

Fabric Cutting Table for Homebased Tailor

Sunurriah Buseri¹, Abdullah Al Rashid Ab Hamid^{1*} &
Ahmad Anwar Safwan Sidek¹

¹Department of Production and Operations Management, Faculty of Technology Management and Business,
Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, Johor, 86400,
MALAYSIA

*Corresponding Author Designation

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Abstract: A home-based tailor is someone who does sewing work or takes sewing wages at home. Usually, home-based tailors use the dining table as a place to do the fabric cutting process. This is because to have both a cutting table and a dining table will use a lot of space. Therefore, the general aims of this study are to identify the design criteria, to design and to develop a prototype of fabric cutting table for home-based tailor. Online survey via Google Form used for data gathering to 50 respondents who are home-based tailor and lived in Kota Samarahan, Sarawak. Respondents were asked about demographical data and several closed questions. From data that collect from the survey, specific criteria have been acknowledges for making this fabric cutting table. Among of the criteria is the tabletop for the fabric cutting table must be vinyl laminated, expendable tabletop, and adjustable height. The last criteria are that the fabric cutting table must have 6 drawers. After finalizing the final design according to data collected, a prototype is built. The prototype main material is from plywood and metal. The study show that this research is a success by creating a fabric cutting table with an expendable tabletop and adjustable height that suitable for home-based tailor.

Keywords: Home-Based Tailor, Fabric Cutting Table, Tailoring, Seamstress

1. Introduction

The idea to make the fabric cutting table is from the problem faced by the most of home-based tailor and village tailor that used their own home as the workspace. The Home-Based Businesses (HBBs) idea is as a company whose major operations are conducted from a house, and it may be any size or kind if the office is physically situated in a house (Fong *et al.*, 2000). Historically, HBBs have been classified as a home-based company that is mostly operated as a part-time employment. Additionally, it is mostly suited to women; for instance, women may make clothing or sell baked cookies while caring for their families and doing household tasks (Fong *et al.*, 2000; Loscocco & Smith-Hunter, 2004). According to Natalia (2020), the phrase "homebased worker" has two connotations. It includes both "homeworkers"

and "self-employed homeworkers. Workers who are self-employed or work on their own account are autonomous in their output; they manufacture products and services from their homes and work autonomously. According to Willian (2019), tailor is a genuine expert and "architect" of clothes. He also stated that tailor creates custom clothing, primarily suits and tuxedos, for a select number of clients, considering their unique characteristics, and goes through a painstaking process of pattern making and intricate garment construction techniques, including handwork and various fittings, to create an awesome garment with flawless finishing for his, typically, high-end client. Cutting table is a table has a long surface with an incorporated yard on one corner and a long groove for scissors crossing the middle (Heather, 2015). According to Heather (2015), there were two categories of fabric cutting table which is industrial use and home used. For home use, fabric cutting table usually is a dining table. However industrial fabric cutting table was included with the fabric cutter machine.

One of the problems that is concern in making the fabric cutting table is to find the right measurement or size for fabric cutting table. According to Sarkar (2019), in mass garment manufacture, there is no set length for a fabric cutting table. The length of the cutting table is technically determined by the length of the marker. The cutting table must be at least as long as the single size marker. A longer marker length (with numerous markers) is preferred in large manufacturing for improved fabric use and less fabric waste (end loss). The second problem is the storage area that needed by the tailor to store their seamstress equipment. As a tailor, they need lot of space or storage area to place their tailoring equipment such as, scissor, measurement tape, rotary cutter, and tailor chalk. A decent cutting table should provide more storage space while also conserving space. For improved space management, several tables may be used as sewing machine tables. Some table styles have drawers and shelves for additional storage (Sheila, 2021). The last problem is the type of the top table. Sheila (2021) said "A rough table surface can hold dirt and make table maintenance difficult. It can disintegrate into a clutter bug that poses a serious threat to your cutting operation". She also added that during operation, a rough or chipped cutting table countertop may trap and drag textiles. This yanking may cause fabric damage. Additionally, it might degrade the accuracy of your cutting procedures. Therefore, finding the right tabletop type is really import in this study to produce a high quality of fabric cutting table.

