

Modern Nightstands Table inspired by Stacking Furniture

Nur Anisah Mohd Adzhar¹ & Mohamad Ali Selimin^{1,*}

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

*Corresponding Author

DOI: <https://doi.org/10.30880/rmtb.2021.02.01.047>

Received 01 March 2021; Accepted 30 April 2021; Available online 01 June 2021

Abstract: The recent development of housing has come with limited floor space that unable to accommodate various activities and other kinds of stuff, especially a big family. This leads to the spacing management problem among most small housing owners like low-cost apartments that brings uncomfortable and congested housing due to furniture, clothes, and other kinds of stuff. Therefore, this study will develop a stackable modern nightstand table to offer a solution for the aforementioned problem. This study starts with distributing the questionnaire to obtain data regarding the design criteria from target respondents. The design process will be done based on the criteria obtained from the questionnaire. The selected final design will be used to fabricate a prototype for this study. The questionnaire data indicated that most of the respondents' keen on a nightstand with a drawer and built-in LED light. A pinewood and its original appearance are the most preferable finishing among the respondents. A prototype of a stackable modern nightstand table made from oriented strand board (OSB), pinewood and finished with wood colour. The outcomes from this study could provide better floor spacing management and facilitate more space for storage especially small items in the drawer.

Keywords: Stacking furniture, Modern design, Space saving, Nightstand table

1. Introduction

Normally, small size housing especially those classified as the low-cost house have very limited space for furniture or storage space. Small apartments always to be crowded and cluttered. This could affect the owners or users from various aspects of life such as comfortableness, stress, trapped, and claustrophobic (Urist, 2013). There are many solutions being introduced to solve the problem including the establishment of minimalist concept, space-saving furniture design and more. Different families might have different activities. Despite all the different priorities and lifestyles of a space, when minimum space is available, it will create a more available floor. The main intent is to turn a

*Corresponding author: aliselimin@uthm.edu.my

2021 UTHM Publisher. All rights reserved.

publisher.uthm.edu.my/periodicals/index.php/rmtb

tight space into one that appears wider and larger (Saruwono *et al.*, 2012). Some families have large family members who will need them to share a room. This will make a room crowded and trapped.

It is common to have at least one nightstand for every room. Normally, this nightstand serves as personal furniture for store any personal items. A nightstand also called a night table, bedside table, or bedside cabinet is a tiny low table or cabinet designed to stand beside a bed or elsewhere in a very bedroom. Modern nightstands are usually coming with one or sometimes more drawers or shelves. They are to support or place items that may be useful during the night, like a lamp, watch, reading materials, a mobile phone, eyeglasses, desktop intercom, a drink, or medication. Usually, the studio apartment needed two nightstands to balance the interior. Since the small size apartment has limited space, the need of a stackable nightstand is necessary, especially for a shared bedroom.

Stackable furniture is any furniture that can be placed on top of each other and normally have the same design. Instead of organizing furniture in a horizontal manner on the floor, stackable furniture can save space in the room by place it in a vertical arrangement. Stackable furniture can be used individually as a stand-alone piece or in pairs of two, three, or even four. Therefore, this study aims to design a stackable modern nightstand table inspired by stackable furniture.

2. Literature Review

The studio type apartments become a choice of residence for people even though it has limited space. Therefore, the furniture in the apartment should be a saving space one, because it does not make the circulation of the apartment smaller but it fulfils the needs of the occupant for furniture. Some methods are used for this design, which is an observation about the occupant's needs of the furniture and analyze it, designing the furniture then analyze it again, after that make the prototype. Based on the analysis, there are four types of main furniture that occupant needs, which are chair, table, bedside, and storage (Wijaya *et al.*, 2015).

It is important to focus on developing new technology for the bedroom set. It is stated that the proximity of one's items reflects their importance. Therefore, a nightstand that responds to the needs and wants of the users would be extremely beneficial. There was intended to determine what user currently keep in their nightstands because this is imperative to begin to design future nightstands with a user-centred design. Volunteers were told the purpose of the study was to investigate the contents of nightstands and bedside tables so that researchers could design better nightstands and furniture for ageing individuals in the future (Brooks, 2011).

