

# CMF Design Method for Bachelor Apartment Furniture

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**Abstract.** To provide a more optimized design method for the furniture design of single apartment by combining the user demand, space distribution and CMF design. To meet the needs of single apartment furniture users in many aspects, including physical, psychological, social, self-development, etc. By analyzing the needs of furniture users in bachelor apartment and the application of CMF design method in furniture, taking IKEA furniture as an example, the importance of the combination of furniture design and CMF design method in bachelor apartment is clarified. This paper puts forward the design methods of sensory needs, interaction needs and cultural needs of bachelor apartment furniture, and expounds its design and application, so as to provide new design ideas and methods for the design of bachelor apartment furniture, in order to realize the empty-nest youths pursuit of quality life.

**Keywords.** Bachelor apartment furniture, CMF design, The empty-nest young

**Introduction.** According to the data of the Ministry of Civil Affairs, the single adult population in China is up to 240 million by 2018. Due to the change of peoples ideas on love and marriage, the single population will likely continue to increase, which also indicates that the furniture design of single apartment will enter a new broad space for development. Based on the case analysis of IKEA furniture, it is found that most of the furniture designs for single apartment on the market only meet the basic physiological needs, and rarely reflect the emotional and social aspects of the design, resulting in poor user experience of furniture and unable to meet the diversity of needs. Therefore, from the perspective of the user demand and the overall development trend of bachelor apartment furniture, it is very necessary to provide reliable design methods for bachelor apartment furniture with the help of CMF design to meet the growing market demand for bachelor apartment furniture [1-4].

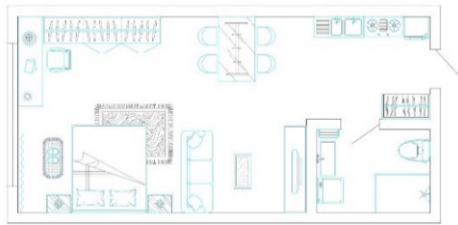
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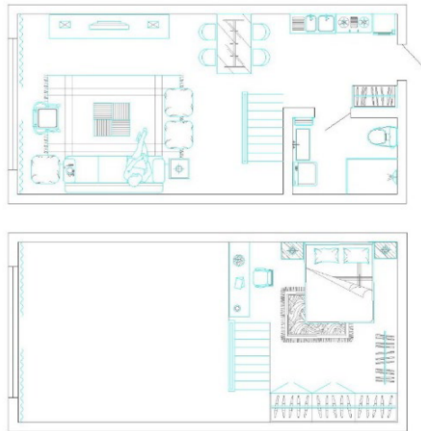
## 1. Brief introduction of bachelor apartment furniture

### 1.1. Single apartment furniture space distribution

Single apartment is a small family housing, the area of the set is generally about 25 square meters - 45 square meters, with complete residential units for the characteristics. The space structure has a single layer and a double layer, the height of the single layer is about 2.3 meters, the height of the double layer is about 4 meters, the space is usually divided into two parts, the inside is the bedroom, the outside is the living room, kitchen and bathroom, see Fig. 1 and 2. The users mainly live alone and empty nest young people with certain economic ability. Due to the limited space of the single apartment, the placement of furniture plays an important role in space segmentation, and can make clear the indoor dynamic and static differentiation, while protecting the privacy of the bedroom can also play a better role in sound insulation, heat insulation and ventilation. Among them, the color of furniture can play a role in regulating the indoor light, and produce visual illusion on the size of the indoor space, and effectively make up for the limited space of the single apartment; The material can create the indoor atmosphere, give the indoor space with vitality; The surface craft plays a decorative role in the space. Secondly, human physiology, emotion and interaction needs also have an important influence on furniture selection and layout. The choice of color, material and process of furniture will also affect peoples comfort wh en using furniture, so in line with the size range of human activities, we should also consider the impact of CMF design in the space of single apartment furniture [5-7].



