

# THEMATIC ANALYSIS ON FURNITURE DESIGN FOR WORKING SPACE IN TINY HOUSE

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## ABSTRACT

There are two future predictions based on current trends: the style of working remotely and the growth of demand for tiny houses. However, the trends are cross-conflict due to the limited space in tiny houses for working activities. One of the most significant influences on working productivity is the suitability of furniture design for working activity. One of the observation results in the furniture design market shows that the available furniture design for working activities is usually not designed for home space. This paper studies the possible types of furniture design for working space in tiny houses. Thematic Analysis extracted from design discussions with 15 Key Informant Interviews (KII) specialises in design (Industrial Design, Entrepreneur, Interior Designer, and Architect) from Malaysia. Results show the attributes of workspace furniture design for tiny houses, such as the consideration ratio of working surface and the longevity time usage for working remotely from the tiny house. These attributes are helpful for future research and development of the furniture design process, specifically in designing furniture design for workspaces in tiny houses. The consistency statement by KII leads to ordering the evaluation of furniture design criteria for workspace in tiny houses. Most of KII is concerned about the technical part, followed by functionality, concept aesthetics, and cost. The perceptual positioning map of workspace furniture shows the working furniture for remote working and their positioning, indicating a space function relationship. The presentation of furniture mapping relates to the estimation for designing furniture for workspaces in tiny houses in the future.

**Keywords:** Evaluation Criteria, Furniture design, Thematic Analysis, Tiny House, Workspace

## 1.0 INTRODUCTION

This study explores the potential of furniture design to enhance the functionality and comfort of workspaces in tiny houses. Working remotely is not a new trend; it has been predicted trends since the era of the internet. The workplace's flexibility allows users to work virtually with internet connectivity (Wajcman, J. et al., 2010). This trend shifts the focus of work-life balance in shaping their environments and working behaviour. As remote work grows, it creates opportunities and challenges from many perspectives.

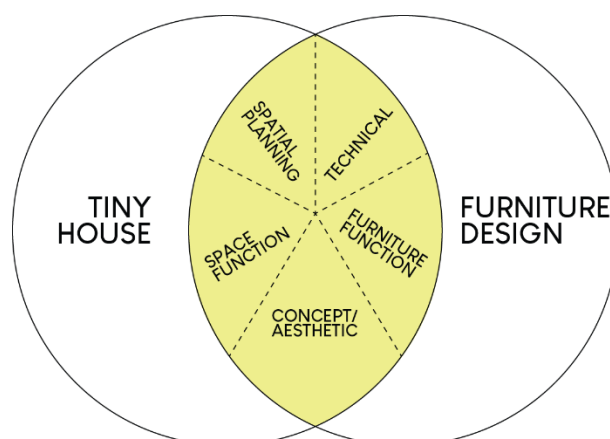
Opportunities from this growing trend are mainly shifting development on technology accessibility and some economic reasons. Some companies found the workers' performance more productive after being given flexibility in managing their space and work time (Ray T. et al., 2021). More companies and employers are taking this trend as an opportunity to minimise

the company's facilities. Therefore, they can save money in preparing the working space for employees (Licite-Kurbe, L. et al.; R., 2021). Many studies show that the remote working style gives a positive response, such as keeping a lot of time and energy in commuting to work, flexibility in choosing a comfortable workspace, and better work-life balance (Hunter, P., 2018).

On the other hand, some companies also need help adapting to the new remote working environment. Some said that workspaces other than the company's office are uncomfortable due to several issues, such as privacy concerns, time control, disturbance of the space's functionality, and lack of social and communication exposure. (Olson, M.,1983). Moreover, health-related issues have been raised since the work remotely has been introduced widely. Excessive spending time in front of the screen results in excessive sitting time, sleep deficiency, and anxiety. (Nakshine, V. et al., 2022). Studies state that working with ergonomic furniture can provide comfort and minimise musculoskeletal disorders. The real question is how to overcome those concerns (Silviana S. et al., 2022).

The remote working style allows workers to work anywhere, including their house. Meanwhile, in addition to employers' desire to reduce the company's costs, individuals also approach the affordable economy to solve problems. Tiny houses are a perfect choice for the young generation who prefer a nonmarriage lifestyle, lower debt percentage, and a simple lifestyle (Shearer, H., 2019). Tiny houses: The community also positively acknowledges the growth of small houses as affordable properties to own.

As it is a response to the economic and social growth of a country like Japan, the rapid increase in the number of tiny houses in the city continues (Hornyak, 2024). Meanwhile, the development of compact housing, such as high-rise apartments in urban areas like Kuala Lumpur, is a response toward rapid urbanisation and significant adaption of culture (K. Seo et al., 2021). According to Global Angel, Malaysia's multiple-family housing was decreasing due to the type of buildings that can occupy a limited space area. The website also mentioned that the high price tag of owning a house in Malaysia is an uptrend and will continue to grow with no cooling-off measures ("Malaysia's Residential Real Estate Information," 2025). The local blogger also mentions that Malaysia's average house size was always above 1500 sqft in previous years; however, in 2018, the average house size was 1,264 sqft. The House and Local Government or KPKT Minister also announced that the average size of the houses in Malaysia will continue to decrease yearly (Tan, 2019).