A unique piece of furniture that occupies a lot of valuable floor space. The design created by Naoki Hirakoso proposes a bedside table that's stackable. This means you could have two separate tables that function as individual pieces when needed but, the rest of the time, can be stacked to save floor space. This versatile piece of furniture, called Tokotoko, can perform several roles in your home. It can serve as a side (or bedside) table, as a stool, or it can even be stacked to create a modular shelving unit. Providing furniture for small and compact living space can be quite difficult, but these conveniently stackable furniture products are here to make having storage equipment and loungers much more practical. Living in small quarters with little to no storage room can make you feel quite cramped and claustrophobic, but these stackable furniture designs conveniently build upwards, creating a lot more room and space for your convenience (Makmanee, 2013).

The modern style eventually morphed into mid-century modern (the 1950s and 60's) and postmodernism (1970s and 80's). While mid-century modern looks a lot like modern design with splashes of bright colour added strategically, postmodernism does not. Postmodernism is bold, breaks all rules of tradition, and has a certain whimsy and irony about it. It is more about the form than the function, which is the exact opposite of the practical features found in modern design (Lee, 2018).

3. Research Methodology

This study adopted the method used as in previous study (Husuno & Selimin, 2020; Lee & Halip, 2020; Selimin *et al.*, 2019; Ramli *et al.*, 2018). First is design survey. A questionnaire is a set of questions or items in writing. It is a method developed specifically to gather information for analysis purposes that can answer the research question. In this study, the questionnaire has 3 sections which are section A (Demographic information), section B (understanding about nightstand table), and section C (design criteria). This question survey will be distributed to 52 respondents around Shah Alam, Selangor.

Second is visual research. Visual research is a qualitative research methodology that relies on the utilization of artistic mediums to "produce and represent knowledge." These artistic mediums include, but don't seem to be limited to film, photography, drawings, paintings, and sculptures. The collected data were used to design a modern nightstand table. The selection of visual research consists of a variety of shapes of tops such as square tabletop, hexagon tabletop, circle tabletop, different material such as metal, plastic, wood-based product and mix material between wood and metal or plastic based on the existing product in the market.

Next is ideas generation. Ideation is the mode of the design process within which focus on idea generation. The sketches of the nightstand table with different size and features are to develop more ideation. The focus of the ideation is stacking furniture for the modern nightstand table. Three pieces of A3 paper will be used to draw the ideation of a modern nightstand table.

After that is idea development. This process involves making, developing, and communicating ideas that are abstract, concrete, or visual. The process includes the method of constructing through the concept, innovating the concept, developing the method, and bringing the concept to reality. Three idea development will be developed in this study which focuses more on the table legs and tabletop shape.

The final design is a process to select and further refine the final specification. The final design will be selected based on the survey that will be answered by 52 respondents. Any adjustment to the final design will be made based on appropriate justification.

The next process is developing a mock-up. In this study, the mock-up size will be developed based on a ratio of 1:4 from the full-size prototype. The material used to make mock-up includes a mounting board, hollow stick square for the table leg, and adhesive to jointing the part. Next, the technical drawing such as 2D and 3D drawings of the final design will be prepared. These drawings will be used as a guideline during the prototype manufacturing process. AutoCAD software will be used to generate the technical drawings.

The last process is prototype fabrication. A prototype is an early sample, model, or release of a product built to check an idea or process. The material used in the making of the prototype will be based on the distributed questionnaire. All processes involve will be based on the chosen material.

4. Results and Discussion

From the survey that was conducted at Shah Alam, Selangor, the results have been simplified as tabulated in Table 1. The questionnaire was answered by 52 respondents. Based on the survey, the respondents mostly preferred combination materials, square tabletop with drawer and maintain the natural colour or pattern of wood material. These findings will be used as a design criterion for this study. Final design will be selected based on these criteria. The selection of visual research consists of

a variety of shapes, design and material based on the existing product in the market to produce a design for the modern nightstand table prototype. There are 7 pieces of visual research that were produced to identify the most suitable and simple design. Majority of the visual research for this study as presented in Figure 1.

