

## HANDLE SELECTION OF STORAGE FURNITURE FOR MODERN MINIMALIST RESIDENCE AT LAVON SWAN CITY, TANGERANG

Catherine<sup>1</sup>, Augustina Ika Widayani<sup>2\*</sup>

<sup>1</sup>Interior Design Department, Faculty of Visual Arts and Design, Tarumanagara University, Jakarta

<sup>2</sup>Interior Design Department, Faculty of Visual Arts and Design, Tarumanagara University, Jakarta

Email: [augustinaw@fsrd.untar.ac.id](mailto:augustinaw@fsrd.untar.ac.id)

*\*Corresponding author*

*Submitted: July 2022, Revised: December 2022, Accepted: February 2023*

---

### ABSTRACT

*Furniture design is very influential on the overall appearance in interior design. The selection of models, materials, finishing, to accessories such as handles is a determining aspect that will affect furniture design. Storage function is the most important function of a furniture. Storage systems in furniture have several aspects of consideration such as the size of the storage area, the open-close system of the storage area, including the model and material of the handle. Harmonization of handle design and the furniture would strengthen the furniture impression received by the user and the observer. The purpose of this research is to determine the characteristics of storage furniture handle for living room of modern minimalist residence at Lavon Swan City, Tangerang. Qualitative method with collection and analysis based on relevant theories and reviewing similar research is used in the process of making the study by referring to the Kilmer design method. Thereupon from this study, it can be seen that furniture handle designs that are suitable for designing modern minimalist house storage furniture Lavon Swan City are cut-out and tip-on-swing type handleless design.*

**Keywords:** *Space, modern, minimalist, storage furniture, handle*

### 1. PREFACE

A good interior design is described as a design that can add a new dimension to a room [1]. Adding the new dimension in question can be done through the application of room styles, such as classic, mid-century, coastal, and others. One style that attracts interest and is often applied by the Indonesian people is a modern and minimalist theme. Around 1930, a new era emerged in the world of interior-architectural design called modernism, the era in which Frank Lloyd Wright's Robie House and Le Corbusier's The Villa Savoye with Pierre Jeanneret were built. The modernism style is characterized by neat, geometric lines, space, function, and clear storage [2].

Meanwhile, the minimalist style itself began to receive attention more or less in 1950 when Ward Bennett poured his ideas into designing furniture and interiors with the mentioned style [3]. Similar to the modernism style, the minimalist style also has characteristics such as simple lines, minimal decoration, monochromatic, open space, the use of natural light sources and industrial materials [4].

In this study, a combination of modernism and minimalism is used in the design of the Lavon Swan City multi-storey house which has a modern-classic exterior. In realizing these two things, choosing the right furniture is one of the important elements that a designer needs to pay attention to. Furniture itself has a variety of functions of each, the storage function being one of them. Through this research, the characteristics of modern minimalist residence would affect the furniture handle selection.

**Figure 1**

*Simple facade of residences at Lavon Swan City, Tangerang*



### **Related works**

This research used three main related works to explain further on how to synergize both interior style and furniture design for interior design.

#### **Modern interior style**

Modern style first emerged from the thought of some artists and designers to make a “pure style”, which is reinforced by the opinion of Adolf Loos: “We have had the style of this century as cultural evolution, that is, removing the ornament of utilitarian objects. Ornaments are just a waste of labor and health.” and Larson’s similar thoughts [5]. The next force that helps reinforce the birth of modern style is “Industrial Revolution”. Easy access of information and exchanging between people around the world as one of Industrial Revolution impact truly helps a lot of people, including the middle-class and lower community. By given more freedom to go against upper-class community, bunch of middle artists and designers can make their own customized style. By customized style means, a more affordable, newer, more modest, and effective for production mass style [6].

By means of using modern style in an interior room, one should prioritize a geometrical shape for furnitures with clean look. The clean look can be attained by using small amount to none ornaments. In choosing furniture color for modern style interior, a designer can combine both neutral color palette and a small spot of vivid hue colors as the accent. A designer should also pay attention to bring smooth surface look on the designed furniture before placing it in a modern room.

#### **Minimalist interior style**

As mentioned in the previous subcategory, minimalist style is often described as a style with simple lines, minimal decoration, monochromatic, open space, the use of natural light sources and industrial materials as the main characteristics. While choosing the right furniture design with minimalist interior, one should take an extra note on: (a) Simple shapes; (b) Minimalist size; (c) Emphasizing functional shape or form; (d) Neutral colour palette; (e) Simple finishing looks with wood, concrete, glass, iron and other simple-look-finishing materials.