**Fig. 1:** Research Gap Framework. (Source: author)




A study indicated the need to understand the furniture design process and the relationship between space and furniture design (Kim et al.; J., 2014). The same study also mentioned examples of John Pawson's design that consider the suitability and compatibility of the furniture design to the function and size of the space, which is an essential factor when designing furniture design (Kim et al.; J., 2014). In this study, tiny houses, as the case target area, aim to evaluate the influence of the criterion and design process when designing furniture design.




## 2.0 LITERATURE REVIEW

### 2.1 Furniture Design for Working Activity

After several months of observation, the authors found that most of the furniture designed for working activities in the current market is generally intended to provide more comfort. Table 1 shows the type of furniture suitable for working activities in general. The furniture listed below is the basic type that authors come across while browsing the internet, with the keyword workspace furniture for remote work.

**Table 1:** Type of Furniture for Workspace

Type of furniture	Example of the Furniture	Detail & Source
Smart office desk		Herman Miller Smart Desk (Source: <a href="https://www.dezeen.com/2017/06/15/herman-miller-yves-behar-live-os-smart-desks-remind-employees-stand-design-technology-neocon-2017/">https://www.dezeen.com/2017/06/15/herman-miller-yves-behar-live-os-smart-desks-remind-employees-stand-design-technology-neocon-2017/</a> )
Ergonomic Chair		Cosm Chair by Studio 7.5 for Herman Miller (Source: <a href="https://alteriors.ca/products/cosm-office-chair?variant=44010009493718">https://alteriors.ca/products/cosm-office-chair?variant=44010009493718</a> )
Multi-function Furniture		Chair PF by Daniel Diermeier (Source: <a href="https://www.diermeierdaniel.com/chairpf">https://www.diermeierdaniel.com/chairpf</a> )

Type of furniture	Example of the Furniture	Detail & Source
Built-in Desk		Built-in desk integrated with shelving (Source: <a href="https://ar.pinterest.com/pin/631348441542616184/">https://ar.pinterest.com/pin/631348441542616184/</a> )
Acoustic and Divider		Allsteel, Recharge Collaborative (Source: <a href="https://www.pinterest.com/pin/recharge-lounge--837106649503182833/">https://www.pinterest.com/pin/recharge-lounge--837106649503182833/</a> )
Restaurant/ Café furniture		Image: Working in a Restaurant (Source: <a href="https://www.entrepreneur.com/business-news/meet-this-company-that-turns-restaurants-into-coworking/313514">https://www.entrepreneur.com/business-news/meet-this-company-that-turns-restaurants-into-coworking/313514</a> )

For example, in Table 1, a smart desk was designed to improve work-life balance (Arlianti et al.; H., 2023) with adjustable features that allowed and reminded users to change positions or stand whenever needed (Kif L., 2017). This active working style can improve user comfort, health, and productivity (Aryal et al.; G., 2019). Ergonomic chairs are always recommended for working activities, mainly because they can promote support to the musculoskeletal system while working at the desk (Silviana et al., D., 2022). Ergonomic chairs also give safety, flexibility, comfort, practicality, stability, and appropriateness while completing remote work (Occhipinti et al.; A., 1993).

Other than ergonomic chairs, multi-position furniture, innovative storage, and multi-function furniture lets the users sit in several working positions, improving their comfort and productivity for extended periods (Workineh et al.; H., 2016). Moreover, some studies mentioned that multi-function furniture effectively simplifies daily activities and tackles the issues in interior design (Shaleh et al.; T., 2022). Multi-function furniture, such as multi-purpose tables, which are single-function furniture items, saves space and improves ergonomic performance, resulting in faster task accomplishment (Cheng et al.; K., 2021).

Another interior solution, including built-in furniture, made the house more stylish, simple, and functional. Some built-in desks with closet doors can help hide the office-related mess instantly (Cori S., 2024). Incorporated interior design with built-in furniture can boost the space outlook and functionality of the house or space (Xiao-zhou, S., 2006). Alternative furniture parts considered necessary for remote working are acoustic and screen dividers that create privacy without completely blocking off the space (Todorova, T., 2023). During the pandemic, desk dividers provided 99% protection from virus transmission (Li et al.; K., 2021). Another study mentioned that a cubicle workspace covered with space or a screen divider indicates privacy zonal, diminished distress and stress, and improved work efficiency by making users feel calmer and happier in that space (Sari, S., 2020).

## **2.2 Places for Work Remotely**

Remote work brings many shifting working places such as restaurants, cafés, and co-working spaces, which are public and social (Shinkawa et al.; Y., 2023). Studies show that situational domestication influenced by free wi-fi in cafes transforms the social space into a workspace (Henriksen et al.; A., 2018). Hence, a co-working space is a business opportunity to create a specific atmosphere, providing appropriate facilities for working activities, especially remote working (Fuzi, A., 2015). Observing all the furniture designs in all these spaces is mostly more casual than the office appearance.

Working from home is another option for remote work. The productivity of working from home differs in geological aspects, culture, and situation. For example, in 2015, studies in China showed an improvement in performance of 13%, which also led to improved work satisfaction (Bloom et al.; Z., 2015). Meanwhile, some studies mentioned that the advancement of technology nowadays also influences working performance (Anakpo et al.; Z., 2023). Additionally, there is a positive impact on short-term staff wellbeing and flexible work design prospects in working remotely (Crawford, J., 2022).