The goal of this study was to come up with a fabric cutting table design that would be ideal for a home-based tailor. This study performed a minimum of 50 home-based tailor respondents in Kota Samarahan, Sarawak, using a questionnaire as a tool to identify design requirements. The focus of the investigation was on the home-based tailor. This fabric cutting table will provide comfort and can help the seamstress carry out the fabric cutting process easily. In addition, this table is also equipped with features that will improve the fabric cutting process.

2. Literature Review

2.1 Furniture

Furniture is a term that refers to both moveable and permanent furniture objects that are used to decorate a home, office, workplace, or public space and are used for storage, work, eating, sitting, laying down, sleeping, and resting (Smardzewski, 2015b). Furniture may also refer to a piece of furniture that is used for storing and holding goods. For example, a table and desk may hold objects while a shelf and closet may keep items within. The English term "furniture" comes from the French "formiture" and the Latin "mobilis," which refers to furniture, equipment, and other moving goods.

Throughout the history of furniture development, the world's styles have evolved and modified through time (Smardzewski, 2015a). As regional cultural interactions intensify, the borders between designs become more blurred, allowing for the infiltration of other cultures. Earlier in the nineteenth century, when humans had a basic grasp of craftsmanship and the introduction of new materials and technology, stumps and were the initial things utilised as furniture (Csanády *et al.*, 2019). With the flow

of time and geography, several furniture styles have developed with substantial variations in shape, colour, construction, and ornamental design.




Furniture may be classified into numerous categories based on its use, including furniture for sitting, sleeping, eating, working, and storage (Smardzewski, 2015a). Seating furniture includes couches, armchairs, benches, stools, and bar stools. Sleeping furniture, such as a bed, mattress, couch bed, or cot, enables individuals who are laying on it to rest and relax. Large-surfaced furniture is often used to prepare food or eat meals, and includes a kitchen cabinet, dining table set, cafeteria tables, and booth couches. Working furniture includes an office desk and chair, a drawing table, a work bench, and a conference table. Additionally, the storage furniture category includes wardrobes, shelves, cabinets, and dressers, all of which need a significant amount of room to keep stuff.

2.2 Cutting Table

Cutting table is a table has a long surface with an incorporated yard on one corner and a long groove for scissors crossing the middle (Heather, 2015). Fabric cutting table used for the fabric cutting process. Some features that needed in fabric cutting table is stability, type of tabletop, additional storage space, flexible and adjustable.

More stability is required for a cutting table than for other table types. This is the variable that controls the balancing level on different types of flooring. A stable table creates just a little amount of movement during operation. According to Sheila (2021), a fabric cutting table need to be stable this because a strong cutting table assures that cuts are delivered smoothly and with the least amount of mistake possible. A strong cutting table helps to provide a clean-cut delivery, while limiting the number of missteps. Your fabric handling abilities also increase because of the table's steadiness.

Table 1: Comparison of fabric cutting table

Type	Illustration	Advantages	Disadvantages
Multipurpose hobby and craft cutting table with drawers		<ul style="list-style-type: none"> • Foldable table • Comes with storage space • Lockable wheels • Made of durable material 	Not as sturdy and can be a little shake
Arrow K8405 Wallaby II Kangaroo sewing, cutting		<ul style="list-style-type: none"> • Foldable table • Comes with storage space • Lockable wheels • Made of durable material 	Tedious to put together
Multi room hiding table Armoire		<ul style="list-style-type: none"> • Fits into small spaces • Storage space to keep your area clutter-free • Great for small projects • The table section swings up well 	Not made with heavy duty materials

Choosing a suitable type for tabletop one of most important in making cutting, this is because type of tabletop will also affect the cutting process. The class on the tabletop is an important factor to be

considered. The cutting table's surface must be free of jagged or rough edges. In addition, the material must be resistant to chipping to prevent damage. Cutting tabletop with a rough or chipped surface might catch and tear textiles after the cutting process. If you pull too hard, you might damage the cloth. It may also have an impact on the accuracy of your cutting procedures. It is difficult to keep table surfaces clean and in good condition if you use a rough tabletop. If not controlled, this can turn into a bunch of little bugs that may quickly make a mess of your cutting activity.