One of the most important issue in designing furniture for minimalist style is, maximizing “space-saving”. Quoted from E9 Architecture Writer in a work of Wahjutami [5], the principle of the minimalist style is saving in terms of space, namely the arrangement and formation of space based on a study of space requirements on function. This can be achieved by designing a

furniture with many open-storages to show a simple look and completed by avoiding bulky shapes on the body or structure of the furniture.

In synergizing the finishing part of the furniture with minimalist style, designer can use either neutral colored tone or monochromatic tone. The most used palette that can be applied are white, black, grey, and brown. Often times, to achieve simple and minimalist final look designer can choose to apply transparent liquid-based finishing to show the texture of the material used.

#### Modern-minimalist style combination

It has become commonplace to find modern and minimalist interior styles combined into the same house design. A house that uses a combination of these two styles, generally applies the characteristics of a firm line, minimal ornaments, and thoroughly well-organized spaces from modern style. Then it combined with monochromatic to neutral color palette to fill the house, alongside simple and functional furnitures to bring the minimalist style characteristics. These two sentences also applied to furnitures used. In the work of Yingfeng Kuang and Weihai Zhang [7], they stated in addition to modern simple lines and shapes, furnitures of this combined styles is often seen using environmental friendly materials hence the board use of cotton fabric, carbon fiber, steel and natural materials such as wood. Further they stated, the furnitures often use black, white, gray, and other neutral natural like colors to bring the pureness, relaxing, and comfort out of the modern-minimalist style.

#### Our contribution

This study was made and brought to public in hope to help designers, notably new and young designers in making and choosing the right decision regarding furniture handle designs. The main interior room style choosen as the topic of this study are the combination of modern and minimalist style, one of the most used combination style in Indonesian region houses. Another purpose that can be contributed from this study is to help more the general public who did not study interior studies and discovered this work pinpoints the differences between modern and minimalist style, with expectations to make it more simple to design a modern-minimalist themed house.

#### Furniture handle

Research on ergonomics experiments on furniture handles was conducted by Zhiyu Xu et al [8]. The research focuses on ergonomics studies, with the aim of getting recommendations for handle parameters based on the physiological characteristics of the user and the user's experience. Research conducted by Altiparmakogullari and Eroglu [9] also focuses on ergonomic studies. This study aims to determine the application of ergonomics in the design of furniture handles. Another study on furniture handles was conducted by Kimitoshi Yamasaki et al [10] with the aim of knowing the handling of furniture by robots. This research is experimental by combining 3D appearance and shape with manipulation procedures instructed by humans so that the robot can hold furniture handles and open furniture.

#### Paper structure

The study can be read as five main subcategories discussing and explaining on how to choose the most suitable design for storage furniture in a modern-minimalist residential house at Laven City, Tangerang, Indonesia. The five main parts include: (a) Abstract; (b) Introduction; (c) Methods; (d) Result and Discussion; (e) Conclusion. By adding some other parts (acknowledgement and references), the structure itself has been deemed as complete. The first two parts (abstract and introduction) mainly explaining characteristic of modern and minimalist

themed interior, as the two of them are the main theme of interior project happening at one of Lavon Swan City housing estate. By entering the second part of the study, some methods used in the making will be explained in some short paragraphs. The purpose of the third part of this study is to spread out the gathered informations and facts to be formed into a more specific and suitable result as the main topic picked. It will contains several personal data relating the work. At the end of the third part, some final conclusions were added.

## 2. RESEARCH METHOD

In the making of this study, the design method by Rosemary Kilmer and W. Ottie Kilmer [6] is used in assisting the process of designing handles for modern-minimalist storage furniture at residential house of Lavon Swan City, Tangerang, Indonesia. These various methods are then supported by data consisting of: (a) Literature data; and (b) Field data.

### Collecting data

Before starting a design, collecting data to understand the problems to be faced is an important process. Various ways can be done to carry out the data collection process regarding furniture handles. In this study, data collection methods are carried out via the internet such as articles, electronic books, and relevant journals found online as well as data obtained from clients.

