A Conceptual Application of the Emotional-Cultural Design Framework (ECDF) in Designing Pleasurable Chinese Interior Spaces

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Abstract

Emotions are guided by individuals' interactions with their surroundings. Therefore, interior designers commit additional effort to beautifying places which individuals loiter frequently. Designers should collect valuable information about users' preferences before designing interior spaces with elements reflecting cultural and user preferences. This study incorporated emotional elements in interior space design and developed a conceptual framework to integrate sentimental satisfaction in achieving pleasurable and delightful interior design. Specifically, design environment and strategies were employed to ensure that interior design encompassed visceral, behavioural, and reflective attributes to create congenial interior spaces. The study appraised the emotional design concept by identifying the three levels of users' emotional responses to relevant designs proposed in previous theoretical frameworks. Subsequently, a conceptual framework was proposed by the study upon reviewing and determining primary interior design features in past studies to develop strategies for accomplishing positive emotional design outcomes. The study presented future research directions to expand present conceptual framework.

Keywords: *Emotional-Cultural Design Framework, New Chinese Decorative Style, Interior Spaces*

1. Introduction

Interior design involves designing interior spaces which individuals frequently utilise (Colenberg and Jylhä 2021, Bae, Bhalodia, and Runyan 2019). Although a similarity exists between the disciplines of interior design and architecture in terms of technical aspects and aesthetic characteristics, the interior design emphasises interior spaces as a crucial aspect to be considered by relevant designers (Rassia 2020, Racz and Zilizi 2018). As such, comprehensive research must be conducted to effectively design interior spaces by accounting for individuals' quotidian activities and respective requirements. Contemporarily, designers are focusing on the emotional demands corresponding with functional aspects in developing reliable and aesthetic spaces to be effectively utilised. The focus arises from Maslow's need hierarchy theory, which describes individuals' emotional and psychological requirements, namely safety, love, esteem, and self-actualisation, in addition to fundamental physiological needs. Particularly, individuals would pursue self-actualisation by fulfilling aesthetic aspects of interior spaces after satisfying psychological and safety requirements (Lambert 2020, Shen 2021, Sami et al. 2020). Hence, all emotional needs must be simultaneously considered by interior designers to sustain contemporary living standards.

Prior interior designers did not consider emotional needs in interior spaces (Liang et al. 2020,

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Romanos et al. 2019, Liu 2013). Contrarily, contemporary interior designers prioritise self-actualisation aspects and aesthetic qualities to address the highly shifting trends, which demand adopting modern and updated practices, such as the incorporation of emotional elements. Correspondingly, interior spaces are constructed aesthetically, reliably, functionally, and adaptably with sufficient operational capabilities and emotional fulfilment for users (Abdullah 2018). Furthermore, past experiences play a significant role in selecting the most appropriate designs for users (Cortés Sáenz et al. 2019, Feng, Rao, and Fu 2022, Ngoc and Fassi 2018). Nonetheless, integrating emotional aspects into interior space design is challenging for interior designers, especially in the Chinese context (Qin 2013). Thus, interior designers should thoroughly understand Chinese individuals' nuanced requirements to bridge the discrepancies between sentimental requirements and interior space designs (Zhang and Peck 2016). As such, collecting detailed information before performing relevant design efforts could assist the designers in fulfilling user needs.

Emotions are intense feelings influenced by alterations in behaviours and surrounding environmental conditions and frequently associated with specific actions (McTeague et al. 2020, Langner et al. 2018). Norman's emotional design theory delineates three interlinked components of the emotional system, which collectively form the visceral, behavioural, and reflective levels (Saraiva and Ayanoğlu 2019, Park and Lim 2019) in influencing individuals' perceptions worldwide. Particularly, individuals are emotionally connected with different objects, which are significantly influenced by visual aesthetics (Govender and Potter 2021, Abdullah 2018).

The visceral level of emotions is triggered by the visual of an object (Saraiva and Ayanoğlu 2019). The physical properties associated with the object design and individuals' perceptions belong to the visceral level, as different physical objects convey specific emotional associations with the individual. To obtain a competitive advantage in the market, different businesses could include visceral designs to enhance consumer emotional experience by targeting subconscious thoughts and perceptions (Yusa et al. 2023).

Voluntarily regulated emotions are part of the behavioural level, wherein individuals decide on an appropriate behavioural strategy after critically analysing the present situation, apart from considering the usage and functionalities of products (Yang et al. 2021). Specifically, individuals would analyse product effectiveness, operation, performance, and utility (Dybvik, 2022), which provides a sense of control in product selection (Smith 2015).