A good cutting table should provide more storage space while at the same time being efficient in space use. In certain cases, certain tables are used for sewing machine tables to help provide better room reservation. Some table types contain drawers and shelves which may be used to increase the table's storage capacity. Additionally, these tables have open compartments that allow tools and creative items to be stored Sheila (2020). If you are looking for storage space, you may also choose tables with fabric roll holders and cabinets. By opting for this storage arrangement, you will make your workstation more organised. and improving the structure and layout of your workspace does the same for you.

Sheila (2020) stated that to get the most out of the cutting table, it should be flexible and adaptable. Extensibility is one of the defining characteristics of the table. You may discover a foldable sewing table with adjustable height, among other items. Using a flexible table will prevent you from problems you may encounter with a hard table. You can make multi-level changes on your table, and then you can use the legs to push the legs apart to change the overall body structure (Misner, 2021).

2.3 Space saving Furniture

Home-based tailors mean that the tailor is workspace is their home. Therefore, their need use some of the house space for their working space. Space- saving furniture is a designed furniture that efforts to develop foldable tools (Li *et al.*, 2015). Shiyao (2013) stated that use of the space saving furniture is very help for nowadays generation because of the limitation of space.

Multipurposed furniture, space-saving furniture, and transformable furniture are all terms used to describe multifunctional furniture So, multifunctional furniture is one of the innovative solutions to these problems. There is a mix of versatile furniture, modular furniture, and specially built rooms that may be converted into various living spaces. All solutions are aimed at maximising space efficiency and minimising waste (Thogersen, 2019). There are multipurpose furnishings accessible nowadays in the present market, all of them are made to be used for those who want to minimize the used of space. For home tailor, space saving furniture really help them in minimize the space used for living and working space.

2.4 Home-based Worker

In the definition of "home-based worker," the phrase might have two meanings. The phrase represents those who work as a homemaker and those who are self-employed as a homemaker (Natalia M. M. 2020). According to Chen & Sinha, (2016) home-based workers work from or within their homes to create items or services for the market. They buy their materials and some of them oversee selling their own products. Haspels (2015) stated that most of home- based worker are from women. The most common home-based work among the women are online business, seamstress business, and baking.

According to Wong (2020) from The Star, *Komuniti Tukang Jahit (KTJ)* provides a working opportunity for single women, single moms, the OKU group, and stay-at-home moms to generate a sustainable income via sewing orders, all while remaining in the comfort of their own homes. These opportunities really help the single women, single moms, and the OKU groups to improve themselves.

3. Research Methodology

In this section, all techniques utilized for the study are explained, such as questionnaires, visual design, thumbnails and ideas, idea developments, final designs, mock-ups, technical drawings, prototypes and estimation of costs. The information and data on the design criteria for producing the fabric cutting tables will be collected through a questionnaire survey.

3.1 Questionnaire

The questionnaire is a common method for gathering data from selected respondents by asking them a series of questions. The survey's goal is to gather design requirements for a fabric cutting table. The questionnaire in this study has three sections: section A for demographic information, section B for fabric cutting table design requirements, and section C for respondents' opinions. Total of question is 17. 50 home-based tailors from Kota Samarahan, Sarawak, would be chosen as possible responders for this study. The information gathered from this survey will be used to create design requirements for the fabric cutting table.

3.2 Visual Research

Visual research is a method for gathering design data by reviewing and interpreting visuals. Visual research aids in the creation of an overview for the intended fabric cutting table based on design requirements derived from obtained data. Images and other materials from papers, furniture catalogues, and websites will be used for visual research in this project.

3.3 Thumbnail and Ideation Sketches

Thumbnail sketches are rapid and spontaneous drawings of an idea that are extremely tiny or succinct. Thumbnail is an important phase in the drafting process since it allows you to see the basic design concept and ideas for the fabric cutting table. In this research, the fabric cutting table designs will be drawn in 2D on A3 paper at the same size. There is no limit to how many ideas you can have in a thumbnail drawing. The researcher will draw as many concepts as feasible for this investigation. In this step, three drawings with a total of 54 concepts is hand drawn. Meanwhile, ideation is the act of generating and visualizing idea via the sketches. By drawing, Ideation is possible to present the design concepts for the fabric cutting table in various forms, features, and viewpoints. This stage will consist of 5 ideations, with the possible designs being utilized in the concept development.

