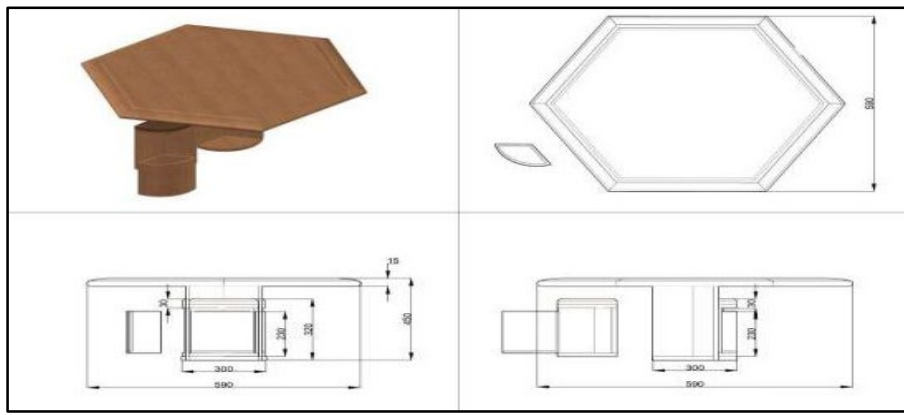
After the design survey is completed, the final design is determined. The design questionnaire was sent to 60 people based on two (2) types of previous concept development. The most preferred by respondents would be the final design based on the design criteria. Figure 8 illustrate the rendering for idea development that preferred by respondents.



**Figure 8: Rendering for Idea development 1**

#### 4.7 Technical Drawing

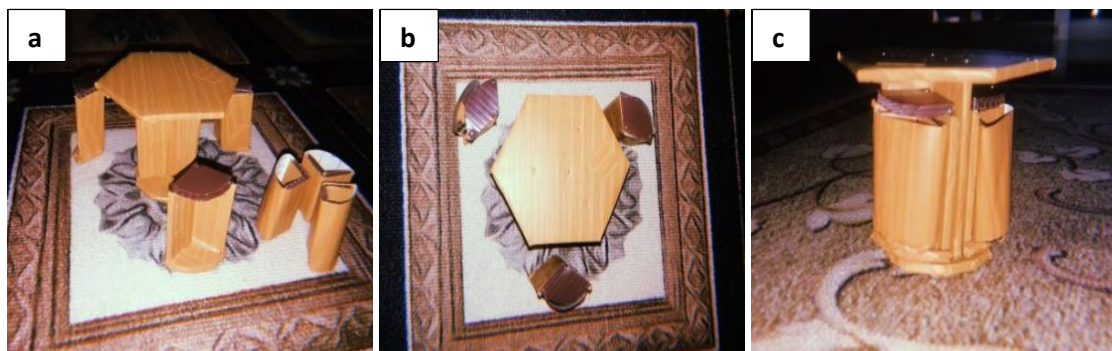
Figure 9 is a 2D and isometric view of a multifunctional coffee table created with AutoCAD software. The 2D sketch showed the dimensions of a multifunction coffee table inspired by hexagonal honeycomb from the front, right, and top views.



**Figure 9: Technical drawing of multifunction coffee table**

#### 4.8 Mockup and Prototype

Figure 10 shows a mock-up created based on the idea development selected. The mock-up was created using foam board to analyze the dimensions at a scale of 1:7. It is used for design review and observing proportions of size and shape.



**Figure 10: Mock-up of multifunction (a) isometric view, (b) top view, and (c) side view**

Figure 11 shows the prototype of the multifunction coffee table inspired by hexagonal honeycomb which using the pine wood material.



**Figure 11: Prototype of multifunction coffee table inspired by hexagonal honeycomb**

#### 4.9 Cost Estimation

Based on Table 5, the cost estimation of the multifunction coffee table inspired by honeycomb hexagons, the calculating cost of the materials used and other resources that are involved in the manufacturing of the prototype of this coffee table. The total cost for material is RM 365.40, for the manufacturing cost which is utility used cost is RM 15.00. The total cost used to produce this coffee table is RM 380.40. The profit estimation desired from the overall cost is 40%. Below is calculation for the selling price per unit of the wardrobe for elderly and the net profit per unit.

Selling price:  $RM380.40 \times 1.40 = RM532.56$

Net profit per unit:  $RM532.56 - RM380.40 = RM152.16$

**Table 5: Direct material cost for multifunction coffee table inspired by honeycomb hexagons**

No	Component	Unit Element		Total (RM)
		Units	Cost / Units (RM)	
Direct material cost				
1.	Pine wood board	8 x 4 feet (1 pcs)	295.00 / pcs	295.00
2.	Wood stain (mahogany)	1 liter	30.00 / liter	30.00
3.	Wood stain (clear gloss)	1 liter	30.00 / liter	30.00
4.	Wood & Parquet Adhesive	500 g	7.50 / 500 g	7.50
5.	Screw Philips Head	48 pcs	0.06 / pcs (M4.0 x 48mm)	2.90
Total Material Cost				365.40
Manufacturing cost				
Utility Used				15.00

#### 5. Conclusion

At the end of the study, the hexagonal honeycomb-inspired multipurpose coffee table was successfully manufactured. The design criteria of the coffee table are in medium size (59cm [length] x 59cm [width] x 45cm [height]), have closed compartment and stool. There are 39 thumbnails, ideation, idea development was produced. The design selected as final is design idea development 1. The final prototype is made from pine wood and fabric for seats. The final prototype has fulfilled the objective of the research. The majority of respondents chose their preferred design, a multipurpose coffee table that helps decrease clutter by lowering the number of stuffs in a space. Respondents chose design development one (1) above the other because it had a more creative and functional design. Furthermore, the method of using the furniture and functions supplied is more trustworthy and appealing than previous design developments.

#### Acknowledgment

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