## **2.3 Evaluation Criteria for Furniture Design**

When evaluating furniture design, several studies show critical criteria in several prospects. The difference in the evaluation may be influenced by different methods, such as the ANP Method, which explicitly enhances and focuses on the design's aesthetic value, resulting in form, colour, and ergonomics being important values (Chen et al.; J., 2014). Meanwhile, in a recent study in 2023, Varol A. mentioned that the primary evaluation criteria in evaluating furniture design are functionality, technical, conceptual, and aesthetic, with several other sub-key criteria (Varol, A., 2023). Another study shows different critical criteria specific to green furniture, such that the weightage of the evaluation is more towards the value and pricing criteria, which indicate cost aspects (Yeğın et al.; M., 2022). For sustainable furniture design, it is reviewed that the evaluation criteria were conceptual of the design towards the environment, economy, and social dimensions (Suandi et al.; N., 2022). Xiaojie Xie and others also mentioned the evaluation key for kindergarten furniture differently than in another study, including the material's environmental friendliness, colour, technological structure, size, and interestingness as 11 other criteria (Xie et al.; J., 2023).

Users evaluate furniture differently when making decisions. A study by Zhang and others shows that the key factors influencing the purchasing process were design style, marketing,

and customer experience (Longxiang, Z. et al.; Z., 2020). Another study in Indonesia mentioned that the critical factors were product quality, furniture uniqueness, price perception, and service quality (Widiyanto et al.; Y., 2014). Moreover, different age groups and monthly net income also impact purchase decisions regarding material, price, and service, which are other factors (Oblak et al.; P., 2020). In this digital era, customer trust, product quality, and web atmospheres have been critical factors in purchasing decisions. A study on the second-hand furniture purchasing situation in Japan that uses Facebook and Instagram platforms shows the factors of brand value, aesthetic appeals, convenience, and service quality of the online platform (Chamnankit, C. et al.; S., 2023).

## **2.4 Furniture for Tiny House**

Due to the limited space of tiny houses, there is a lot of consideration and solutions in designing for the space. A study by Norwich University indicates that tiny houses that range from 120 to 400 square feet aim to simplify and minimise the energy requirement (Lutz, M., 2019). Other studies characterised the Indonesian tiny house size as 60–80-meter square (Analisa, F.; S., 2023). More space-saving furniture was introduced to utilise compact house layouts and improve users' quality of life through foldable, elastic materials, flat packaging, and mobile components (Xiang, Y., 2013). Other than space-saving furniture, flexible furniture also shows efficiency in proposing various activities in space to maximise the space commodity while reducing material resources and energy usage (Susanto D. et al.; A., 2018). Flexible furniture design is lightweight and easy to store, which is crucial when utilising limited space (Imam et al.; M., 2018). Spatial furniture planning is also a critical consideration in tiny houses. Space utilisation, function, flexibility in combination, and multiple styles are the factors in designing furniture for small-size houses (Chen, X., 2015).

## **3.0 METHODOLOGY**

Before the online design discussion with KII, a short discussion between laboratory members of the System Planning Laboratory, Design Department, Chiba University, was held to indicate the type of furniture needed for a tiny house. The Miro Platform discussed the suitable type of furniture for a house based on the current project: image assessment for online sources. The method used is the KJ Method when five laboratory members concluded that six types of workspace furniture for tiny houses Sets of Workspace Furniture, Built-in Workspace Furniture, Multi-Function Furniture for Working, Well Setup Furniture Workspace, Simple Furniture for Working, Flexible furniture for Working.

Fifteen key informant interviewers (KII) from Malaysia have been invited to participate in online design discussions as part of the dataset development. Using the Miro Platform, as shown in Fig.2, all the KII with backgrounds in Industrial Design, Architecture, and Interior Design have shared their view on various aspects. In the Miro Platform, an image assessment set of workspace furniture was identified through a collection from multiple online platforms. The professional will indicate one image per furniture keyword based on their perspective and appoint commentary to the furniture design selected based on their viewpoint towards workspaces for tiny houses. Each commentary has been clustered within the same images, coded and iterative, and compared into themes through thematic Analysis. Seven codes, which are material, size, space or placement, time, design, activity, and feeling or behaviour, are highlighted in each commentary. Each coded commentary is then tabled into each type



of furniture keyword, presenting a statement that indicates the furniture design for a working space in a tiny house. Other than that, another result presents the perceptual positioning map of the furniture for the working space.