**Figure 1.** Single floor furniture layout of a bachelor apartment



**Figure 2.** Layout of double floor furniture in a bachelor apartment

### *1.2. Single apartment furniture user demand analysis*

Empty nest youth is no longer a label, it should be said to be an attitude to life, Eric krynabe mentioned in the single society. The majority of people who tend to live alone are young people under the age of 30. They have a high level of education, good family and their own economic strength, and have neutral or conservative views on marriage. In the Research Report "empty nest Youth Research Report 2021" of China Mobile think tank, the research objects are single and living alone young people with higher education in the first tier and new first tier cities, who are concentrated in 22-35 years old, with bachelors degree or above, living in working, unmarried, single, living in renting (excluding group rent) and living alone, and these groups are also the main buyers of single apartment furniture. Through Maslows hierarchy of needs theory, the needs of empty nest youth groups are analyzed from three levels: basic life, social needs and future development, as shown in Table 1.

In the basic life of empty-nesters, financial independence brings them more satisfaction, so they prefer to live alone, avoid the disputes of sharing apartments and dont have to pay the high housing prices in big cities, which is the main reason for the rapid expansion of the bachelor apartment market and the hot selling of bachelor apartment furniture. Empty-nest youth are more willing to invest more money in health, freedom, personal development, housing security and other issues. For them, houses and furniture are not just a place to live, but a vision of a better life. Nowadays, in terms of consumption concept, empty-nest youth gradually return to rational consumption from unrestrained consumption. For furniture, they choose more from their own needs, pursue high quality, and pay attention to experience, efficiency and brand. In this regard, the basic survival furniture can no longer meet the needs of empty-nest youth for single apartment furniture, on this basis, more consider the safety, practicality and comfort of furniture. In CMF design, the difference of color will affect the visual comfort of empty-nest youth to different degrees, and the quality of materials will affect the health of empty-nest youth. Therefore, the material and color of CMF design must be considered in the design of bachelor apartment furniture in the basic life of empty-nest youth.

For social activities, nearly 70% of the empty-nest youth contact their parents at least once a week, mainly through voice and video, and their friends get along with each other through online contact on weekdays and offline meeting on weekends. However, the majority of empty-nest youth do not reject strangers to socialize, and 80% of empty-nest youth will use strangers to socialize online. It can be seen that the increase of online social interaction promotes the frequency of furniture use and the interaction between empty-nest youth and furniture. Moreover, empty-nest youth based on the same or similar interests, emotions and values will also organize offline parties, which requires thinking about the tolerance and communication of furniture. Aiming at the social needs of empty-nest youth, the design of bachelor apartment furniture should improve the functionality, expand the tolerance and increase the communication, and the properties of materials can determine the main function of products, so materials can play an important role in it [8].

In terms of self-development, empty-nest youth yearn for more jobs and development opportunities in big cities. They believe that work is not only a tool to support their families, but also a means to realize their self-worth. In order to gain more professional competitiveness, many empty-nest young people will study in their spare time except for

recreation. The importance of knowledge and culture is reflected in the process of empty-nest youth perfecting their self-cultivation, which improves their self-consciousness. In order to highlight their professional field and cultural level, Empty-nest youth will look for personalized furniture that fits their temperament, showing their unique attitude to life and cultural heritage. Therefore, furniture design with cultural implications is highly respected, mainly including the shape of furniture and the cultural content reflected by furniture surface treatment technology [9-12].

**Table 1.** User requirement analysis table

| Demand level           | State of life  | Furniture demand   | CMF breakthrough point  |
|------------------------|--|--|---|
| Basic life             | Tend to live alone, pay attention to health and freedom, housing safety, the pursuit of quality, focus on experience, practicality | Furniture safety, practical furniture, comfortable furniture | Color - visual experience + furniture atmosphere<br>materials - health and safety + comfort                                 |
| Social demand          | Online networking and offline gathering  | Furniture tolerance, furniture communication                 | Material - function + shape + interaction   |
| The future development | To realize self-worth, improve their own awareness, learning knowledge and culture   | Personalized, cultural creativity, sophisticated technology  | Surface craft - material diversification + furniture texture, furniture cultural characteristics, furniture differentiation |

Through the analysis of the needs of empty-nest youth, the design of bachelor apartment furniture should be combined with CMF design method to meet the basic life, social needs and future development needs of empty-nest youth.