### Data processing

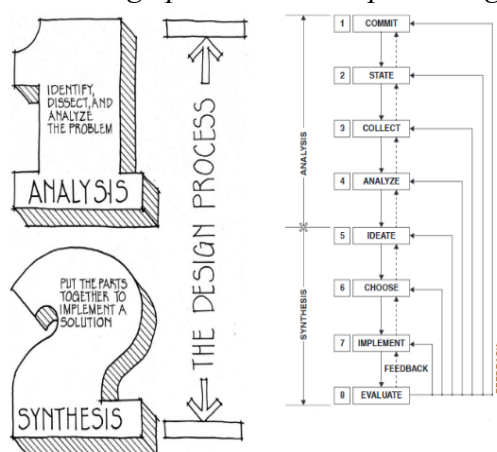
After studying and summarizing various data information obtained online and/or clients, the two data will go through a comparison process. This process is carried out to identify and assist the selection of the handle's design on the furniture in accordance with the data desired by the client. By focusing on modern and minimalist keywords according to the client's wishes, an option for various types of handles that can be matched can be formed. This method can be applied by making a programming of the desired furniture handle design.

### Analysis data

After going through the stages of data collection and processing, the last step that needs to be done is analyzing the data. The effort of conducting this data analysis is to assist designers in eliminating inappropriate handle options for the furniture they are making, leaving only the one that is considered as the most suitable option. This can be poured into one of the stages of design by Kilmer, namely the analysis stage.

**Figure 2**

*Kilmer design process, two steps and eight steps*



**Figure 3**  
*"Collect" design stages*



**Figure 4**  
*"Analyze" design stages*



With the conclusion from the analysis reached, the next Kilmer design stage that can be carried out is the synthesis stage. At this stage, the designer will implement the design results of their decisions in real terms.

**Figure 5**  
*"Ideate" design stage*



**Figure 6**  
*"Choose" design stage, selected tip-on-swing and cut-out handle models.*



### 3. RESULT AND DISCUSSION

By focusing the design on the following opinion, “furniture design concept leads to the production of useful items that result in tactical experiences” [8], various data were sought which were summarized through the Shape London Corporation [9], Hohenandel [4], also Mockett (Doug) Mockett & Company [10], and MT Copeland [11] regarding furniture handles to bring Postell's opinion to life.

#### **Types of handle furniture**

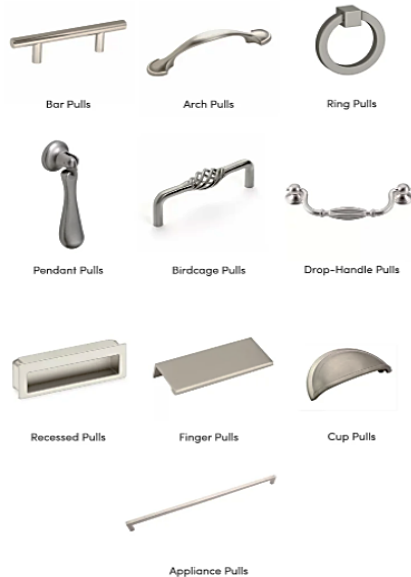
By overall, handle furniture can be divided into two major groups of types of furniture, namely:

##### **Furniture with handle**

Furnitures with handle are all furnitures that use handles as in conventional inventions. At the beginning of the development of storage furniture design, the construction on the surface of the door will be attach with a handle to help the user to pull the door so it can be opened. The following are various forms of furniture with handles:

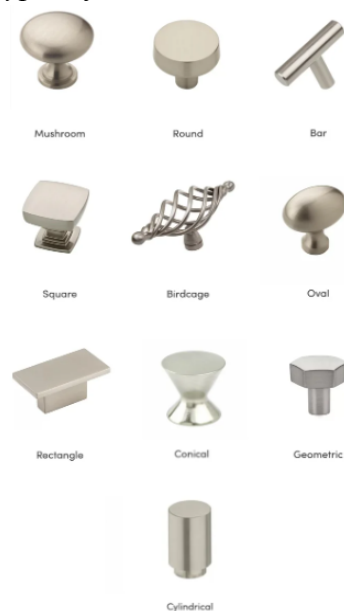
(a) Pulls: one of the furniture hardwares that can be identified by its shape, which is generally long;

**Figure 7**  
*Types of pull handles.*



(b) Knobs: is a hardware that has geometric shapes such as circles, ovals, and squares;

**Figure 8**  
*Types of knob handles*



(c) Novelty: this hardware has a distinctive design compared to the other two types and is often associated with the handle design of the Victorian era. In general, the design of this novelty type handle has a unique shape that matches the theme of the furniture or the whole room that a designer wants to achieve.