15 Name:  
Professional in:

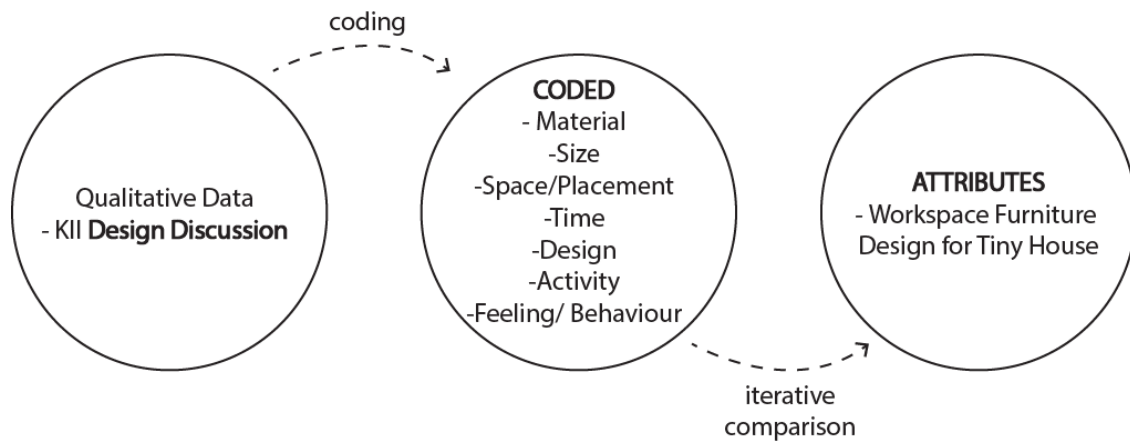


Fig. 2: Design Discussion in Miro Platform. (Source: Illustration by author)

Section	11 Set of Workspace	12 Built-in	13 Multi-function	14 Well-set-up	15 Simple set-up	16 Flexible
Figure						
	Shape bulky, will make the house smaller, the screen background should be removable, better have storage too. Table- storage. Dining area is suitable, but not really function not reworking (long-time use), more suitable for discussion only, plug point not suit in sofa, better placement at table, not for home especially the background. Placing office furniture, system furniture, easily produce and easily get everywhere. This is too bulky, especially the backrest is too big, gonna cut out the personal space. This is create to have a	Save space, minimize the depth of the supporting structure. Size of the chair is small- good, but not good design. Change to seamless design chair. not suitable for real working space because the surface space is not enough (but depends- work type), design wise is ok. Hong Kong also have this kind of design. A good idea to utilize space and make it versatile design for multi purposes and function in the space. For example, the multi function furniture coffee table to dining table, good for small space, table surface is big good for work, but the chair is too small, at least chair with backrest and have fabric	As a dining table, it is not a good design, it is not necessary foldable. It is complicated for everyday use. Use better mechanism to change the furniture design for different. This is a good furniture, the chair must be stackable. The small table can be extend for bigger number user, increase the size without changing structure.	One function set up only. Limited function. But good for hybrid working as it is not as second office. But not for everyone. Footrest not necessary to stand alone, design attach to the table, size wise is good, placement is ok. L shape table is better for different purpose, for beginner is ok as long as the space is enough. Too conventional. The chair is really space-eating chair. The castor of the chair will break the wooden floor. feel pressure, everything is good, but the design look very formal, look complicated. more customize on the personal need, vertical planning. more customize on the personal need, vertical planning.	Nice set up, but not suitable enough for work. Relaxing, entertainment purposes is better. Especially for work from home with kids, this is better set up- spacious, not complicated. This is a good idea to utilize furniture. Coffee table become an important furniture in house. a bit not suitable, probably acceptable for short time working time, not ergonomic.	It is ok. It is better if this design is foldable for storage and movable. Highly applicable to be house furniture. can be office furniture but not as main workstation, quick space for quick amendment work, concept is ok, but the design look can alter into softer look for home. The design, force the user to stand and change the position frequently. This is a good design to encourage better health. no need back panel, privacy is for your head, this kind of design work for 20-30 minutes. the need for tiny house, smart home living system, the incorporate with technology, flexible and go vertical, green living. smart home living system, the incorporate with technology, flexible and go vertical, green living.
Figure						
	Practical, contrast, Not suit to be home furniture, visually better for office setting, home furniture better more relax and softer. Not for tiny house, more toward office. Unless the tiny house is temporary office or small office for 2-4 people. Individual workspace must thought of the power management: wiring, maintenance, economically is ok, comfort provided thru soft furnishing.	micro space might suit, definitely for houses, chair wise suit for short term work, not for longer than an hour. Play around with the wall. The wall is the main space for hidden furniture. Needed improvement: the door may take the space, open slide inside (better ample space). Quite suit for tiny space- good for personal, saving space, multi purpose, for small space also suitable common material for built-in furniture.	interesting, for studio house, its good to be side table and quick grab for small work. The idea is there. The detail is not for the longest used. The product didn't have consistency of product story.	the most ideal - comfortable, workspace for office and house, however, sometime is too big to tiny house, this is consider a fix workspace, a serious workstation, not sharable, specialize workstation, depends on the need, the table is a bit too big, for tiny house, the length is ok, 4ft, width is 15-18inch. Not practical at for small space. This set up is not bring other function to the space. The design is bulky, too mechanism. common workstation for home ok, commercial ok, normal but still the best solution, proper set up, color wise is too office, the black color looks more cooperative, depends on the home concept, black is not	office lounge area is ok, home is not possible to have this, as public furniture is ok, like hotel, airport. cute idea, more outdoor than indoor, suit for public space. casual use, not long time use, cause the chair have no backrest.	quite interesting, a part of solution for working lifestyle, more mobile and casual, healthy working solution- changeable function for different posture, the height is fit (weakness) 90 degree. The cheapest solution, the most practical. Flexible furniture is unstable manipulation of the function is practical. High cost one time. Maintenance also low. ID perspective: temporary time-working, not for longer time - depends on concept and working style. good furniture, function use is variable probably the use of fabric material in certain

