

## Guidelines for Home Design in the New Normal Era in Thailand

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**Abstract:** This research aims to study home design guidelines in this new era in Thailand. The data were collected by conducting a semi-structured interview with three groups of key informants, including five participants – academics and real estate experts, five participants – residential project developers listed on the Stock Exchange of Thailand (SET), and home builders, the members of the Association of Home Builders of Thailand, and five participants – architects of a design company using design thinking, which is a creative human-centered problem-solving approach to better meet the needs of residents. Moreover, they are housing designers and developers in Thailand. The data were analyzed using content analysis. The research results revealed that the home design principle consistent with Thai residents' new normal era behavior is a house with feel-good qualities, including flexibility, good hygiene, security, privacy, environmental friendliness, and convenience. In the new-normal era, homes should have private spaces to work or study from home, multi-purpose areas, an enlarged kitchen and increased functionality, a designated parcel receiving area, and/or a storage area. The building assembly system installation that enhances good health and comfort in living is also recommended. These valuable, novelty results might also lead to Thailand's real estate business development trends. Not only for housing residential designers and developers but also for other related business suppliers associated with new product development for home innovative inventions and technologies in the future.

**Keywords:** building assembly system, COVID-19, epidemic, home design, new normal era.

## 泰國新常態下的家居設計指南

**摘要：**本研究旨在研究泰國這個新時代的家居設計指南。這些數據是通過對三組關鍵線人進行半結構化訪談來收集的，其中包括五名參與者——學者和房地產專家，五名參與者——在泰國證券交易所上市的住宅項目開發商，以及住宅建築商，泰國房屋建築商協會的成員，以及五名參與者——一家設計公司的建築師，使用設計思維，這是一種創造性的以人為本的問題解決方法，以更好地滿足居民的需求。此外，他們是泰國的住宅設計師和開發商。使用內容分析對數據進行分析。研究結果表明，符合泰國居民新常態時代行為的家居設計原則是具有良好品質的房屋，包括靈活性、良好的衛生、安全性、隱私性、環境友好性和便利性。在新常態時代，家庭應該有在家工作或學習的私人空間、多功能區域、擴大的廚房和增加的功能、指定的包裹接收區和/或存儲區。還建議安裝可增強健康和舒適度的建築裝配系統。這些有價值的、新穎的結果也可能導致泰國房地產業務的發展趨勢。不僅適用於住宅住宅設計師和開發商，也適用於與未來家居創新發明和技術的新產品開發相關的其他相關業務供應商。

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关键词：建築裝配系統，新冠肺炎，流行病，家居設計，新常態時代。

## 1. Introduction

Since the end of 2019, the coronavirus has affected humanity in all dimensions, which is different from the outbreaks of germs in the past, such as severe acute respiratory syndrome (SARS) in 2004, H1N1 influenza in 2009, Middle East Respiratory Syndrome (MERS) in 2014, Ebola Virus Disease in 2014, Zika Virus Disease in 2016, etc. This is because the impact has essential characteristics in three dimensions. The first is “coverage” because nearly all countries worldwide have been heavily affected, resulting in many infected people. The second dimension is “diversity” because it affects the economy and society, and lifestyles have had to change significantly, forcing people to adapt and learn to live newly. Finally, the dimension of “prolongment” is relevant because this epidemic has lasted longer than previous pandemics. The World Health Organization (WHO) initially declared that it would last as a severe epidemic for only 3–9 months [7].

The impact of this disease has required public health measures, especially those announced to lock down the area to stop the spread of the disease, causing people to be unable to go about their daily lives and changing lifestyle like never before. This causes the need to get acquainted with unfamiliar standards to find a new way of living to be safe from infection, leading to new technologies and innovations. Over time, people in society will become familiar with new living behavior and “the new normal” will become a part of everyday life [11].

The focus now is on social distancing, especially working and studying from home, making people inevitably spend more time there than they used to. Because home is a place that gives residents peace of mind that they will be safe, housing must be reshaped according to the new lifestyle and respond to lifestyle changes. When homes become a secure place in the new normal era, residents pay more attention to details in home design, especially the creation of living spaces that are in line with changing lifestyles, creating a sense of security for residents, including more use of automation systems to control the operation of various devices in the home to reduce exposure and the spread of germs. Therefore, the house style must be designed to be a home that can be self-sufficient and versatile to support life in the house aesthetically for a long time [10].

For this reason, the researchers are interested in studying the guidelines for designing houses in the new normal era and can respond to the changing lifestyles of residents appropriately in Thailand by using the process of design thinking, which is a creative human-

centered problem-solving approach to best meet the needs of residents.