**2. Research status of CMF design method**

*2.1. Overview and development of CMF design methods*

CMF is the abbreviation of Color-Material-Finishing, that is, the explanation of Color, Material and process. Color is the first perception of the product, and the material and surface technology of the product can determine the realization of Color. M is the initial letter of Material, product function, surface technology, color texture, etc., are affected by Material properties. F is the initial letter of the Finishing process, which is divided into two categories: product Finishing process and surface process. The selection of this process directly affects the suitability of the material and the presentation of color. The term CMF was first proposed by Herman Miller, an American furniture and interior design company, and the CMF showroom was opened in 1996. However, due to the limited users, the CMF showroom was only used within the enterprise or when communicating with customers, and was not promoted on a large scale. The "Art of Plastic Design" conference was held in Berlin, Germany, in 2005, so that the term CMF was publicly proposed and popularized, and is commonly used in academia. Although the attention of CMF design abroad is more important than that of China, it is worth paying attention to that the CMF has set off a design trend in full fire as soon as it enters China, and it has a long history. CMF design method to provide new ideas for the

domestic design research, many scholars and companies use CMF design in different aspects and the way of study, qualitative leap for the ascension of domestic products, especially in recent years, CMF application in furniture design, to the health of the living and the sustainable development of furniture materials [13-15].

## *2.2. Research status of CMF design in the field of furniture*

A total of 1149 articles were found by searching the keyword "CMF" on the Internet, among which 262 articles were about CMF design, but only 17 articles were about furniture design. In Wan fang database, 6074 articles with CMF design as the theme can be retrieved, but there are 32 articles related to furniture design, but only 14 articles really discuss CMF and furniture content, among which, CNKI and Wan fang database articles have a certain overlap. Keywords in Wan fang database show that CMF research on furniture products is mainly concentrated in children, the elderly and other people with obvious physiological characteristics. Among them, the CMF design of childrens furniture is mainly elaborated from the physiological needs of children, psychological needs, user experience and other aspects, summarizes the needs of children, analyzes the CMF design, and gives the corresponding design theory. For example, Han Yuxin proposed the design principles of sensory moderation, scene adaptability and emotional hierarchy based on user experience in CMF design of childrens furniture, which provided a new idea for childrens furniture design. In addition, the design of furniture for the elderly focuses on the design of CMF materials. For example, Wu Hongwei proposed that the CMF design of furniture for the elderly should take full consideration of the multi-dimensional perceptual characteristics of materials, so that the design can be more humanized.

To sum up, both children and the elderly mainly start from the users feelings and combine with the CMF design method to conduct research and analysis, without discussing the cultural nature and interactive behavior of furniture. So in the face of a sharp increase of new special group (empty nest youth), the number of rapid expansion, furniture demand rapid growth, the existing furniture design theory and method have been unable to support the huge market demand, and using the CMF design study furniture design method of this kind of group is blank, this aspect should be added more content, improve the whole furniture design system.

## **3. CMF design case analysis**

IKEA was founded by ingvarkamprad in 1943 and was born as a mail order catalogue business in almhult, a forest town in Sweden. As of August 2017, IKEA has 356 shopping centers in 29 countries or regions around the world, 37 in mainland China, 16 procurement zones in the world, and 3 in mainland China. This shows that China is IKEAs largest procurement market, and its influence on IKEA cannot be underestimated. Its influence position in IKEAs global strategy is beyond doubt, which indirectly reflects that China has a large audience of IKEA. Focusing on peoples living environment and reflecting the relationship between furniture and nature and society are the remarkable characteristics of IKEA Nordic style furniture. And IKEA has been adhering to the concepts of green design, sustainable development design and environmental protection