Fig. 3: Screenshots of the data transfer from the Miro platform- photo and viewpoints of KII transferred to Excel and colour-coded according to the title before iterative comparison in Table 2 (Source: author)

As shown in Figure 2, this paper only analysed section 1 (in the green bounding box). As shown in Figure 4 below, the thematic analysis process is a flexible theoretical approach to analysing qualitative data with clear guidelines and potential pitfalls (Braun et al.; V., 2006). However, adapting thematic Analysis for the design discussion dataset leads to a Design map, which helps evaluate existing technologies and notify new technologies (Brown, N., 2018).



**Fig. 4:** Thematic Analysis in this study. (Source: author)

## 4.0 RESULTS

Two analyses are extracted from the online discussion with all KII. First, the thematic Analysis lists the attributes of furniture design for tiny houses. The second Analysis presents the current workspace furniture design's position in perceptual mapping and shows the relationship between furniture design and space. Based on the first activity, five images were selected for sets of workspace furniture; six images were selected for built-in workspace furniture; six images were selected for multi-functional furniture; five images were selected for well-set-up workspace furniture, six images were selected for simple setup workspace and five images selected for flexible workspace furniture which 2 of it was similar images as multi-functional furniture.



## 4.1 Thematic Analysis

**Table 2:** Thematic Analysis, Attributes of Furniture Design for Workspace in Tiny House




Workspace's Furniture	Material			Size			Space/Placement		
	Positive	Negative	Neutral	Positive	Negative	Neutral	Positive	Negative	Neutral
<b>Set of Workspace Furniture</b>	Soft furnishing-comfort, outlet port for charging			Small working space, not good			Provide limited working space for commercial use	Not suitable for home, tiny house, small space	Common area
<b>Built-in Workspace Furniture</b>	Netting is a good material	Upholstery is not a good material	For chair - fabric finish, no castor wheel. Wooden finish is a common material that easily matches home concepts.	The size of the working surface is good	Consume space for structure		Saving, utilising, multi-purpose space	Space consuming, no composition to the space function	
<b>Multi-function Furniture for Working</b>	Wood is a good material	The mechanism must be sturdy		Compactness size is good.			Combining the space function	There is no barrier to the space-probability of having disturbance of the space function	
<b>Well-set-up Furniture Workspace</b>	Castor wheel is not good	Recommended: Anti-bacteria surface		Enough surface	Too big for a tiny house	Recommended: 4ft length and 15–18-inch width	Arrange the workspace that accesses natural light. Utilise vertical space.	This setup limits space to one function, and chair design consumes space.	
<b>Simple Setup Furniture for Working</b>				Slightly bigger size for residential.	Size is too small		Suit for public/common area, easy to match any space		
<b>Flexible Furniture for Working</b>	Recommended: fabric material			Ergonomic needs to be considered.			Secondary space to do work. Utilise space for multiple functions.		
<b>Attribute Workspace Furniture Design for Tiny House</b>	Having an outlet port is important for remote work nowadays. Soft furnishings, like fabric, give comfort. Wood is a good material. Wheels are not for home use.			Enough surface/area size is important, but not too big for a tiny house. Recommended: 4 feet in length and 15–18 inches in width.			Most workspace furniture is more suitable for commercial, public, and common areas. Furniture that allows space to be used for multiple functions is good. Choosing the right type of chair is also important so it does not consume too much space.		




**Table 2 (contd.):** Thematic Analysis, Attributes of Furniture Design for Workspace in Tiny House



Workspace's Furniture	Time			Design			Activity			Feeling/ Behaviour		
	Positive	Negative	Neutral	Positive	Negative	Neutral	Positive	Negative	Neutral	Positive	Negative	Neutral
<b>Set of Workspace Furniture</b>		Not for a long time working space		Compact ability, modularity of the design	Position of the plug point and higher backrest make the design bulky and not practical posture.		For temporary use of activity	More suitable for waiting activity		Depends on the user's working behaviour/style, e. Giving personal space is good	Doesn't have a higher point in ergonomic or comfort	For home must be more relaxed and have storage
<b>Built-in Workspace Furniture</b>		Chair is not suitable for working.		Integrate furniture to provide personal space and storage.	Selection design of the chair is important.		Utilise space for different kinds of activity	Not for working		Being comfortable with space orientation and integrating space with nature is a good		
<b>Multi-function Furniture for Working</b>		Not for long-term use		Multi-function furniture and multi-function space are practical and interesting.	Chair design affects the practicality.							
<b>Well-set-up Furniture Workspace</b>	Applied for longer time workstyle			Ideal working space	Only for working, design looks very formal	Normal look	Second office			Personally custom the workspace.	Conventional, serious setup, not easy to tidy	Depending on the need, a minimal setup is better to ease the cleaning process.
<b>Simple Setup Furniture for Working</b>		Not for long-time use		Utilise the furniture for other functions, more homey setup	Complimentary parts to make it suitable for working activity		Suit for temporary or short-term activity and comfortable people sitting on the floor	Not for working activity		Set up that promotes the user to move	Simple and more relaxing for home	Not suitable for working
<b>Flexible Furniture for Working</b>	Short-time working style			The flexibility of the furniture makes it multi-functional and allows the space to be utilised well.	Foldable, storable, moveable		It makes the user move more, has a suitable posture for healthy working behaviour, and is user-friendly.			Encourage healthy working behaviour.		Depends on user needs and promotes healthy working behaviour
<b>Attribute Workspace Furniture Design for Tiny House</b>	Most furniture is applied for short-term working style except for well-set-up spaces			Utilise the furniture's function and allow space to be utilised well. The plug point position is better on the table than on the chair. Choose a furniture design that is important to the home concept. Recommended designs: foldable, storable, moveable			Most activity suits temporary use, and good furniture should promote healthy working behaviour (e.g., movement, better posture)			It integrates space with nature, is customisable to the user's needs, and encourages healthy working behaviour. Well-set-up furniture is too conventional, giving pressure while using, but it must be more relaxing.		