Table 1: Summary of the questionnaire result

Element	Percentage (%)	Description
Demographic information	55.8	Female respondent
	44.2	Stay in a terrace house
	69.2	Household income below than RM 3,000.00 per month
Understanding about nightstand table	51.9	Preferred buy the table based on the size of the room
	48.1	Their nightstand table had a drawer
	65.4	Their put electronic device
	76.9	Preferred to place the table beside the bed
Design criteria	69.2	Preferred natural color
	67.3	Preferred combination materials such as wood and metal or plastic
	44.2	Preferred square for tabletop
	88.5	Preferred to have storage for the nightstand table
	55.8	Preferred feature to have a drawer

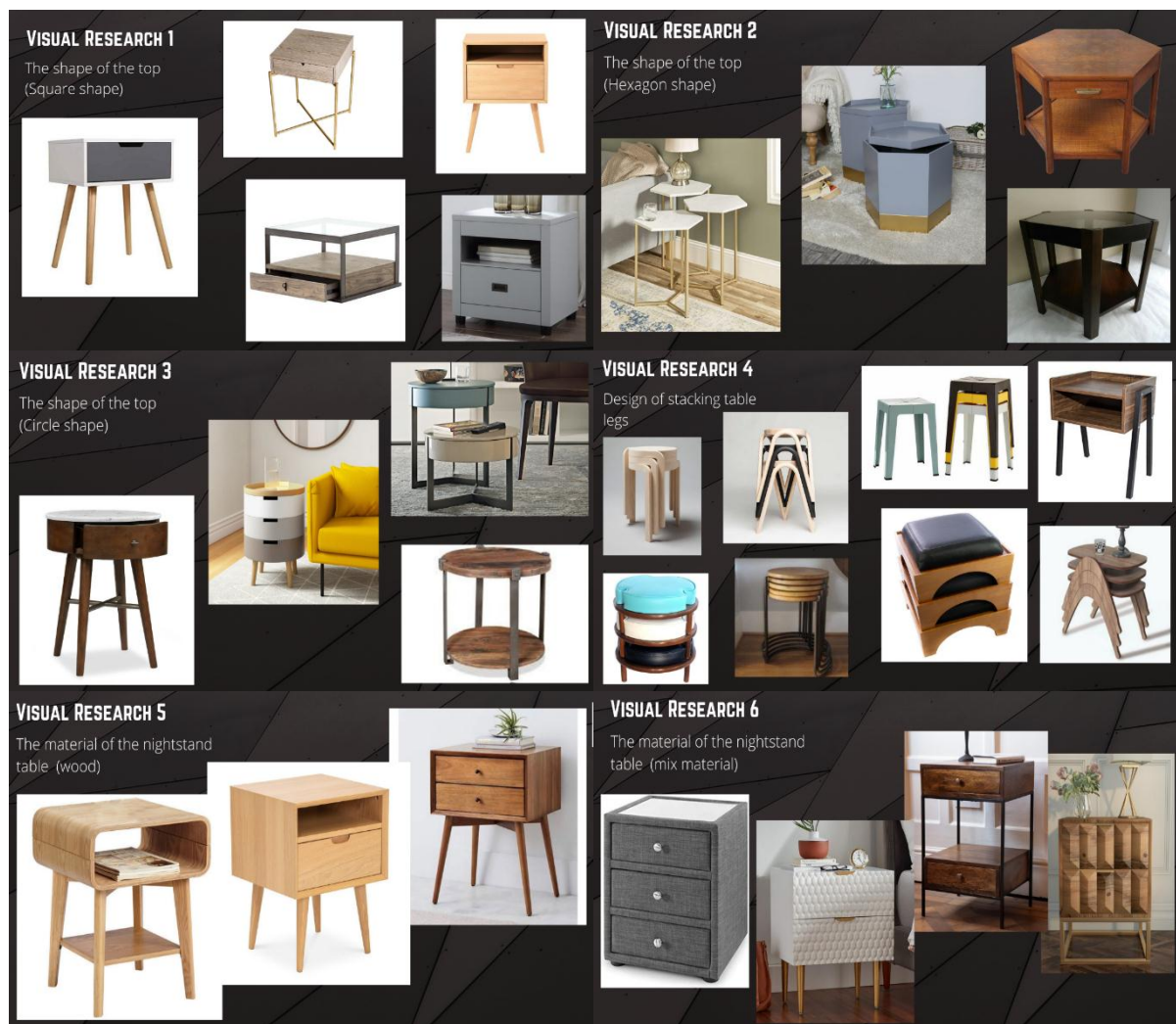


Figure 1: Visual research of nightstand table

For the ideation process, the researcher used 3 pieces of A3 paper to generate different ideas. The focus of the ideation process is a stacking furniture concept. Figure 2 shows the ideation of the nightstand table.