## 2. Related Literature

### 2.1. The Principle of Housing Design

Housing design is one for everyday living related to human activities and behaviors by enhancing the beauty of the interior architecture to be more than just livable. It is convenient and safe to engage in activities with different human beings. For designers to analyze these concepts, they must have basic knowledge and understanding of the principles and concepts of design theory related to architectural design, including the principles to use in creating various components and the structures in the design [8].

The universal design is that of the environment. The environment elements accessible to everyone can be understood and used as much as possible regardless of age, body size, and individual abilities or disabilities. It can meet the needs of anyone who requires its use. This is a fundamental condition of good design in every process that needs to be considered for the diversity and accessibility of everyone [13]. It is an environmental design principle that creates places and objects so that everyone can make full and equal use without having to design any unique or specific modifications for any particular group of people. The seven principles include equitable use, flexibility, simple and intuitive, perceptible information, tolerance for error, low physical effort, and size and shapes for approach and service [2].

### 2.2. Living Space

The residence's living space is the customer's utilities. It is divided into two types as follows [12]:

(1) Basic functions consist of bedrooms, bathrooms, dressing rooms, living rooms, relaxation rooms, pantry and kitchen, dining rooms, multi-purpose rooms, entrance halls, terraces, balconies, and parking.

(2) Special functions, depending on the residents' lifestyle, include an entertainment and activities room, a fitness room, a gallery, a book room, an office room, a religious activity room, a closet room, a garden toilet, and a swimming pool, etc.

### 2.3. New Normal

A new normal means a situation or phenomenon that was initially something unusual or unfamiliar or not standard. Later, a crisis changes the situation or phenomenon into normal [1].

COVID-19 has caused changes in consumer behavior, including (1) living a lifestyle in which the

importance of sanitation (wellness) is essential and can be achieved by designing the residence and selection of materials that allow for a good environment and hygiene for residents, reduced exposure (touchless) in areas at risk of infection, and (2) valuable benefits that create a balance of life. The design of the residence must have an allocation of space that is perfect and can answer all living needs. There must be a design space to have diversity and can be flexibly adapted to use, including using technology to meet the needs of life more through various applications until it becomes a new normal in the lives of people. Additionally, there should also be spacing in the common areas leading to the concept of using the common area in the form of co-separate space and (3) virtual livable connection to be part of the housing design to facilitate the living of residents and respond to the concept of living in the new normal era.

#### 2.4. Design Thinking Process

Design thinking process is a thought process to solve problems and develop new ideas. The aim is to find user-centered solutions that focus on the creation of tangible future results to provide solutions or innovations that meet users' needs and different situations.

The process of design thinking is diverse but can be processed in three main parts as follows [5, 6, and 9]:

(1) Inspiration: Inspiration can be a problem or an opportunity to find answers to a problem. A clear goal and awareness of the framework or scope are essential sources of inspiration.

(2) Ideation: Synthesizing a sight or idea into a tool or approach to solving the problem. Generating good ideas is essential for multiple arguments. Diversity of ideas is necessary. Therefore, it is vital to have members with different expertise working together.

(3) Implementation: Implementation is done after developing the best idea. An innovative prototype is created that changes the idea to be a product or service and is tested for improvement. This will be the process of making an action plan.

The design thinking process has been applied and built into many models. A model that is popularly used in management work and creative work for organizations is the double diamond model, which consists of four steps as follows:

(1) Discovery is a new way of seeing the world, observing new things, gathering insights into the research process, then using them to analyze and synthesize customers' real problems.

(2) Defining is the first step to understanding all the possibilities. Then, identify what is possible and establish a clear conclusion about the customers' problems.

(3) Development is the creation of solutions or ideas, prototypes, testing hypotheses, and then improving them to get prototypes that will lead users

according to their needs.

(4) Delivery introduces a product or service that has been developed and can solve problems for users or customers.

### 3. Research Methodology

This research uses a qualitative methodology, applying the process of design thinking (Discovery Defining and Developing) in this research by using a semi-structured interview with three groups of key informants, including (1) five qualified experts in the academic sector (respondents A-1 to A-5), (2) five qualified managers in real estate development companies listed on the Stock Exchange of Thailand or home builders who are the members of the Association of Home Builders of Thailand (respondents B-1 to B-5), and (3) five qualified architects in the design company (respondents C-1 to C-5) to discover new things understand occurring problems and needs from these main stakeholders, who are in the field of the housing design in Thailand. In this regard, to define what is currently happening and to understand all the possibilities to develop the ideas or solution concepts, the researcher collected data from key informants who could provide information very well. The researcher obtained in-depth and holistic information from primary sources from small key informants by asking questions and observing behavior [4]. The author of [3] states that critical contributors for appropriate qualitative research should be between five and twenty-five.