Refer to Table 2; Table 3 below explains every attribute of workspace furniture for a tiny house.

**Table 3:** Attributes workspace furniture for tiny house

Codes	Attributes in detail	Example (in picture)	Key of Informant (KII)
<b>Material</b>	Power outlets for charging equipment such as computers and smartphones are must-have features in furniture design for working activity.	 <p>Source:  <a href="https://www.iconsofdenmark.dk/products/coffee-tables/level/level-side-table/">https://www.iconsofdenmark.dk/products/coffee-tables/level/level-side-table/</a> </p>	KII2, KII9 & KII10
	Soft furnishing materials like fabric can comfort the user.		KII8, KII9 & KII11
	Wood is a good choice for sturdy, unique appearances that can easily fit into any interior design concept.	 <p>Source:  <a href="https://www.jennikayne.com/products/newport-desk-oak?epik=dj0yJnU9THhLY0hVbWVpM0ZHa252R29GckpkalVlQajBiSzITR0ImcD0wJm49eHdvUTV4UmtFNWxnRFdNaTkYd2lNUSZ0PUFBQUFBR2VPSGJB&amp;view=jkh-home-alt-reviews">https://www.jennikayne.com/products/newport-desk-oak?epik=dj0yJnU9THhLY0hVbWVpM0ZHa252R29GckpkalVlQajBiSzITR0ImcD0wJm49eHdvUTV4UmtFNWxnRFdNaTkYd2lNUSZ0PUFBQUFBR2VPSGJB&amp;view=jkh-home-alt-reviews</a> </p>	KII7, KII12, KII13 & KII15
	A wheel or castor in the chair is not suitable for a home.		KII3 & KII15
<b>Size</b>	Enough surface area or adequate rationing sizing based on the size of the area provided for working activity is essential for working activity in tiny houses.	 <p>Source:  <a href="https://www.pinterest.com/pin/2744449763021273/">https://www.pinterest.com/pin/2744449763021273/</a> </p>	KII2, KII3, KII8, KII10, KII12, KII13 & KII14

Codes	Attributes in detail	Example (in picture)	Key of Informant (KII)
<b>Space/ Placement</b>	Furniture designed for working activities is suitable mainly for commercial spaces, office environments, and public or common areas.	 <p>Source:  <a href="https://www.pinterest.com/pin/285978645080759352/">https://www.pinterest.com/pin/285978645080759352/</a> </p>	KII2, KII3, KII4, KII7, KII8, KII11 & KII12
<b>Time</b>	Most of the furniture design features for tiny houses are predicted to be not for long-term use due to the size and ergonomics of the design visually not convinced.	 <p>Source:  <a href="https://www.pinterest.com/pin/36521446971786283/">https://www.pinterest.com/pin/36521446971786283/</a> </p>	KII2, KII4, KII5, KII6, KII7, KII8, KII10, KII11, KII13 & KII14
<b>Design</b>	<ul style="list-style-type: none"> <li>- Multi-functional furniture is a good solution</li> <li>- Allowed the space to be utilised more efficiently compared to built-in furniture because some of the built-in furniture has hidden features</li> </ul>	 <p>Source:  <a href="https://www.core77.com/posts/61361/Build-a-Dual-Purpose-Sofa-Create-an-Automatic-Indoor-Garden-3D-Print-Your-Own-Pens-n-More?utm_source=public_sidebar">https://www.core77.com/posts/61361/Build-a-Dual-Purpose-Sofa-Create-an-Automatic-Indoor-Garden-3D-Print-Your-Own-Pens-n-More?utm_source=public_sidebar</a> </p>	<ul style="list-style-type: none"> <li>- KII3, KII5, KII6, KII9, KII10, KII11&amp;KII12</li> <li>- KII 5, KII6 &amp; KII9</li> </ul>

Codes	Attributes in detail	Example (in picture)	Key of Informant (KII)
<b>Activity</b>	Furniture designed for temporary usage promotes a healthy lifestyle while working at home.	 <p>Source:  <a href="https://www.pinterest.com/pin/436356651386143350/">https://www.pinterest.com/pin/436356651386143350/</a> </p>	KII1, KII3, KII5, KII9, KII12, KII14 & KII15
<b>Feeling/ Behavior</b>	The integration of space with nature encourages healthy working behaviour.	 <p>Source:  <a href="https://workspacebliss.com/office-decor-workplace-ideas/">https://workspacebliss.com/office-decor-workplace-ideas/</a> </p>	KII5, KII14 & KII15