Emotions associated with intelligence comprise the reflective level, in which individuals examine all product facts based on past experiences to account for all merits and demerits (Chen and Chen 2020). The reflective level is regarded as a significant level in assisting emotional development (Norman, 2005). The design standards could be broadly categorised into spatial design guidelines and emotional design principles and standards, which are elucidated in the following subsections.

Interior design is required to be effectively planned in ensuring attractive and useful end design (Prominski 2016, Song, Albert, and Prominski 2020). An essential guideline provided by researchers and interior design practitioners is avoiding overdecoration as the attractiveness would diminish gradually with impractical functionality (Collina et al. 2020, O'Malley, Innes, and Wiener 2017). As such, space planning and spatial design features require constant sensitivity to maximise functionality with adequate aesthetics by amalgamating various strategies. For instance, interior designers could improve interior lighting by carefully arranging

the placement of different interior objects (Zölch et al. 2019, Klemm, Lenzholzer, and van den Brink 2017, Wiener and Pazzaglia 2021). Therefore, space planning provides a holistic approach to designing interior spaces based on specific functionality (Liaros 2019), while incorporating aesthetic factors to satisfy psychological needs (Menon and Krishnan 2019).

Different principles and standards are available for interior designers to enhance consumer emotional experience by designing from users' perspectives and associated emotions (Bilro, Loureiro, and Guerreiro 2019), thus resulting in positive exposure (Dybvik 2022). Accordingly, perceived usability is integral to the effective functioning of products (Schrepp et al. 2021, Bhandari, Chang, and Neben 2019), apart from introducing interactive factors to conduce an emotional attachment to the products (Thomson and Coates 2021). Essentially, a product should fulfil the visceral, behavioural, and reflective levels of users' emotions to facilitate a positive emotional engagement, which could assist in sustaining product loyalty (Norman 2005, Zhou, Ji, and Jiao 2021, Alaniz and Biazzo 2019).

Past scholars discovered that individuals' psychological requirements were significantly correlated to personal emotions (Cao 2021, Wang 2018, Higuera-Trujillo, Llinares, and Macagno 2021, Ćurčić et al. 2019), wherein spiritual emotions depend on the product design while the usability and operational aspects of any space determine functionality (Han 2021, Wang et al. 2021, Lai 2022). Contemporarily, consumers prefer attractive designs elevating personal emotional associations, which could enhance consumer engagement with the utilised objects and products (Hesham 2022, Fan 2017, Li et al. 2017) through instincts, behaviours, and reflections. Hence, interior designers should prioritise emotional associations, due to the living space being important to an individual in performing various quotidian activities with positive experiences. In addition, consumers' emotional needs are constantly fluctuating, in which the trend witnessed a shift from a closer association with nature and natural objects, including plants, trees, and flowers to the aesthetic features of objects and spaces (Yu, Bai, and Wu 2018, Sun et al. 2020). As such, interior space design becomes crucial for consumers when the design would significantly impact emotional and psychological fulfilment. Psychological satisfaction is a prerequisite for high productivity in different life-related activities and tasks. Thus, interior designers should emphasise consumers' emotional needs owing to the selection of interior space designs and other relevant products being highly contingent on personal emotions and associated reflections (Fan 2017, Hesham 2022, Wang et al. 2021, Lai 2022).

The new Chinese decorative style outlines the methods of designing spaces in a streamlined shape with undecorated floors to provide an open space for maximum utilisation (Shen et al. 2020, Sun et al. 2020). The aesthetic quality is enhanced by integrating curvilinear designs to enhance the functional characteristics of the spaces according to modern interior design practices (Fu, Peng, and Li 2021). One distinguishing aspect is the design reflects both modern and conventional elements of Chinese interior space design, which preserves the traditional Chinese culture while considering modern-day users' aesthetic preferences (Yin and Ruishuang 2021, Shen et al. 2020, Li et al. 2019). As China is emerging globally in terms of significant economic growth (Puren, Roos, and Coetzee 2018, Yoon et al. 2015), Chinese citizens' choices and priorities of quotidian practices are also experiencing major transformations (Liu, Bo, and Huang 2021, Dong, Ye, and Cheng 2013, Yin and Ruishuang 2021).

The current study aimed to develop a conceptual model to comprehend the application of an emotional-cultural interior design framework in China to achieve a congenial interior design outcome by fulfilling two research questions as follows:

RQ1: Which principles are focused on by interior designers in the new Chinese decorative style?