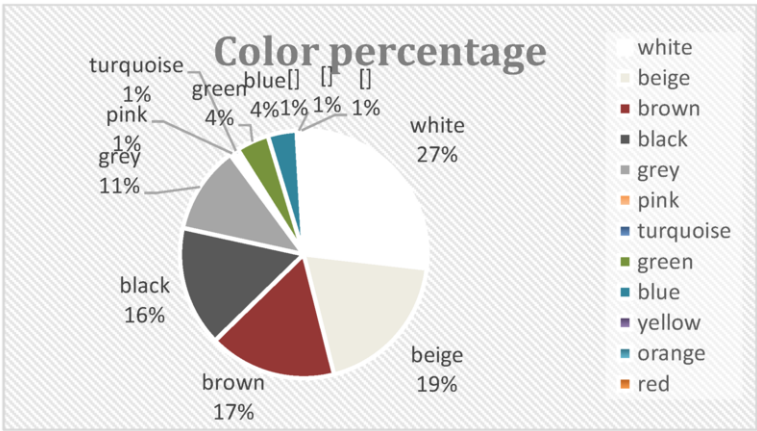
design. Secondly, IKEA design style furniture has the characteristics of reuse and tidiness in each design space, which is very suitable for the living condition of small rooms. Therefore, for those empty nest young users who like exquisite life but have limited economic conditions, Ikea will be their first choice [16-18].

3.1. IKEA furniture color analysis















Among all kinds of sensory features, vision is the first sense organ and occupies the most important position. Therefore, the aesthetic law of color and shape plays an important role in industrial product design. Of course, in furniture design, not only color, but also the shape, material, function and other aspects of furniture are combined together, but the first feeling of furniture is the cooperation of color. Among the various types of IKEA furniture, color analysis is mainly carried out for the four types of necessary furniture: beds, cabinets, tables and chairs, and sofas. It is concluded that there are 12 main colors of these four types of furniture, among which white, beige, brown, black and gray furniture account for the largest proportion, and a few are fresh and lively bright colors. However, the proportion of these four types of furniture colors is not exactly the same. Beds: white, beige, gray, many; Cabinets, tables and chairs: white, beige, brown, with a large number; The sofa is beige, black and gray, with a large number, as shown in Table 2. Furniture with different functions is also different in the selection of colors. For example, the largest number of sofa colors in IKEA furniture is gray. The main consideration is that the cleaning of sofa is cumbersome, and it is not suitable to choose colors with high brightness; Secondly, the sofa is used for users to rest, relax and provide tools for comfortable sitting and lying. Gray can provide users with a gentle, simple and peaceful feeling, and is not easy to be contaminated with dust. Of course, furniture presents gorgeous or simple, bright or dark, cold or enthusiastic colors, which can show different emotional effects, as shown in Table 3.

Due to peoples different perceptions of objects, natural colors will give people a myriad of feelings to express different color feelings. White, beige, brown, black and gray are the main colors of IKEA furniture, creating a sense of whiteness, gentleness, silence and simplicity for users, reflecting the simplicity and nature of Nordic style. The simple and pure color furniture, applied in the single apartment with limited space, just relieves the cramped feeling of insufficient space and creates a comfortable living atmosphere.

Table 2. IKEA furniture color proportion table



**Table 3.** IKEA furniture color analysis table

| Furniture chromatography | Furniture legend  | Color extraction  | Color characteristics  | Psychological induction   |
|--------------------------|---|---|--|---|
| white                    |    |    | The lightness is the highest, bright, clean, pure, simple, neat.   | In peoples feelings, white is quieter and purer than any color.   |
| Beige                    |    |    | Beige refers to the color between white and camel. Beige is brighter and fresher than camel, more elegant and stable than white, with high lightness | Beige makes people feel warm and comfortable, quiet and warm.   |
| brown                    |    |    | Brown represents nature and simplicity, and the color is low-key and gentle  | Brown is a color very close to the earth. It is often associated with soil and gives people a sense of reality and firmness |
| black                    |    |    | Black represents steadiness, elegance, fashion, attention-catching, authority and seriousness.   | Black is a mysterious and cool color that gives people a sense of solemnity, elegance, awe and longing                      |
| grey                     |    |    | Gray is between black and white, no color, only brightness.  | Gray gives people a sense of calmness, realism, perseverance and persistence  |
| green                    |  |  | Green is the most common color in daily life, between yellow and green.  | Green gives people the feeling of safety, ease, life, tranquility and full of life.   |
| blue                     |  |  | Blue is a cold tone, belonging to high-frequency light, representing the color of the sky.   | Blue usually reminds people of the sea and blue sky, giving people a beautiful, dreamy, rational and peaceful feeling.      |