3.4 Idea Development

The act of turning an idea into a concept and then bringing that concept to life is known as idea development. The researcher will assess which of the five ideation sketches best meets the design objectives and is the most distinctive. In this step, the researcher utilizes the thumbnail and ideation to improve the selected ideation by adding an additional value and combining ideas to build the design concept in more detail. The final design will be chosen from a total of 5 concept development sketches that match the design requirements.

3.5 Final Design

At this stage, researcher will review all the potential designs made from idea development and evaluate the designs to filter out the best design by conducting a design survey. The final design drawing will be done completely freehand with detailed information and full dimension. Subsequently, after decided, the final design is then transforming into a mock-up.

3.6 Mock-up Development

Mock-up is a scale model of design that used for demonstration, design evaluation, and other purposes. Mock-up has a realistic perspective of a design and it help researcher to acquire feedback

towards the fabric cutting table from the users. Mock-up can also help to reveal the problem that are less obvious on the paper, such as color clash. After the final design come out, researcher must produce a mock-up with 1:6 scale based on the dimension of the final design. The materials that will be used to produce the mock-up are PVC foam board, manila card, and super glue. Mock-up reflects the overall atmosphere of the design after design is formed, so researcher can identify the shortcomings and modify to improve the design before produce the prototype. Therefore, the mock-up may look different with the prototype.

3.7 Technical Drawing

Technical drawing refers to a drawing that convey the technical information or illustrating concepts on how it is constructed. Technical drawing is aimed to provide an accurate measurement, information, and different view of the product for designer to construct the product in appropriate techniques. Researchers will use AutoCAD software to construct the technical drawing of fabric cutting table with full dimension.

3.8 Prototype Fabrication

A technical drawing is one that conveys technical information or shows how something is built. The purpose of a technical drawing is to offer the designer with correct measurements, information, and many views of the product so that they may create it using proper procedures. The researchers created a full-dimension technical design of a bedside table using AutoCAD software. The technical drawing will be shown in orthographic view, which includes top, front, and side perspectives. This stage will also include the product's isometric and perspective perspectives. The technical drawing was drawn using centimeters as the measurement unit (cm). All the drawings will be printed on A3 sheets of paper.

3.3 Cost Estimation

Cost estimation is a process to estimate the cost, the quantity of the materials, and selling price of a unit fabric cutting table. The cost estimation helps to predict the cost and quantity of materials and other resources that involved in the design and manufacturing project. The elements of cost estimation include material cost, manufacturing cost, and market cost involved in the manufacturing prototype. At the end of this stage, researcher will be able to predict the selling price of a unit product based on specific total amount of products to be produce.

4. Results and Discussion

4.1 Questionnaire Analysis

Questionnaires were used in this study to obtain input from respondents who are also potential buyers or users to the furniture to be produced. The distributed questionnaire had three sections. A summary of the findings of the questionnaire is as shown in Table 2. Section A shows that 80% of the respondent is Malay and 82% is female. In section B shows type of design for fabric cutting table that prefer the most by the respondent. The higher type of fabric cutting table design that choose by the respondents was normal design (36%), follow by multifunction design (34%), then the space saving design (16%) and lastly is the simple design (14%). Section C show the most common problem that face by tailor with the fabric cutting tables. The highest problem that faces by tailor with the cutting table is they don't have an ideal size for tabletop surface to cutting fabric. This problem has been selected by 80% of the respondent. For the seconds highest problem that commonly face with fabric cutting table is the needles are scattered on the table. For this problem 34% of respondents agreed with it. Problem regarding rotary cutter blunt easily voted by 28% respondent and the least problem that face by the respondents is the fabric cutting table to big and used lot of space area, with 26% of respondent.