RQ2: How could the emotional-cultural interior design framework produce pleasurable interior spaces?

The current article is divided into five sections discussing the theoretical study background, followed by the study methodology, the study results in the emotional-cultural design framework (EDF) form for interior design, finding discussions, and the study conclusion. This section presents the research background and problem statement along with the research questions. The next sections are described as methodology, results, and future directions and limitations.

2. Methodology

To achieve a delightful and pleasurable interior design, a conceptual framework was established in this study by referring to various literature sources on the emotional aspects and the new Chinese decorative style for interior design. Correspondingly, a literature review of existing publications was conducted to thoroughly comprehend relevant concepts in accomplishing emotional satisfaction at different levels according to Norman's emotional design theory and Maslow's need hierarchy. To ensure a pertinent literature review, the conceptual framework was developed based on two fundamental facets, namely the emotional design principles and standards and the interior design characteristics prioritised by designers to achieve an equilibrium between aesthetics and functionality. Particularly, the researcher identified relevant interior design principles with Chinese design features and characteristics before translating the principles into Chinese interior spaces with different levels of emotional design. Moreover, performing a literature review allowed the researcher to strategise effective approaches to fulfilling different emotional needs.

Database queries were conducted in July 2020, in which different keywords and search terms were utilised in the review process. In addition, synonyms and other relevant terms were employed to derive all relevant articles. The search terms were combined via OR and AND operators, while the wildcards ("*") were simultaneously utilised to retrieve all relevant literature. The employed search string was ("Interior Design*" AND Chinese New Style*) AND (Emotional Design OR emotional Design Framework OR "Visceral Design") AND/OR (China* OR "Chinese Interior Spaces" OR "Chinese interior design*). Several databases, such as the Association for Computing Machinery (ACM) digital library, Scopus, and ScienceDirect, were utilised to extract relevant research papers, which garnered 55 publications initially before finalising 43 articles after removing all duplicates. Subsequently, study titles and abstracts were scrutinised to determine potentially relevant publications from the 43 extractions. Resultantly, 37 research papers were subject to the screening process by full-text perusal before finalising 33 articles to be included in the current review.

All publications which did not focus on emotional design were excluded, although the number of relevant studies was limited while certain researchers solely concentrated on emotional design principles or strategies. Nevertheless, the finalised 33 publications included in the list to be reviewed for conceptual framework development were documented using Excel spreadsheets. Concurrently, the publications were coded through the NVivo software to classify the texts into the new Chinese decorative style features and characteristics, interior design principles, and various EDF stages respectively. The process facilitated data collection

as analysing the collected data in the respective categories could effectively formulate an in-depth understanding of the overall conceptual framework. The coding process is explicated in Figure 1, which demonstrates the overall study methodology based on the grounded theory.
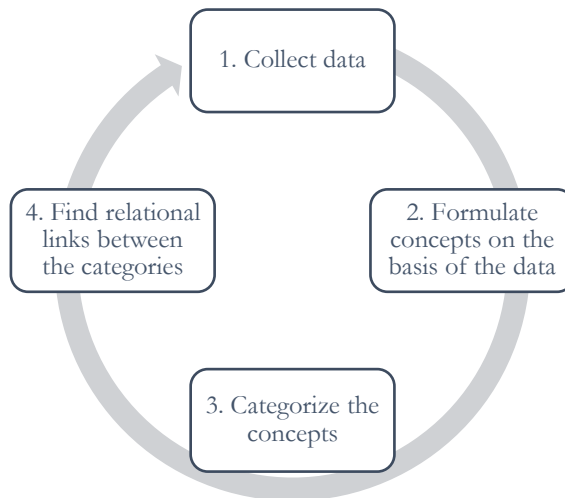
Figure 1: The Research Flow is based on the Grounded Theory.