### 3.2. IKEA furniture material analysis

There are many kinds of furniture materials, which can be divided into three parts in application: structural materials, decorative materials and auxiliary materials. Structural materials include wood, metal, bamboo, rattan, plastic, cushion, glass, stone, etc., while wood, as a classic traditional material, is divided into solid wood and plate, which has always been in an important position in furniture materials. The decorative materials used in furniture mainly include paint, veneer, mask, etc.; Finally, adhesives and hardware accessories are used as auxiliary materials for furniture.

Through the analysis of the materials of furniture products on IKEAs online official website, it is found that the main material of IKEA furniture is wood, followed by metal, as shown in Table 4. According to the proportion of IKEA furniture materials, this paper mainly analyzes the physical properties and user experience of five materials commonly used by IKEA. Among these five kinds of materials, wood materials account for three kinds. Because wood materials are natural materials with low production cost, no pollution, recyclability and durability, and they have natural and beautiful patterns and good decoration, which are similar to the environmental protection, nature and sustainability advocated by IKEA furniture. See Table 5. Of course, if furniture is made of only one material, it will be slightly dull and there will be no change. Therefore, IKEA furniture mostly adopts two or more materials for combined design, such as the combination of wood and metal. Metal has the characteristics of fire prevention, moisture-proof, antimagnetic, mildew proof, etc., but metal furniture has a hard and cold texture. Combining with wood materials can weaken the hard and cold of metal, enhance the fire prevention and moisture-proof of wood materials, and it is lively and changeable, It can meet the requirements of different shapes, structures and comfort, and make full use of the unique properties of materials. The combination of various materials not only complements the advantages and disadvantages, but also breaks through the barriers in modeling to form a diversified appearance, which just meets the personalized pursuit of empty nest youth.

Table 4. Proportion of IKEA furniture materials

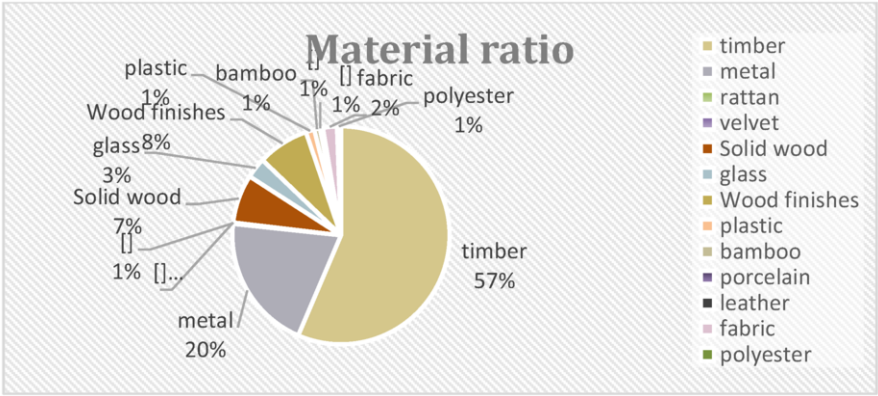












Table 5. IKEA furniture material analysis table

| Material category | Furniture legend  | Material sample   | physical property   | User experience  |
|-------------------|---|---|---|--|
| wood              |  |  | Wood or other non-wood plants are glued or molded from raw materials.   | It is convenient to split, resource-saving, cheap, cost-effective, not easy to deform, and stable in quality.                    |
| Metal             |  |  | The raw material of metal furniture is cold-rolled steel plate, which is made through multiple processes and has a large bearing capacity | The color is gorgeous, recyclable, fireproof, moisture-proof, antimagnetic, etc., but the texture is hard and the sound is loud. |