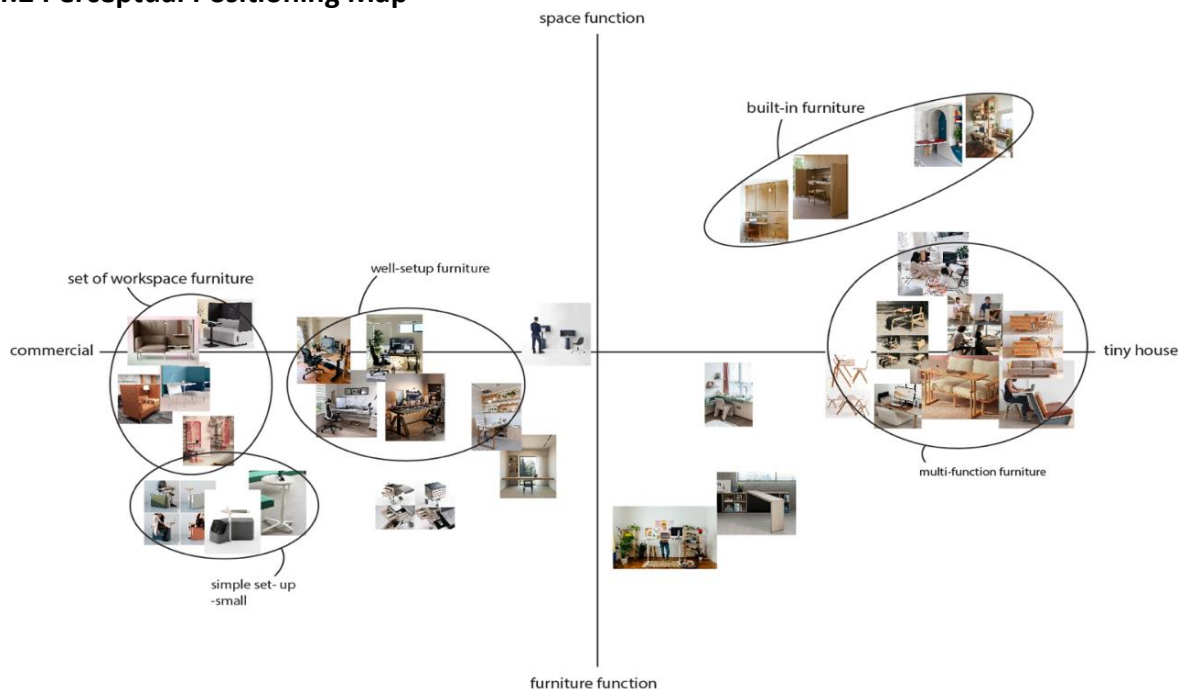
As a result of KII design discussions, the author projected that furniture design for working activity is not designed specifically for tiny houses or home environments. Furniture design that allows the space to be utilised for more than one function is a good solution for limited-space houses such as tiny houses, as Chen X. (2015) theorised. In this case, as Cori S. (2024) speculated, the built-in furniture design is the most constructive type. However, the most crucial piece of furniture for working activity is the chair, which most of the KII's commentary focused on, and the selection of chair design is essential. A chair that is manageable in size and has swivel and adjustable features is vital. However, a castor wheel part is not recommended depending on the type of floor house as mentioned in material attributes (KII3&KII15).

In time attributes, even though most of KII thought that the furniture designed for tiny houses is not suitable for long-term use, it is considered not a concerning situation as some of KII mentioned in feeling or behaviour attributes that short-term use of furniture is better for building active physical working behaviour under health reasons (K3, K5 & K14). Between these two attributes, well-set-up workspace furniture shows longer-time use yet possibly will give pressure or stressful feeling during working activity, which contradicts the house's feeling that supposedly is more relaxing.

Even though built-in furniture design is easy to create and adjust to suit the concept design of the house or interior design, theoretically, according to Susanto, D., & Ilmiani, A. (2018), the multi-function furniture design is more economically friendly in terms of production and cost of purchasing since the user gets more than one function in one furniture design. KII recommends foldable, storable, and moveable features as essential for furniture design in limited space, as Xiang, Y. (2013) mentioned.

To support the time and design attributes, the activity attributes show that most of the furniture provides temporary time usage yet still projects an optimistic viewpoint in establishing healthy working behaviour (KII1, KII3, KII5, KII9, KII12, KII14 & KII15). Some KII also mentioned biophilia interior design that integrates the space with nature to improve the working behaviour (KII6, KII14, & KII15). Hence, all the attributes above are compromised by several studies that say smart furniture, integrating environment sensors, and flexible furniture enhance life quality (Medeiros et al.; A., 2018).