3.   Conceptual Building

The present conceptual model was proposed by propounding that interior space (product) is designed based on two major aspects, namely appearance and functionality, with the user utilising the product by considering emotional needs at the behaviour, visceral, and reflective levels. Figure 2 depicts the relationship between the designer, user, and product, which constitutes the design environment or process.
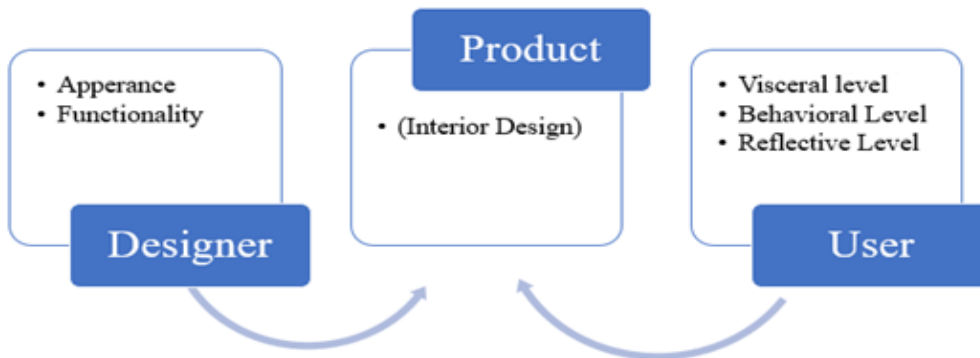
Figure 2: The Relationship between the Designer, User, and Product.

1.1. Interior Design Principles

Several factors are emphasised when considering interior space design and development (Darwish, Rasmy, and Ghaly 2022) to achieve an equilibrium between aesthetics or appearance and functionality of the space (Al 2021), which form the interior design principles as summarised in Table 1.

Table 1: Interior Design Features.

Feature	Explanation	Reference
Balance	Balance is an important interior space feature. Each object needs to belong, possess a purpose, and look well-balanced with the environment in terms of usability, colours, texture, and other elements. Moreover, the object needs to possess an appearance-related balance.	(Zingoni 2019, Hall 2019)
Emphasis	A specific prime function exists in each room or interior space. For example, the prime purpose of the bedroom is to rest in the bed, while the kitchen serves for cooking and eating. Therefore, each room must be designed to emphasise functionality by highlighting several particular items through specific colours, placement, and relevant visual strategies.	(Hall 2019)
Rhythm	A rhythm in the design is important, which could be achieved by employing complementing colours and patterns. The rhythm could also be achieved via contrasting colours (colours on opposite gradient ends), transitioning strategies, repetitions, and other approaches.	(Hall, 2019)
Contrast	Applying different types of patterns, colours, and designs which are either complementary or contradictory could create contrasts and depth in interior space design.	(Widyaevan and Rahardjo 2019)
Scale and Proportion	The object sizes must parallel the available space. Moreover, the scale must be relevant to the function. The conformity between the scale and the proportion of items and corresponding sizes leads to unity, harmony, and coherence in interior spaces.	(Ching and Binggeli 2018, Yin and Ruishuang 2021)
Unity	The feature of unity allows a designer to ensure that different elements in a space are similar in terms of sizes, colour groups, themes, placement, and other features.	(Kirillova, Fu, and Kucukusta 2020, Ramadan and El-Halaby 2020)
Attention to Detail	Attention to detail ensures the designer maximises the quality of the interior space design by concentrating on relevant design, aesthetics, and functionality.	(Colenberg, Jylhä, and Arkesteijn 2021, Ching and Binggeli 2018)

1.2. Features and Characteristics of New Chinese Decorative Style

Certain features and characteristics are associated with the new Chinese interior design style, which distinguishes the new Chinese style from other counterparts employed worldwide. The unique design style maintains a proper balance between the colour quality and place based on relevant utilisation to portray harmony (Jiang, 2021). The interior design practices in China are constantly shifting, wherein different previously-employed designs continue evolving by introducing alternative and modern elements (Xu and Wu 2022). The modern Chinese style was adopted in the 1840s when alternative designs and styles were introduced in China (de Francisco Vela and Ayala-Garcia 2020, Liu et al. 2022). Subsequently, the continuous adoption of Chinese interior design practices assisted the country in producing one of the most robust and attractive designs recognised and appreciated across the globe (Shen et al., 2020). Modern

interior design practices are extensively employed in different Chinese cities to construct an immersive experience for the citizens in performing daily routines and recreational activities (Gang 2018, Wang 2021, Chen et al. 2022)