Next, the researcher developed 3 idea development (Figure 3). In this process, the stackable function for the table legs was included in the nightstand table design. Besides that, the design element for the nightstand table is a square shape. As for the table legs, a stackable function was implemented in the legs design, so that the nightstand table could stack to each other and create the space needed of the respondents by stack the table. These idea development sketches will be used as a candidate for the final design selection conducted using the Google Form platform.

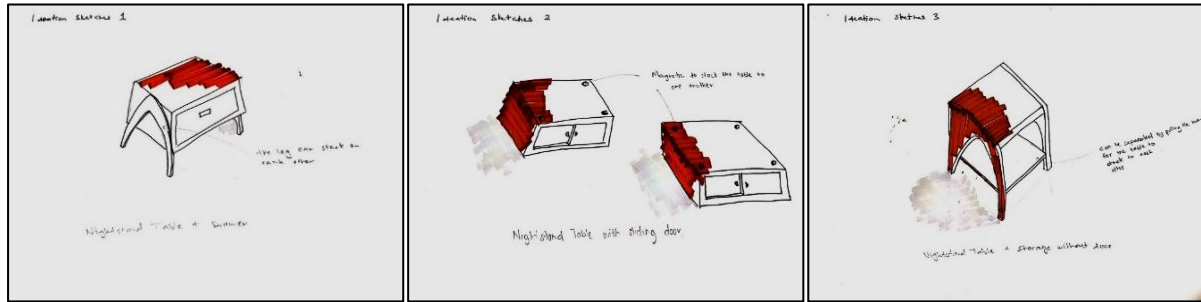


Figure 2: Ideation of modern nightstand table

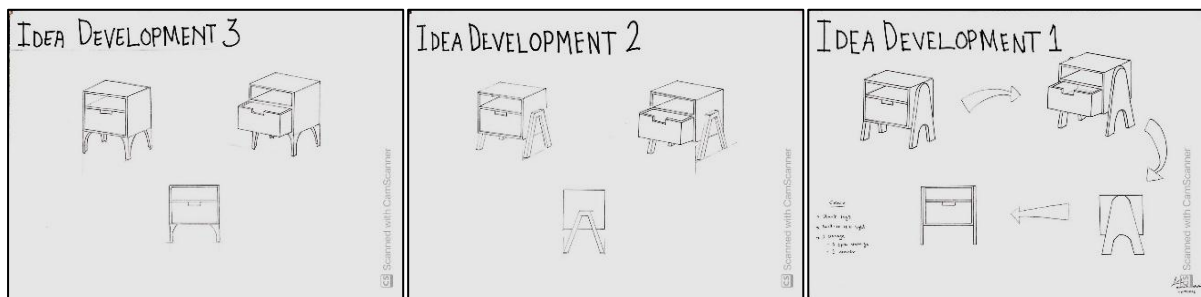


Figure 3: Idea development of nightstand table

The final design was selected based on the final design survey that answered by 50 respondents. The majority of the respondents (36 respondents) chose idea development 2. Therefore, idea development 2 was used as a final design for the prototype fabrication process (Figure 4).