The data obtained from the semi-structured interviews were analyzed by content analysis by extracting the data from the audio recording files, which is the ideation process of design thinking that be used in this research to gain insights from the targets and to find the meanings of different messages in the information acquired, concluding, and interpreting the findings.

### 4. Finding

Researchers conducted semi-structured interviews with key informants on home design approaches in the new normal era. The interview results, used to develop the idea concept of a prototype for home design in the new normal era in Thailand, can be seen as follows:

(1) Home design guidelines from the impact of people's living habits in the new normal era should focus on the design of living spaces that can accommodate more living at home due to the new normal that has changed people's lifestyle significantly from before. The clear result is that people will spend more time at home because they fear contracting the disease and feel unsafe if they must go out to work, study, or do other activities outside the house. Therefore, when people stay more often at home, designing a living space that can accommodate more activities is essential. This may be done by keeping the

primary usable space as before but with changed details in the original living space to be able to be used in various ways, or to be flexible in use or adding extra usable space, such as a work area, a multi-purpose family activity area, etc., into the house. Moreover, adding a building assembly system to support living, such as a disinfection system, air purification system, ventilation system, voice control systems or contactless technology, etc. to make residents happy, comfortable, private, and safe for long periods at home.

(2) The principles of home design by the living behavior of people in the new normal era consisted of 1) the flexibility in space design is usable space to be able to adjust the use flexibly to support the use and variety activities of family members, 2) convenience is the design of the usable area and the installation of building assembly systems that assist the residents, such as the design of the complete usable area for all family activities, using voice control or touchless technology to control the work of various devices in the home, etc., to support life in the home for a longer time, and 3) safety is the design of the usable space and the installation of building assembly systems that assure residents of their safety and hygiene. 4) Privacy is the design of the living space that emphasizes shielding from the public. The private area may be separate from the contact area with a public zone to reduce interaction with other people. 5) Good hygiene is the installation of building assembly systems that enhance good hygiene for residents, such as disinfection systems, air purification systems, ventilation systems, etc., to make residents feel good and safe from germs and various pollution, and 6) environmental friendliness means that people live in harmony with nature and emphasize sustainability, which may be used to save energy or focus on planting large trees to provide shade and absorb air pollution to increase aesthetics and enhance the comfort of the residents.

(3) The house's living space in the new normal era should have a workspace or online study area that offers privacy. The workspace or study online should be a private space because working or studying requires quietness. There should also be a multi-purpose area or recreational area to support family activities, such as an exercise area, family activity area, online business area, etc., which may modify the use of the living room area. In contrast, the kitchens should be increased or made more functional because people will refrain from eating out. Therefore, there may be more cooking for family meals or baking as a hobby. Additionally, one of the vital areas is the parcel receiving area or a storage area. When people do not want to go outside or meet many people, shopping has changed to more ordering through online channels. Therefore, a parcel-receiving area or storage area will be used more to reduce interactions with outsiders.

(4) The critical building systems that contribute to

good health and comfort of living are ventilation systems, air circulation systems, purification systems/air filters, disinfection systems, intelligent home systems, touchless systems, voice command systems, Internet of Things systems, Internet/Wi-Fi systems, and cold house systems, including naturalness.

(5) In the case that the original house has been completed and has already been moved into, increasing the usable space can cost a massive amount of money, so it is essential to focus on modifying the existing space to accommodate the current use or activities, including arranging the house to have various corners and choosing furniture that can be adjusted for usefulness and choosing to installing the necessary building assembly systems suitable for the existing budget.

Additionally, when considering the results of interviews with key informants under the design thinking process, which is a thought process to solve problems and develop new ideas, can summarize the interview results according to the design thinking process leading to the principles of home design in the era developed from this research, as shown in Table 1.

Table 1 Summary of the study of the principles of house design in the new normal era from the design thinking process

Principles	Develop	Define	Discover
(1) Flexibility	The design of the usable area to adjust the usage flexibly.	People use the space in their homes, engage in different activities and have more variety.	The spread of COVID-19 has caused people to panic. Therefore, they must adapt and
(2) Convenience	The usable space is designed and installed with a building assembly system that facilitates residents.	People perform their homework and engaged in more activities at home.	comply with public health measures to control the spread of incredibly social-distancing measures. This practice
(3) Safety	The design of the usable space and the installation of a building assembly system ensures residents' safety of life, property, and hygiene.	People are scared; therefore, they choose to stay at home more and refrain from traveling outside the house because they think that home is the safest place.	has become a habit and has led to a new normal lifestyle. The new normal lifestyle has resulted in dramatic changes in daily routines.
(4) Private	The living space design separates the private zone from the public area.	People reduce their interactions with others according to social	

		distance measures.	
(5) Good hygiene	It is installing a building assembly system that enhances good hygiene for residents.	People pay more attention to hygiene due to safety from germs and various pollutants.	The spread of COVID-19 has caused people to panic. Therefore, they must adapt and comply with public health measures to control the distance, primarily social-distancing measures. This practice has become a habit and has led to a new norm in life. Lifestyles have changed dramatically.
(6) Environment friendly	It uses an energy-saving system to support the increase in home energy use or focuses on planting large trees to provide shade from the sun and absorb air pollution.	People live and engage in activities at home more and longer than ever before, causing more electricity consumption.	