Vertical designs of contemporary tower structures in China are preferred to allow a space to be fully utilised in a smaller area for accommodating more people or objects (Gang 2018), which leads to interior designers adding layered structures in the designed spaces. Simultaneously, certain traditional elements are maintained after being modified to suit contemporary requirements in terms of modernity and aesthetics. The elements include bamboo, one of the natural resources widely employed in China, to reflect the harmony between individuals and the surrounding natural environment (Gang 2018). Accordingly, different lacquers and screens are applied to enhance the appeal and decoration of interior designs according to modern practices (Yin and Ruishuang 2021). Furthermore, modern Chinese design styles encompass painted wallpapers to decorate the walls through various panels (Liu & Liang, 2020) , while incorporating wooden tables for decorating interior spaces (Chen et al. 2020). Meanwhile, cloisonné is a conventional Chinese technique in ancient times to produce handmade decoration pieces in elevating the aesthetic quality of interior spaces with several modern elements (Norris, Braekmans, and Shortland 2022). Resultantly, Chinese interior designers integrate modern techniques with traditional practices in producing attractive and functional living spaces for individuals in different nations (Chen et al. 2020, Norris, Braekmans, and Shortland 2022, Gang 2018, Yin and Ruishuang 2021). For example, the new Chinese decorative style comprises diversified space accessories with the utilisation of rich spatial levels, moving scenery, and linear decoration as presented in Table 2.

**Table 2:** Specific New Chinese Decorative Style Features.

Feature	Description	Reference
Diversified Space Accessories	Under the strategies of the new Chinese decorative style, designers could implement different methods of adorning the interior spaces. The methods include different combinations of styles and art, such as green plants, textile art, lamps, and lanterns to achieve a combination of traditional and modern feelings within the space	(Yin and Ruishuang 2021, Fan 2017)
The Environment of Moving Scenery	The art of moving scenery is incorporated into the new Chinese decorative style regularly to engender liveliness in the interior design.	(Yin and Ruishuang 2021, Stallabrass 2020, Bell 2019)
Linear Decoration	Designers are more inclined towards employing linear decoration, as simple and clean linear designs in the furniture, art, and other adornments within the space create a more calming and simpler life among the latest generation.	(Liu and Liang 2020, Jiang 2021, Yin and Ruishuang 2021, Bell 2019)
The Richness of Spatial Levels	The spatial levels in the new Chinese decorative style are similar to traditional spaces by possessing an increased focus on the need for privacy and isolation. Therefore, frames and windows are ubiquitously applied.	(Yin and Ruishuang 2021, Chen and Thwaites 2018)

Figure 3: The New Chinese Decorative Style Features and Characteristics.

1.3. Applying the EDF in Designing Chinese Interior Spaces

According to the emotional design framework, incorporating the behavioural, visceral, and reflective levels of emotions could generate a pleasurable and delightful interior design. Several strategies to construct emotional design are discussed in the following subsections.
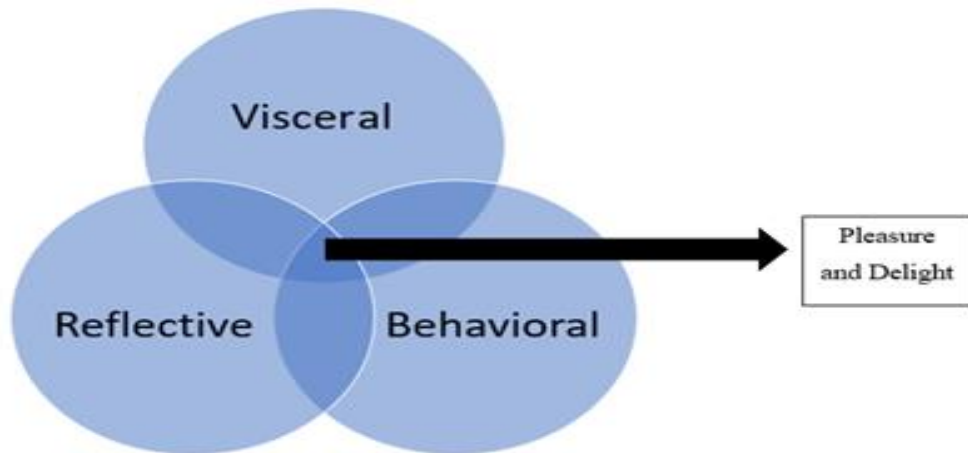
Figure 4: Emotional Design Outcomes.

1.1.1. The Visceral Design Meaning and Relevant Implementation Strategies

Visceral design is the initial impression of an individual on a design element (Saraiva and Ayanoğlu 2019, Abdullah 2018), which could be defined as an emotional reaction to the beauty and appearance of an object (Julia Nehme, Rodríguez, and Yoon 2020).