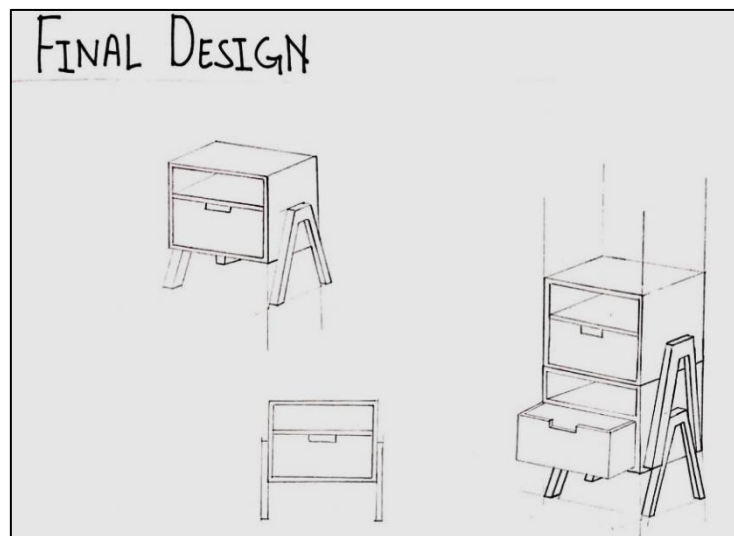


Figure 4: Final design of modern nightstand table

This study used computer-aided design software called AutoCAD to create technical drawings. The views that will be presented through technical drawing is the orthographic view and isometric view. The unit that used in the making of technical drawing is in centimetre (cm). The final design has dimension of 58 cm length, 44 cm width, and 60 cm height. Figure 5 shows the final design of modern nightstand table inspired by stacking furniture.

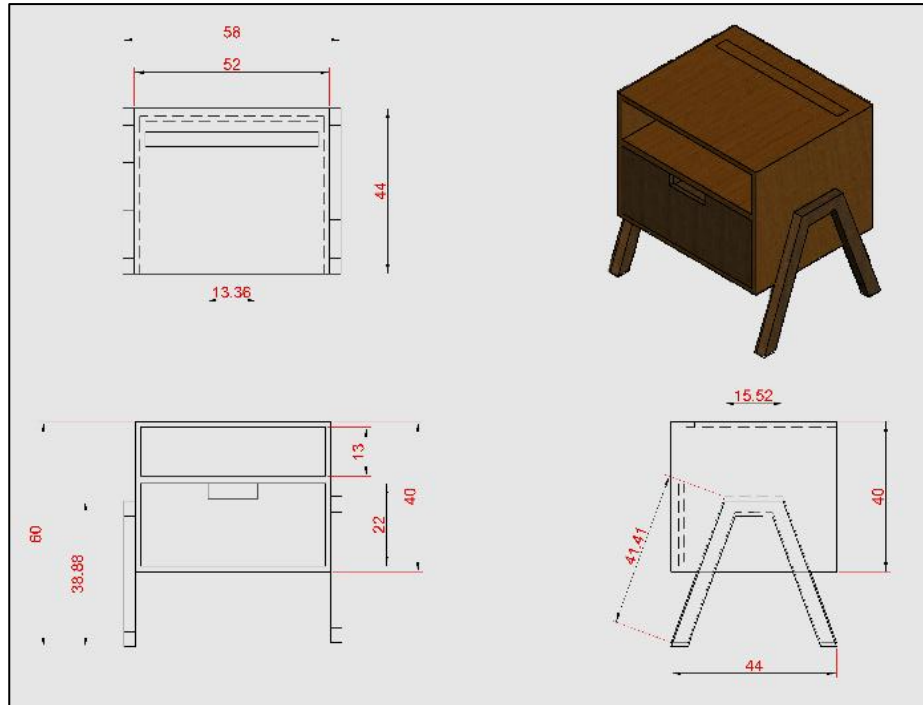


Figure 5: Technical drawing of modern nightstand table

In the prototype fabrication process, the material that is used in the manufacturing process of the prototype including the OSB, pinewood, ruler, pencil, eraser, panel saw machine, measuring tape, adhesive, air pressure nails gun, sanding machine, LED light and thinner. The technical drawing of the final design was used as a reference in the prototype manufacturing process. The manufacturing process was started from the measuring, cutting, sanding, and assembly to the finishing process. In the measuring process, the dimension for each part needs to meet the accuracy as shown in Figure 5. In addition, during the cutting process, the shape of each part was cut out by using a panel saw machine.