Table 2: Findings of the questionnaire

Detail	Item	Percentage (%)
Section A		
Gender	Male	18
	Female	82
Age	Below 20	8
	21-30	30
	31-40	14
	41-50	28
	Above 50	20
Race	Malay	80
	Chinese	0
	Indian	0
	Iban	10
	Other	2
Section B		
Type of cutting table currently used	Dining table	52
	DIY table	48
Fabric cutting table design you prefer	Normal	36
	Simple	14
	Multifunctional	34
	Space-saving	16
Material for tabletop	Plan laminated surface	26
	Laminated with gridline surface	16
	Laminated with cutting mat	58
Type of tabletop	Foldable	38
	Extendable	62
Table height	Static	10
	Adjustable	90
Type of drawer	Open	36
	Closed	64
Number of drawers	2	4
	4	22
	6	74
Material	Wood only	32
	Metal only	4
	Wood and metal	64
Section C		
Most common problem faced by tailor	Not enough space to cut the fabric	80
	Fabric cutting table too big and used lot of space	26
	Rotary blunt easily because of rough surface	28
	Needle are scattered on the table	34
Other features	Scissor storages	54
	Magnetic edges	34
	Table legs with castor	12
Tabletop height	4 ft x 5 ft	2
	5 ft x 3 ft	32
	6 ft x 4 ft	48
Suitable height	Waist level	56
	Bellybutton level	28
	Above bellybutton level	16
Color for cutting table	Natural	46
	Warm	46
	Bright	8

4.2 Visual Research

A visual study was done to give a clear picture of the designs for fabric cutting tables available in the market to be used as an additional basis in designing fabric cutting tables for the use of tailors. Among the elements that are prioritized in this visual study process are the design a fabric cutting table, a dining table that has expandable and adjustable height elements. The results of the visual study are as shown in Figure 1.



Figure 1: Visual research

4.3 Thumbnail and Ideation Sketches

Thumbnail has been made based on criteria that have been collected from the survey. Some design been shown on thumbnails. All sketches have all the criteria that needed such as have 6 drawer, adjustable height, and expendable tabletop. Figure 2 shows the thumbnail for the fabric cutting table design.

The ideation also based on the design criteria that have been answered by the 50 respondents. Among these ideations (Figure 3), there have a different pattern and types of design. There were 4 pieces of ideation was proceeded to the idea development.