**Figure 9**

*Novelty handles*



#### Handleless furniture

In order to get around a simple and smooth appearance, this type of furniture handle then undergoes a change in shape known as handleless. The thing that most distinguishes the handleless type from the previous type is, on the handleless furniture there is no protrusion where the user's finger generally pulls the door of the furniture. Handleless furniture can be further divided into several forms:

(a) Recessed finger groove: are generally found in the upper-middle position of a furniture door (such as drawers and cabinets). Users need to slide their fingers in between the handles to pull the furniture door;

**Figure 10**

*The finger groove handle is in the form of a “J” shape. This furniture handle is designed for the purposes of the Courcelette Residence modern house.*





**Figure 11**

*Finger groove handle "bevel" type gap. It is a kitchen furniture product by Dica with the title "Series 45".*



(b) Rebated: is a handle shape that looks like a "closed hole". This handle uses a bevel finger groove system combined with the use of additional material as a cover to be tucked into the handle frame. These additional materials can use a type that is intentionally distinguished from the rest of the furniture material (Figure 12);

**Figure 12**

*Rebated handles with contrasting materials are applied in the gap of kitchen cabinets at Lambeth Marsh's house in London*



(c) Cut-out: this type gives a very simple impression because to make a cut-out handle, designer only needs to make a hole according to the shape he wants on the surface of the furniture door;

**Figure 13**

*One of the cabinets in the "Etch House" house applies a cut-out handle on the door surface.*



(d) Scalloped: has a resemblance to the rebated type, this handle is also made by carving a hole on the surface of the furniture door and then inserting additional material between it. The thing

that distinguishes a scalloped from a rebated is that the scalloped handle can be inserted with the same additional material (Figure 14) or a different material from the rest of the furniture (Figure 15);

**Figure 14**

*Scalloped handle with the same overall material used on the Red Zephyr Blue House.*



**Figure 15**

*Scalloped handle with different additional materials on one of the Etch House furniture*



(e) Tip-on-swing: is a type of handle that uses the help of a "tip-on-swing" spring system to open furniture doors. Users only need to press the door surface to operate the system;

**Figure 16**

*Cabinet with tip-on-swing application.*



### Materials of handle furniture

Some of the materials used to make the handles are matched with the materials in the main construction of the furniture, but there are also some handle materials that are selected differently from the main construction materials. Materials that can be used as handles are: (a) Stainless steel: gives a sleek and cool impression. Besides, stainless steel material is able to resist corrosion; (b) Wood: creates an impression opposite to stainless steel. Wood material produces a "warm" and "earthy" look; (c) Glass or crystal: used when the designer wants to give a "clean" and elegant touch to the furniture handle; (d) Metal: Similar to stainless steel, metal gives a cool impression when it's used as a furniture handle; (e) Stone: if the wood material produces a "warm-earthy" appearance, then the stone material produces a "cool-earthy" appearance; (f) Ceramic or porcelain: is a material that has advantages such as, it can be applied with custom

patterns to its structure; (g) Enamel: Generally used as a coating for ceramic or porcelain materials, enamel can also be used as a handle material by coloring it to add the beauty aspect; (h) Acrylic: this material gives an elegant impression, but is lighter compared to a glass.

Subsequently, looking at the field data provided by the client regarding the design of Lavon Swan City residential house with modern minimalist interior, the following results are obtained: (a) Clean-cut appearance; (b) Utilization of wood material and finishing; (c) Space saving; (d) Functionality.

Through the client's field data, the comparison results to assist the selection of storage furniture handle designs can be described as follows:

**Table 1**

*The compatibility of the storage furniture handle design with the modern minimalist interior of Lavon Swan City*

<i>Num.</i>	<i>Handle Types</i>	<i>Compatibility</i>
1	With handle	X
2	Handleless	V

**Source:** Data analysis

The results in the table above are obtained through comparisons between literature data and field data also considerations. Thus, storage furniture with a handleless model comes out as the most appropriate choice.

**Table 2**

*Handleless type for modern minimalist living house storage furniture design Lavon Swan City*

<i>Num.</i>	<i>Handleless Type</i>	<i>Clean-cut</i>	<i>Space saving</i>	<i>Safety</i>
1	Recessed finger groove	X	V	V
2	Rebated	X	V	V
3	Cut-out	V	V	V
4	Tip-on-swing	V	V	V
5	Scalloped	X	V	V

**Source:** Data analysis

From the table above, three conditions are added to narrow the results. These three conditions are added by considering: (a) Clean-cut: provides a straightforward, simple, and uncluttered look. This level is more and more attainable with the use of the same overall material; (b) Space saving: does not take up small spaces by containing no protruding parts on the handle model; and (c) Safety: reduce the possibility of danger such as body parts of children and adults colliding with the protruding part of the handle.