Next, in the sanding process, a sanding machine was used to smoothen the surface of the OSB and pinewood materials. In this process, each part of the OSB and pinewood needs to be sanded until getting a smooth surface and free from impurities. Subsequently, in the assembly process, the parts that were cut and sanded were assembled using an air pressure nail gun. Before assembling each part with nails, an adhesive was used to make the connection much stronger and more durable. Finally, for the finishing process, the surfaces were wiped using thinner to clean the dust and impurities. The prototype of modern nightstand table inspired by stacking furniture is presented in Figure 6.



Figure 6: Prototype of modern nightstand table

5. Conclusion

In conclusion, this study successfully achieved its objective. A modern nightstand table inspired by stacking furniture was fabricated which have 2 tiers of space, one is open storage and the other one is a drawer. This design also has a built-in LED light and also has legs that can be stacked to other nightstand tables. Design criteria were obtained by distributing questionnaires using Google Form around Shah Alam, Selangor. The result of the questionnaire was used as a reference in designing this modern nightstand table. The idea development 2 was chosen as the final design. The material used to fabricate a modern nightstand table prototype were OSB, pinewood, drawer rail, LED light, nails, and thinner. For future study, the researcher may need to do more research on the existing nightstand table in the market and also the current value for the table so that the new design nightstand table prototype can be accepted in the market.

Acknowledgement

This research was made possible by support from the Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia.

References

- Brooks, J. O. (2011). Toward a “smart” nightstand prototype: an examination of nightstand table contents and preferences. *Health Environments Research and Design Journal*, 4(2), 91–108.
- Husuno, N., & Selimin, M.A. (2020). Meja kopi moden pelbagai fungsi diinspirasi oleh Palmanova, Itali. *Research in Management of Technology and Business*, 1, 326-336.
- Lee, C.Z., & Halip, J.A. (2020). Modern corner bookshelf inspired by ASPAM building. *Research in Management of Technology and Business*, 1, 194-204.
- Lee, T. (2018). Modern vs contemporary design styles. *The Spruce*, 1–10. Retrieved from <https://www.thespruce.com>
- Makmanee, T. (2013). 55 Stackable furniture products from smiling stackable storage to colorfully huggable seating. 1–33. Retrieved from <https://www.trendhunter.com>
- Ramli, N.A.M., Selimin, M.A., Ab Hamid, A.A.A., Bon, A.T., Rahim, W.N., & Halip, J.A. (2018). Conceptual design of modern minimalist dining table inspired by British military uniform. *Proc. of the Int. Conf. on Industrial Eng. and Operations Management*, Bandung, Indonesia.
- Saruwono, M., Zulkiflin, N. F., & Mohammad, N. M. N. (2012). Living in living rooms: furniture arrangement in apartment-type family housing. *Procedia-Social and Behavioral Sciences*, 50, 909-919.
- Selimin, M.A., Hasanuddin, S., Halip, J.A., Ab Hamid, A.A.A., & Bon, A.T. (2019). Contemporary modular study table for small minimalist residence in Malaysia. *Proc. of the Int. Conf. on Industrial Eng. and Operations Management*, Bangkok, Thailand.
- Urist J. (2013). The Health Risks of Small Apartments. *The Atlantic*. Retrieved from <https://www.theatlantic.com>

Wijaya, C., Kusumarini, Y. & Suprobo, F. P. (2015). Perancangan Portable Folding Furniture untuk Interior Apartemen Tipe Studio. *Intra*, 3(2), 9-17.