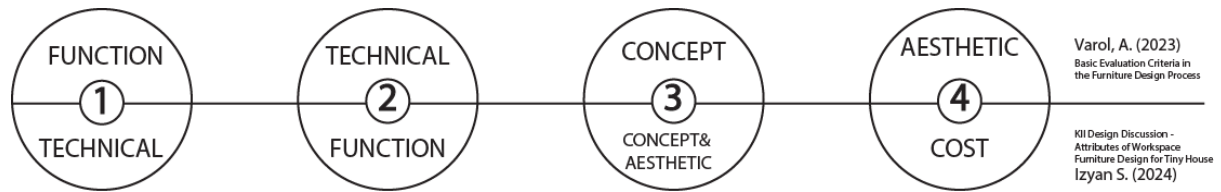
#### 4.2 Perceptual Positioning Map



**Fig. 5:** Perceptual Positioning Map based on furniture design and space relation.  
(Source: author)

Figure 5 shows the position of furniture design for working activity selected by KII in design discussions. The positioning of furniture design used discriminant Analysis to see if the type of workspace's furniture design impacted their position in the type of space. As a result, in 4.1, multi-functional furniture shows the highest relation in creating multi-functional space to utilise the limited space in a tiny house. Besides that, built-in furniture is another solution that can successfully create a working activity in tiny houses. However, built-in furniture probably demands higher spending and only serves one type of function. From Figure 5, the usual furniture design for working activity positioning was practically for commercial space, for example, a workspace and well-set-up furniture. In contrast, flexible furniture is distributed all over the space because of the flexibility features.

## 5.0 DISCUSSIONS



**Fig.6:** Evaluation criteria of Furniture Design differences between this study and Varol, A. (2023) (Source: author)

Based on the attributes above, we can see a critical criterion that affects the KII commentary, evaluating the existing furniture design to suit it in the space case study as a tiny house. As reviewed in the literature review, furniture design evaluations contrast with each other depending on the context of the design. In this case, KII is affected mainly by technical factors, followed by functionality, concept, and aesthetics, compared with Varol A. studies (2023), as shown in Figure 6. This ordering is based on frequently repeating the number of commentaries highlighted in codes, as shown in Figure 3.

**Table 4:** Number of commentaries

Criteria- commentary context	Number of commentaries	Key of Informant (KII)
<b>Technical</b> - <i>Not suitable for long time use (time) due to the size and ergonomics of the furniture design</i>	21	KII2, KII4, KII5, KII6, KII7, KII8, KII10, KII11, KII13, KII14 & KII15
<b>Technical</b> – <i>Enough surface area is needed for working activity</i>	14	KII1, KII2, KII3, KII5, KII8, KII10, KII12, KII13 & KII14
<b>Function</b> - <i>Multi-functional furniture design and multi-function space is a good solution for tiny house</i>	18	KII1, KII3, KII5, KII6, KII7, KII8, KII9, KII 10, KII11& KII15
<b>Function</b> – <i>Integrated furniture for extra or other function</i>	9	KII2, KII5, KII6, KII10, KII11, KII13, KII14 & KII15
<b>Concept</b> - <i>The type of furniture impacts the user behaviour</i>	15	KII3, KII4, KII5, KII6, KII7, KII10, KII13 & KII14
<b>Concept</b> – <i>Biophilia furniture; embedded design with nature.</i>	3	KII5, KII14 & KII15
<b>Cost</b> – <i>Multi-functional furniture design is economically friendly</i>	4	KII5, KII6, KII9 & KII15

The consistency of every KII in giving their viewpoint is the collection of analysed data in ordering these criteria for furniture design evaluation. Repetitive context often strengthens an opinion (Mubarak, Z., 2019). The evaluation criteria in this study show that the technical aspect is the primary concern when selecting a furniture design, which was impacted by the limited space of the tiny house. Therefore, some KII agree that vertical spatial planning is also crucial (KII6 and KII9). In the context of this study, functionality is the second essential criterion for identifying the critical criteria of furniture design for working activity. However, to fulfil the function of the furniture, technical criteria that indicate the need for enough surface to suit the activity and the solid ergonomic requirement make the technical important to executing a proper workspace and furniture design in a tiny house. Certainly, concept and aesthetics are essential criteria to deliver a suitable furniture design that aggregates the home



concept, which is remarkably designed toward calm and relaxing behaviour. Some of the KII mentioned several contexts regarding economically friendly furniture, related to reviewed studies in 2.3 that show cost concerns criteria like green furniture, sustainable furniture, and buyer's purchasing factor.

## 6.0 CONCLUSION

In conclusion, this study aims to analyse the first section of the design discussion with KII to gain an in-depth understanding of the topic. By approaching the research using thematic Analysis, furniture design attributes for working activity in tiny houses have been extracted in Table 4. From the same study, the order of evaluation criteria for furniture design in the context of designing for a specific space, such as a tiny house, results in the technical theme as the main criterion. Therefore, based on the design discussion commentary, the positioning map for the workspace's furniture design from the perspective of the space-function relationship shows multi-functional furniture as practically the best option for a tiny house. In comparison, typical furniture design for working activity shows the visual position near commercial space. Based on this Analysis, future research and development of furniture design could benefit the designer and researcher. This study's limitation is that the KII's representative was limited to Malaysian professionals and the number of the KII. A more diverse professional and significant number of KII is recommended for further research. Other than that, in better control of KII commentaries, probably early or expected attributes hinted to the KII.

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