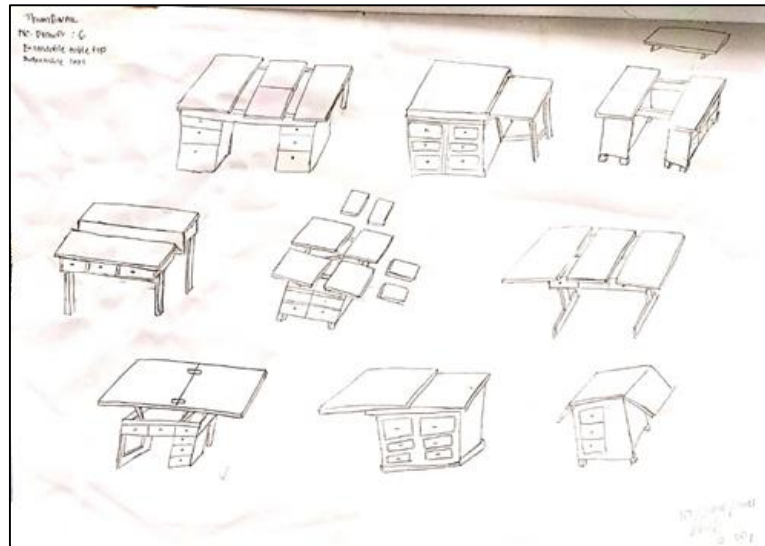


Figure 2: Thumbnail

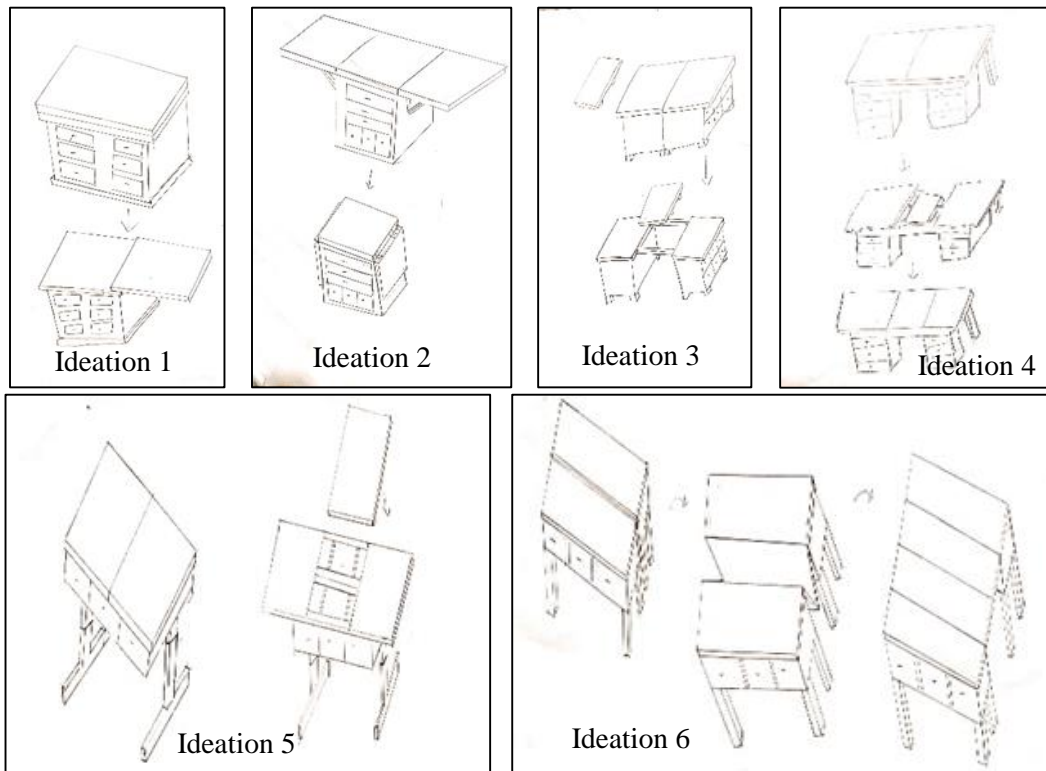


Figure 3: Ideation

4.4 Idea Development

In this study, there are four idea developments were made based on ideation 5 and ideation 6 as a basis design fabric cutting table. The five idea developments were improved by adding more value and design criteria. In this idea development, more features were added. The idea development also shows the dimension for the table. Every idea development showing variety of concept but still holding to the criteria needed.