1.1.2. The Behavioural Design Meaning and Relevant Implementation Strategies

The human mind generally prioritises pleasure and usage efficiency by considering product functionality or design elements. The attached emotions to the design elements are a response

to the product's practicality and usability (Xiong and Xiao 2022, Martin et al. 2021, Hartikainen et al. 2021). Particularly, the failure or success of a product in achieving usage purposes is vital at the behavioural level, which is concurrently influenced by the difficulty level to achieve personal goals (Alonso-García et al. 2020, Xiong and Xiao 2022). If a conscious effort is required to accomplish a goal, feelings attached to the design would be engendered negatively, whereas a positive behavioural attachment would arise when products allow goal accomplishment with minimal effort (Zhou, Ji, and Jiao 2021, Kim 2021).

1.1.3.   The Reflective Design Meaning and Relevant Implementation Strategies

The reflective design is the highest level of design emotions, wherein every emotion revolving around the meaning and message is conveyed through the design details. The reflective level represents users' contemplative and conscious thoughts, in which the design is approached consciously by weighing the benefits and limitations. Users would be predisposed to assign relevant meanings to the design elements based on personal perceptions from positive or negative experiences.

1.1.4.   Conceptual Model Derivation

The proposed conceptual model originating from the emotional-cultural design framework could allow producing a pleasurable design, as illustrated in Figure 5. Particularly, the design environment or the process consists of the designer, design principles, and new Chinese design characteristics and features. The factors could collectively be applied to generate pleasurable Chinese interior space design through the emotional design framework with the visceral, behavioural, and reflective levels of emotions.
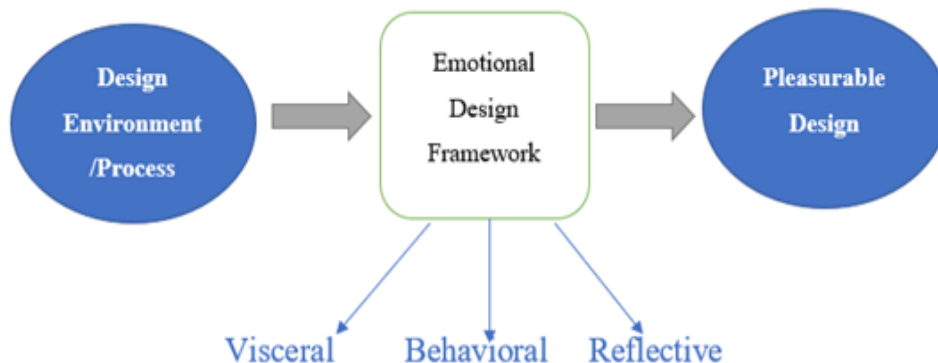
Figure 5: The Present Conceptual Framework.

4.   Limitations and Future Directions

Emotional design is not only a style but also an approach to understanding how interior designers design, decorate, and adorn interior spaces to produce comfort for users, as the core of emotional design emanates from enjoying the occupied spaces. Furthermore, maximising the functionality of each element within the space plays a significant role. As such, every item within the interior space is essential to providing sustainable and substantial support to the interior design for positive emotional responses from the users. Accordingly, the present conceptual framework could be extended in future research for scholars to achieve sustainable and pleasurable designs through experimental and long-term observational studies.

5. Conclusion

The current study sought to apply the emotional-cultural design framework conceptually to improve the emotional satisfaction level through interior design strategies. The study appraised the emotional design concept by identifying the three levels of users' emotional responses to relevant designs proposed in previous theoretical frameworks. Subsequently, a conceptual framework was proposed by the study upon reviewing and determining primary interior design features in past studies to develop strategies for accomplishing positive emotional design outcomes. Particularly, pertinent emotional design elements were incorporated to maximise the aesthetics, appearance, and functionality of interior spaces, which would generate pleasurable and delightful feelings for users.

The present study referred to Norman's emotional design theory and Maslow's need hierarchy to garner initial concepts for a sound understanding of how emotional design elements could create pleasurable and delightful effects for users. Similarly, numerous interior design studies were inspired by contemporary emotional design practices, which proliferated grounded research in the discipline of emotional design for interior spaces (Abdullah, 2018; Govender & Potter, 2021; Taghikhah et al., 2021; Smith et al., 2022). The literature review conducted in the current study fulfilled the research questions by defining the employed research terms and synonyms to extract relevant research papers. A total of 20 articles were included in the review upon removing duplicates, unfounded literature, and irrelevant sources. Insights into the emotional design meaning and the implementation approaches of the new Chinese decorative style were generated to improve the usability and aesthetics of interior design while being concurrently contributed by the emotional-cultural design framework to enhance overall interior space. Summarily, this study discovered an alternative interior design domain for academicians and practitioners.

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