|                    |   |   |  |
|--------------------|---|---|--|
| <b>solid wood</b>  |   | Solid wood furniture refers to all wooden parts of furniture, which are composed of 80% - 95% solid wood. | Natural, environment-friendly, healthy, with its own decorative beauty, and long service life.                                 |
| <b>Wood finish</b> |   | The wood veneer is made of various precious wood, and the panel is bonded to the model.                   | The decoration quality is improved, the construction cycle is shortened, the cost is low, and the furniture taste is improved. |
| <b>Textile</b>     |   | Fabric is a kind of upholstered furniture, which is mainly composed of sponge wrapped fabric and springs. | Comfortable touch and colorful colors can add a warm atmosphere to the space.  |

3.3. *IKEA furniture surface technology analysis*

With the rapid development of modern furniture surface technology and the continuous improvement of peoples living standards, the relationship between furniture surface technology and furniture art is becoming closer and closer. It not only has practical functions, but also needs to have good sensory experience. A good surface technology can give it a specific shape, such as color, texture, texture, etc. through its differences, it can strengthen its impression, strengthen its beauty, make its shape, color, quality perfect combination, and give people a beautiful and comfortable feeling; At the same time, it can also extend the service life of the product.

Among IKEAs many furniture, there is no place to look for complex carving and inlaying techniques, but instead to show the beauty of the original ecology of the furniture. For this reason, IKEA furniture mainly takes painting as the main surface treatment process, in which wood and metal are the main materials used by IKEA, and polyester paint and acrylic paint are mainly used, which can show the real and natural material itself of furniture, as shown in Figure 3. At the same time, the simple surface treatment process can reduce the cleaning of furniture, enhance the fluidity and penetration of indoor space and expand the visual effect, which is also needed by the single apartment in small space.

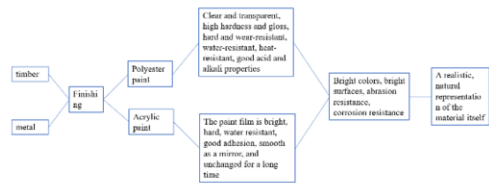


Figure 3. IKEA wood and metal surface treatment analysis diagram

## 4. CMF innovative design of single apartment furniture

### 4.1. Design method

#### 4.1.1. Sensory needs design method

Senses are human physiological experiences, which are summarized as five senses: vision, smell, touch, hearing and taste. Vision, touch and smell are the main senses for furniture to interact with people. When designing single apartment furniture, we can analyze the sensory needs for rational design. The factors that cause the visual influence of empty nest youth are shape and color, the factors that affect the tactile sense are material and decoration, and the material is the main factor that causes smell. Therefore, sensory needs include shape, color, material and decoration. According to the empty nest youths pursuit of life, the unique shape; Warm colors; Healthy materials; Simple decoration can meet their sensory needs, and unified colors, shapes and materials are easier to bring a sense of belonging to empty nest youth.

#### 4.1.2. Interactive requirements design method

The interaction of single apartment furniture mainly refers to the interaction behavior of empty nest youth using furniture and the interaction behavior of empty nest youth using furniture in the process of interaction with friends and family. In the interaction between empty nest youth and furniture, the functionality of furniture is the main reason for using furniture. Therefore, furniture needs to have practical functions to generate high-frequency interaction with users, so as to make furniture convenient. In the analysis of IKEA furniture, it is found that users can assemble furniture according to their own needs, so as to enhance their feelings with furniture and enable users to obtain a sense of achievement. Secondly, when empty nest youth use furniture with friends and family, the accommodation of furniture plays an important role, which can meet the needs of many people to use furniture at the same time for communication and interaction and enhance emotion. Among them, the properties of materials will affect the functionality and accommodation of furniture. Therefore, according to the functional needs of furniture, select appropriate materials for design, in order to give full play to the maximum use value of furniture.