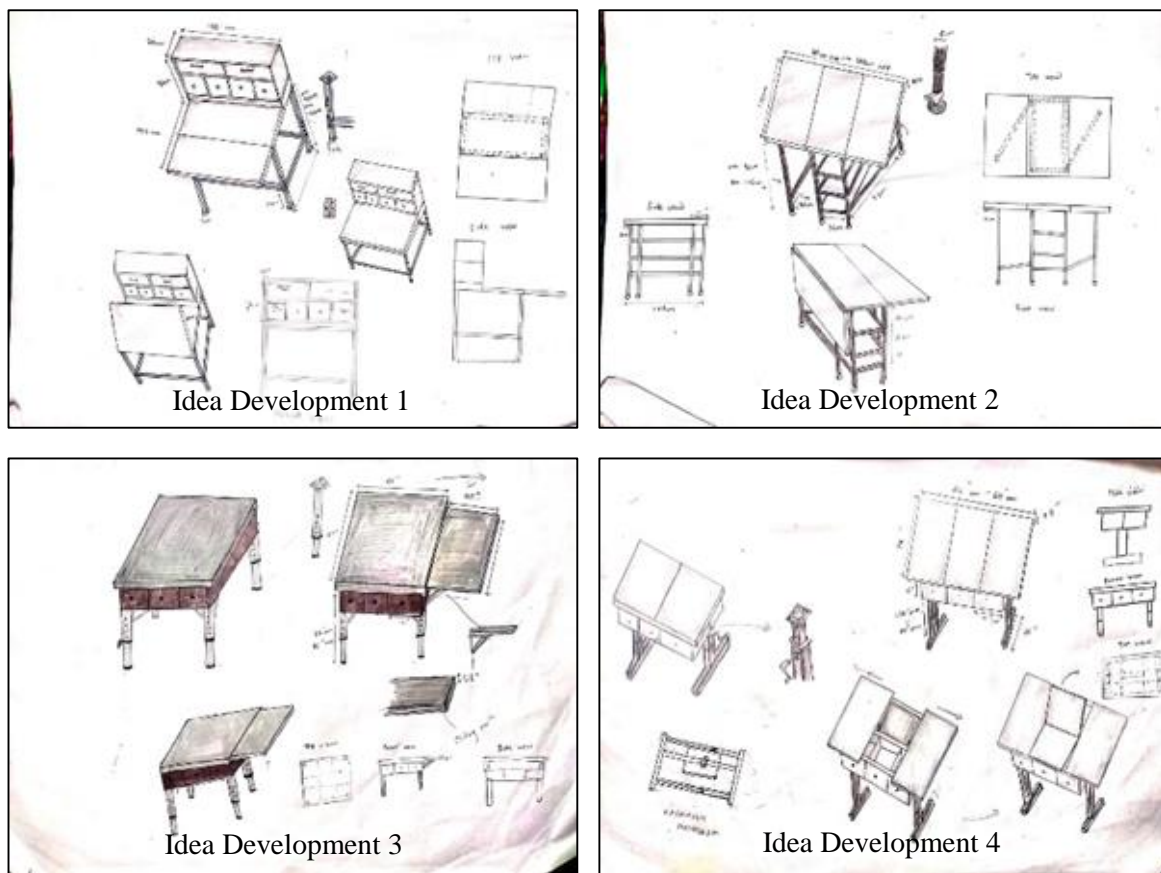


Figure 4: Idea development

4.5 Final Design

A final design has chosen based on from the 3 ideas development. In this stage, a simple design survey was conducted through Google Form in order to identify the final design of fabric cutting table for home-based tailor. From a simple survey that was given to 30 tailoring students at Giat Mara Batang Sadong, Sarawak. Idea development 2 (Figure 5) have been choose with the height percentage of vote.

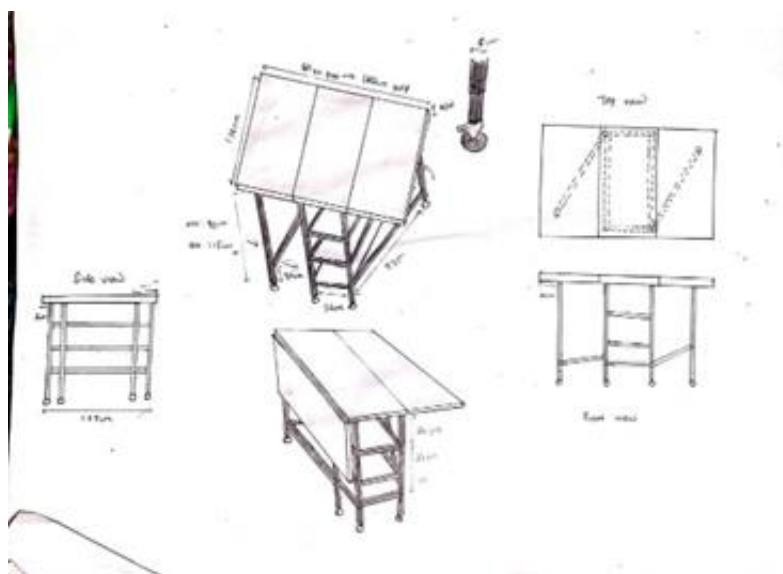


Figure 5: Final design of fabric cutting table for home-based tailor

4.6 Mock-up Development

The mock-up of fabric cutting table for home-based tailor made from compressed foam board with scale of 1:6 as presented in Figure 6. All the joints were attached together by using UHU glue. To make the flipped part moveable, small stick was attached with it to make the part can be move. Small toy tire, all been used for the table wheel. The final design of fabric cutting table can be visualized through this mock-up and modification can be made for further to improve the design before produce the prototype.



Figure 6: Mock-up of fabric cutting table for home-based tailor

4.7 Technical Drawing

The technical drawing of fabric cutting table for home-based tailor was illustrated with full dimension by using AutoCAD software (Figure 7). This technical drawing provided the fabric cutting table structure in detail and different view of the fabric cutting table.