**Figure 17**

*Application of handleless cut-out and tip-on-swing on storage furniture*

Keyplan



Handleless tipe cut-out



Handleless tipe tip-on-swing

Thus resulting in tip-on-swing and cut-out handle design as the final result that can be applied to the design of modern minimalist home storage furniture at Lavon Swan City. In addition, the use of handleless tip-on-swing and cut-out model as the final choice also supports the functionality side as stated in Tunjung Atmadi's opinion which is the modern minimalist concept prioritizes function and effectiveness of use so it impacted the design which almost or does not use ornament decorations. The author continued again in the journal [12], this concept prioritizes speed and precision.

#### 4. CONCLUSIONS AND RECOMMENDATIONS

While choosing a model or design of furniture handle for a residential house with modern-minimalist style, here are the things that needed to be considered: (a) Simplicity of form; (b) Efficiency, effectiveness, and functionality; (c) Selection of neutral colors, as well as; (d) The use of wood, glass, and iron as the main material.

With the considerations explained above, both tip-on-swing, and cut-out handle designs are considered as the most suitable ones for storage furniture in a modern minimalist house located in Lavon Swan City, Tangerang, Indonesia.

#### Acknowledgment

The author would like to thank profusely to all parties who have helped and supported in the process of writing this article.

#### REFERENCES

- "mockett.com," Doug Mockett & Company, 1 May 2017. [Online]. Available: <https://www.mockett.com/blog/blog-2017-cabinet-hardware.html>. [Accessed March 2022].
- "mtcopeland.com," MT Copeland, 17 February 2021. [Online]. Available: <https://mtcopeland.com/blog/complete-guide-to-cabinet-hardware/>. [Accessed March 2022].
- "shapelondon.co," Shape London COporation, Agustus 2020. [Online]. Available: <https://www.shapelondon.co/handle-details>. [Accessed March 2022].
- E. L. Wahjutami, "Kesenjangan Konsep dan Penerapan Gaya Modern Minimalis pada Bangunan Rumah Tinggal," *Mintakat: Jurnal Arsitektur*, vol. 18, no. 1, pp. 21-29, 2017.
- H. Newton, "Modern Interior Design - a Guide to Modern Interior Styles and Design," *livingetc.com*, 01 October 2020. [Online]. Available:

- <https://www.livingetc.com/spaces/interior-inspiration/modern-interior-design-242293>.  
[Accessed 15 March 2022].
- J. Postell, *Furniture Design*, 2nd Edition, Hoboken: Wiley, 2012.
- K. Hohenadel, "What is Minimalist Design," *thespruce.com*, 02 01 2022. [Online]. Available: <https://www.thespruce.com/what-is-minimalist-design-4796583>. [Accessed 14 March 2022].
- K. Yamazaki, T. Tsubouchi and M. Tomono, "Modeling and motion planning for handling furniture by a mobile manipulator," in *International Conference on Intelligent Robots and Systems*, San Diego, 2007.
- P. Cleuricuzio, "The International Style Movement Overview and Analysis," *theartstory.org*, 2017. [Online]. Available: <https://www.theartstory.org/movement/international-style/>. [Accessed 2022].
- R. Kilmer and O. W. Kilmer, *Designing Interiors*, New Jersey: Wiley, 2014.
- S. Dodsworth, *The Fundamentals of Interior Design*, Lausanne: AVA Publishing SA, 2009.
- T. Atmadi, "Kajian Desain Interior Kantor PT. Pupuk Sriwidjaja dengan Konsep Modern Minimalis," *NARADA*, vol. 4, no. 3, pp. 303-313, 2017.
- Y. Altiparmakogullari and I. Eroglu, "Ergonomics Information Flow in Product Design: A Case Study About Handles Used by Turkish Furniture Producers," *DRS (Design Research Society) International Conference*, 16-19 June 2014.
- Y. Kuang and W. Zhang, "The Application of Minimalist Style in Interior Design," in *Proceedings of the 3rd International Conference on Arts, Design and Contemporary Education (ICADCE 2017)*, Moscow, 2017.
- Z. Xu, N. Yu and H. Hu, "Study on the Handle Test Sample of Furniture for Ergonomics Experiment," in *International Conference on Applied Human Factors and Ergonomics*, 2018.