#### 4.1.3. Design method of cultural needs

Empty nest youth are mostly young people who have received higher education. They pay more attention to self-learning and improvement in self-development, which reflects the cultural needs of empty nest youth. Single apartment furniture not only has exquisite appearance and practical functionality, but also has changeable styles to meet the spiritual and cultural needs of empty nest youth. Behind the different styles, there are also thousands of different cultures. For example, IKEA is mainly in the Nordic style, and its furniture products all show the characteristics of simplicity, nature, green, environmental protection and excellent design, quietly showing the characteristics of Nordic culture. For empty nesters who yearn for a comfortable rural life in northern Europe, this is undoubtedly the best choice of furniture style, highlighting their

interpretation of northern European culture. Therefore, integrating unique cultural conformity, color, decoration, etc. into the furniture design of single apartment is like injecting soul into furniture and meeting the cultural pursuit of empty nest youth.

## 4.2. Single apartment furniture CMF design

### 4.2.1. Color perception

Usually, furniture colors give people the most intuitive impression in the senses, and create the overall style atmosphere of the whole living space, so that users can focus on the current environmental experience and immerse themselves in the feelings of pleasure and satisfaction. Furniture color plays a leading role in the whole space style, and the difference of color creates the difference of perception, which brings diversified experience to users. At the same time, color also has the characteristics of different functions. Different functions or materials will use different colors to distinguish, enhance prompts and interactive behaviors, so as to help users quickly grasp the function and use mode of furniture, and experience the sensory enjoyment brought by furniture without interference.

In the "zero" series of tables and chairs, the shape adopts the Arabic numeral "0". The rounded chamfer has more temperature and affinity, giving people a sense of safety and comfort, and the most attractive thing about the whole family is its color matching. It mainly adopts log color and mung bean grey. Green represents health and life and gives people an infinite sense of security; The color of the log is beige, which makes people feel warm and quiet, and it is also full of natural gifts like green. The combination of the two sets off the color to the extreme, leaving users in a vibrant environment. In addition, the components at the connection of furniture structure are highlighted in black to prompt the users interactive behavior of assembly and splicing, as shown in Figure 4.

The special space conditions of single apartment not only improve the requirements for furniture, but also enhance the role of furniture color. In the demand analysis, empty nest youth pay attention to experience, quality and yearning for a better life, which indicates that the furniture color of single apartment should adopt simple, elegant, mild and other colors to make up for the space defects of single apartment and create a unique living environment for empty nest youth. Different colors are used to distinguish the structure and function of furniture, so as to reduce the interaction between empty nest youth and furniture.



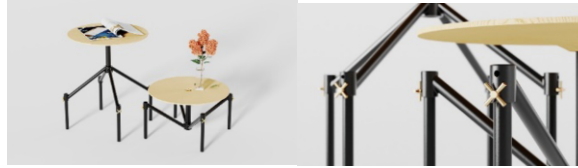
Figure 4. Zero series tables and chairs

### 4.2.2. Material perception

In the same way with color, the difference of materials will also lead to sensory differences, such as the gentle and soft wood, the hard and cold metal, etc. because of this, a variety of furniture styles have emerged, and the empty nest youth also have more

choices. The performance of materials determines the shape and function of furniture. Among them, wood has better assembly and disassembly functions. Therefore, in the interactive needs of empty nest youth, wood can meet the fun of self-assembling, and can also be expanded or reduced according to the number of users, as well as convenient storage. Different materials will also affect the apparent chromaticity and gloss of the color, and then affect the final appearance and texture. For example, soft wood colors are mostly diffuse, without high gloss. Metal materials have high gloss, bright and rich colors, and the shape is more changeable than wood, which can meet the personalized furniture needs of empty nest youth. The single material is a little dull, while the combination of multiple materials adopts the long to make up for the short, so as to give full play to the maximum performance of the material.