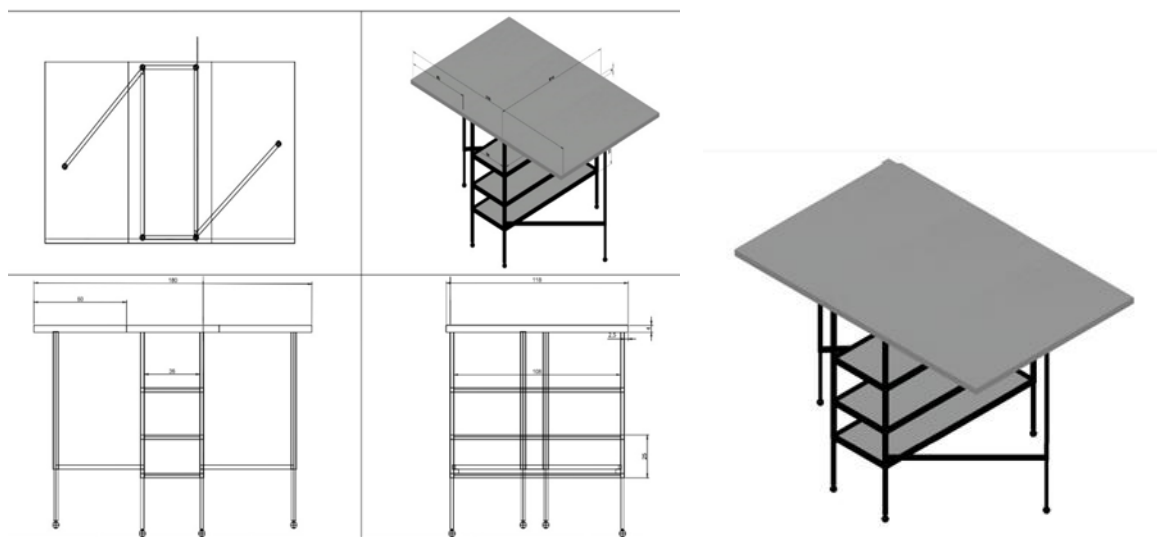


Figure 6: Technical drawing of fabric cutting table for home-based tailor

4.8 Prototype Fabrication

A prototype of fabric cutting table for home-based tailor are fabricated into actual product based on the final design. The prototype making processes are involved measuring, cutting, assemble, and finishing. The first step of making this prototype is by measuring the metal rods and plank, after that cutting the metal into the measurement needed. Next is assembling the metal rod's part by using welding method to make the frame of the table. After that, assembling the table to into the table frame by using

screw to be secured it. Lastly, for the furnishing, the plank part was layer or laminated with Formica (Figure and the table frame was painted using the black color paint). Figure 7 shows the prototype of this study.



Figure 7: Prototype of fabric cutting table for home-based tailor

4.9 Cost Estimation

The cost and amount of materials and other resources used in the production prototype of the fabric cutting table are calculated. The project's cost assessment only includes material and production costs; no marketing costs are included. The cost estimate for producing a unit of Fabric Cutting Table is shown in Table 3. The prototype of the bedside table cost RM 557.30 in total, while a unit product of this fabric cutting table sells for RM 640.90.

Table 3: Cost estimation

No.	Item	Quantity	Cost per unit (RM)	Total cost (RM)
1.	Metal Rod 32 mm	1	41	41.00
2	Metal Rod 25 mm	2	34	68.00
3	OSB board 12mm	2	58.90	117.80
4	Formica	2 sheets	63.70	127.40
5	Caster	6	16.70	100.20
6	Hex Bolt screw	1 pack	12.90	12.90
7	Flat Head screw	1 pack	7.50	7.50
8	Adjustable screw M8	1 pack	6.00	6.00
9	General Purpose Adhesive	1 can	6.50	6.50
			Total material cost	487.30
			Total manufacturing cost	70.00
			Total cost	557.30
			Profit (15%)	83.60
			Selling price	640.90

5. Conclusion

In conclusion, this study achieved the research objectives. The Fabric Cutting Table for Home-Based Tailor was designed and develop following the criteria from data collection from the survey. The survey for this research has been giving to the home base tailor at Kota Samarahan, Sarawak, and the data from this survey are used to create the design of this fabric cutting table. The criteria of the cutting table are 6 drawers, extendable tabletop and adjustable height. The color that prefers by the respondent was natural color and material that been preferred by respondent is combination of wood and metal.

Three design what been chosen for the survey and idea development 2 has been chosen as the final design of this research. The prototype of this design was made from plywood for the tabletop and shelves and the frame and legs of the table is made from hollow metal. 2-inch wheel also been using in this prototype for mobility. This product can be mass-produced with extended research on the cost and material.

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