### 5. Conclusion and Suggestions

As the valuable results from this research, using a creative human-centric problem-solving approach through the design thinking process from the three main groups of key informants, divided into 1) five participants – academics and real estate experts, 2) five participants – residential project developers listed on the Stock Exchange of Thailand (SET), and home builders, the members of the Association of Home Builders of Thailand, and 3) five participants - architects of a design company to discover the current situations trends and insights related to a home design in the new normal era in Thailand. Then, define what to understand and interpret how possible ideas should serve their needs and conclude before developing the solutions or idea concepts. However, the delivery process is limited in this research, which means that the developed concept has not been developed into a product prototype and tested with the residents.

The finding of this research, a house design in the new normal era in Thailand should be a house with qualities that create a good feeling for the residents under the “Feel Good SPEC” concept (see Figure 1), which includes flexibility, good hygiene, safety, privacy, environment friendliness, and convenience as follows:

(1) Flexibility states that the living space of the house must be designed to be flexible and adaptable to support the use and various activities of the family by changing the details in the original living space to be able to be used in various ways or having flexibility in use or adding extra usable space, including adding a building assembly system to support residents to stay at home for long periods happily, comfortably, privately and safely.

(2) Good hygiene is installing a building assembly system that enhances good hygiene for residents to make residents have good hygiene and feel safe from various germs and pollution.

(3) Safety is designing the usable space and installing building assembly systems that ensure the residents' safety of life, property, and hygiene. People need housing that is safe for their health and the protection of life and property because the new normal results from the epidemic of serious infectious diseases that led to changes in the lifestyle and living lifestyle of people in society.

(4) Privacy is the living space design that emphasizes shielding from the public, separating a private zone from the public area to reduce interaction with other people.

(5) Environment-friendly states that people should live with nature and focus more on environmental friendliness, which may use an energy-saving system to support increased home energy use or focus on planting large trees to provide shade and absorb air pollution to improve the aesthetics and enhance the comfort of the residents.

(6) Convenience is the design of the usable area and installing a building assembly system that facilitates the residents to accommodate all family activities and support life in the home for a longer time.



Fig. 1 The concept of “Feel Good SPEC” for home design in the new normal era in Thailand

When considering the elements of home design in the new normal era, it was found that the usable area of the house in the new normal period differs from the available home in many respects: (1) a workspace or study online that is private, quiet, peaceful and uncrowded. They may add more rooms to work or look online, or add a work corner in the bedroom or use a partition; (2) a multi-purpose or recreational area to support the activities of the family, such as an exercise area, family activity area, online business areas, etc.,

may adjust the usage of the living room area; (3) the kitchen area should be increased in size or increased usability to support the cooking for eating within the family, including practicing cooking or baking as a hobby; and (4) a parcel-receiving area or storage area to support the increase in online spending. Additionally, the house in the new normal era should have critical building systems as follows: (1) a system for good hygiene, such as a ventilation system, air circulation system, purification system, disinfection systems, etc., and (2) systems for convenience, including intelligent home systems, touchless system, voice command system, Internet of Things system, Internet or Wi-Fi system, fantastic house system, etc.

Therefore, designing a house in the new normal era should focus more on a living space design that can accommodate greater flexibility in living at home. This may be done by keeping the primary usable space as before but changing the details in the original living space to be able to be used in various ways or to be flexible in use or add extra usable space, such as a work area, a multi-purpose area, family activities area, etc., into the house, including adding a building assembly system to support living, such as a disinfection system, air purification system, ventilation system, voice control system, or contactless technology, according to valuable results, not only by the housing residential designer and developer. They can adopt these guidelines for home design in the new normal era and other related business suppliers associated with new product development for home innovative inventions and technologies. Due to the focus on housing sector in this research and the guidelines that have not been tested with the number of residents, as the limitations of this research, the ongoing research should take these guidelines to experiment with the consumer group to develop and fulfill these guidelines so that it can genuinely meet the lifestyle and living behavior of people in the new normal era society, also create a good quality of life for future residents.

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