REVERSE is a coffee table and a side table. Through different assembly methods, users can use it as a coffee table or side table. At the same time, it can also be easily disassembled to facilitate transportation. Its materials are mainly metal support and wood desktop. The metal has a good supporting force, which can stably hold the desktop above. The wood desktop shows nature and softness, alleviates the hardness and coldness of metal, and satisfies the users vision and touch. However, different assembly methods make it show different functionality, and also produce different interaction behaviors with users, reflecting the characteristics of materials, as shown in Figure 5.



**Figure 5.** REVERSE table

Materials are the form carrier of furniture. The correct and efficient use of materials can give full play to their maximum functionality and make the color have a better color rendering effect, and also enable empty nest youth to perceive the temperature and comfort of the furniture surface through materials. In the healthy life pursued by empty nest youth, the environmental protection of furniture materials is also indispensable. Biodegradable recycled materials should be used as much as possible to achieve zero waste of materials, reduce environmental pollution, and provide a healthy quality of life for empty nest youth. In addition, different materials have different surface treatment processes. Reasonable use of appropriate treatment processes can increase the service life and aesthetics of materials.

#### 4.2.3. *Surface process perception*

As the last process of CMF, the surface treatment process can not only improve the shape and texture of furniture, but also increase its decorative performance and enhance the use experience of products. For biomass furniture made of wood, bamboo, rattan, etc., the surface finishing process is often used to make up for product defects and beautify the surface texture. At the same time, this surface treatment process can also prevent its wear, moisture, corrosion and other effects, so that the service life of the product can be extended and the sensory enjoyment of users can be improved. For non biomass furniture made of steel, glass and stone, in order to realize the diversified texture performance of materials, common surface treatment methods include plating, electroplating, chemical

oxidation and other methods. Cultural and creative processing technology in furniture design can improve the texture of furniture, create furniture characteristics, realize furniture differentiation competition, and meet the empty nest youths pursuit and understanding of culture.

Patnon bedside table is a new type of bedside table with a partial classical feeling. It extracts the characteristics of the typical (Doric) column architecture of Parthenon, pursues the beautiful proportion and classic shape like Parthenon, simplifies the shape of columns as much as possible in the design, and has a certain echo with the cabinet. In order to make the bedside table more architectural, the drawer panel is designed with four arches, and the bottom sealing plate is also carved with continuous wave decoration like steps. The elegant line decoration and retro modeling features show the elegance and elegance of Parthenon temple architectural culture, making its furniture contain rich temple culture. The transparent coating smoothes the roughness of the wood, improves the touch of the material, and completely shows the elegance and affinity of the wood material, as shown in Figure 6.



**Figure 6.** Patnon bedside table

Single apartment furniture usually only has the most basic surface treatment process, which can only change the color and protect the furniture. Therefore, the innovative design of single apartment furniture dominated by surface treatment in the future can be considered from the perspective of cultural creativity. Change the stereotyped furniture replication, enhance the cultural connotation of furniture, and further enhance the emotional experience of empty nest youth. It can be said that "F", as the last and most important step, is to accurately control the details of furniture shape, texture and emotion on the basis of materials, so as to convey the comprehensive sensory aesthetics and material aesthetics, so as to realize the differences of furniture culture.

## 5. Conclusion

As a specific social phenomenon and a unique social group, empty nest youth also show different personality characteristics in living conditions, social and personal development. The emergence of single apartment furniture is also due to the emergence of such groups. Starting from the lifestyle of empty nest youth, this paper summarizes the needs of empty nest youth, analyzes the current situation of furniture CMF design with IKEA furniture as an example, puts forward sensory, interactive, cultural and demand design methods, completes the interpretation and exploration of the popular trend of single apartment furniture, interprets and controls the material aesthetics and sensory aesthetics, and finally carries out refined management of quality and emotion, so as to create a natural, healthy Pleasant living environment. Pursuing the material of furniture, controlling the details of furniture and harmonizing the color of furniture are the special needs to meet the higher quality of living alone of empty nest youth, and can fill the vacancy in the design method of single apartment furniture at present.

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