Investigating the impact of socio-cultural factors on culture-based product design

Abstract:

Cultural elements fundamentally shape human interaction with artifacts, influencing their design, adoption, and role in daily life. Prioritizing these factors hierarchically is critical for advancing culture-centered design frameworks. This study systematically identifies socio-cultural parameters through a three-phase methodology to propose a structured design model. First, a PRISMA-guided systematic review of 35 peer-reviewed articles (retrieved via Google Scholar using keywords: *culture*, *social-cultural factors*, and *design*) was conducted, culminating in 13 studies for analysis. Next, manual content analysis using thematic coding extracted recurrent socio-cultural terms (e.g., *tradition*, *values*, *symbolism*) to identify prioritized cultural dimensions, including material practices and belief systems. Finally, the dispersion of these factors across functional, symbolic, and aesthetic design layers was mapped, informing a hierarchical model. This model delineates how macro-level cultural norms (e.g., collective identity) inform meso-level usability principles and micro-level aesthetic choices (e.g., ornamentation), offering designers a structured approach to navigate cultural context. Results emphasize the dynamic interplay between societal values and product lifecycle integration, highlighting the necessity of embedding ranked cultural priorities into design workflows to enhance user acceptance. The study contributes a replicable methodology for cross-cultural design research and actionable guidelines to operationalize socio-cultural awareness in innovation processes. By aligning design practices with cultural hierarchies, this framework fosters culturally resonant and sustainable outcomes, addressing gaps in theoretical and applied culture-centered design discourse.

Keyword: Culture-centered design, Product Design, Socio-Cultural Factors, Content Analysis, Hierarchical Model.

1. Introduction

Culture is the fundamental component that defines the identity of a nation, ethnicity, region, and political group. There are different cultures and value systems among different groups. Cultural

identity is determined by three factors: (1) attachment to the cultural-heritage group and the larger society in which one resides (2) participation in practices that reflect the culture of one's heritage or the larger society (3) value orientation of the individual and the group. People express their views through cultural institutions and through cultural elements. Cultural identity reflects, to some extent, a common social psychology of good feelings. In other words, an individual's cultural identity may highlight their good feelings about the culture to which they belong (Bertola & Colombi, 2024; Zhang et al., 2020). Culture is viewed and defined differently by researchers. It is related to people and its content includes a wide range of phenomena, such as norms, values, shared meanings, and patterns of behavior (Balée, 2021). Culture is communication, and communication is culture (Gu & Fong, 2024; Ogidi). Culture involves race and ethnicity, as well as other variables, and is manifested in customary behaviors, assumptions and values, thought patterns, and communication styles. Specifically, culture is the shared knowledge and behavior of a group of people and their social transmission (Dua et al., 2024). Levels of culture are related to the layers of mental programming by an individual. For example, it corresponds to the level of nationality, ethnicity, country of the individual, community, level of education, income and education of the individual. Therefore, in culture, differences are created based on nation, region, religion, gender, race and community (Smith, 2002; Søndergaard, 2024). Four levels (from bottom to top) of cultural characteristics can be defined: Level 1: Symbols/objects represent tangibles that have agreed-upon meanings. Individuals in a culture reflect the "self" and "objects" of the objective culture in symbolic interaction. Level 2: Behavior is the actions of an individual in response to stimuli or others. It reflects objective culture and "action" in symbolic interaction. Level 3: Rituals/Rites are a set of actions/behaviors performed by individuals. They represent the expression of symbolic values and a planned set of activities that combine. It is a diverse form of cultural expression, often both functional and expressive. Rituals enable social interactions at different levels and have multiple consequences. Social action and interaction are symbolic in interaction. Level 4: Values are a combination of shared meanings, assumptions, and ideals among people in a society and reflect traditions (Basu, 2017). In fact, culture is a dynamic set of value systems that are changed by society and incorporate new forms and meanings (Prameswari et al., 2017). For design, cultural added value creates the core. The same is true for product value for culture. Design is the impetus for advancing culture (Lin et al., 2007). Cultural product design is the process of rethinking or reviewing cultural characteristics and then redefining the process in

order to design a new product that is appropriate for society and satisfies consumers through culture and beauty. Using cultural features to add value to a product can not only contribute to economic growth, but also promote unique local culture in the global marketplace (Ceschin & Gaziulusoy, 2016; Leong & Clark, 2003). Therefore, how to transfer cultural characteristics and become a cultural product is an important issue. Design can be linked to culture by incorporating cultural values into products. Therefore, considering design for culture, it becomes important to pay attention to cultural values. Furthermore, meanings are transmitted and regulated among people based on what is communicated to them in the social context. This suggests that symbols and objects in a culture may not necessarily create meanings on their own. It is through social behavior and interactions that meanings are embedded in them (Cox, 2017). Cultural characteristics (especially cultural values and behavior) are considered in design. There is less emphasis on cultural behavior, rituals, and values, but more on cultural symbols (Hung et al., 2013). In design, the main issues in cultural design are still limited to identifying aesthetic stereotypes such as national form or color, which are not well-defined pattern. Designers must balance values with local empowerment, and this will best address individual wants and needs. This means that specific needs solve with more local solutions (Appiah & Danquah, 2020). It is assumed that the localization of products should be considered as a balance and the potential capacity to hold, preserve and present cultural values to the relevant product (Chinweizu, 1975; Gavristova & Khokholkova, 2022). Technological, anthropological, aesthetic, and socio-cultural factors of users may enable designers to design products that are appropriate to the cultural context of their users (Moalosi et al., 2010). How sociocultural factors are transformed into product design features enables one to assess the extent to which elements of a social system (values, norms, beliefs, behavior) differ and interact in product design (Moalosi et al., 2007). Infusing culture into the design of user interactions with products has multiple benefits at different levels. Instead of being limited to functional and aesthetic features, products at this stage have the following characteristics: function, meaning, gender, knowledge, aesthetics, and mediation (Yang, 2003). Since social and cultural parameters play an important role in product design, it is very important to examine the influence and prioritization of these factors in the product design process in a culture-oriented manner. The concern of this research is to examine the prioritization of cultural parameters in different layers in culture-oriented design and to present a model based on this.

2. Methodology

In order to achieve the set goal, this research was conducted in three stages. In the first stage, a systematic search was conducted in the field of culture-oriented design based on the Prisma flowchart with the keywords culture, social and cultural factors, and design in the Google Scholar search engine. In this stage, the output was 700 articles. In the next stage, 65 duplicate articles were removed. Then, irrelevant articles were removed, leaving 50 articles. After removing duplicates and non-English articles, 35 articles remained. In the final stage, after reviewing the abstracts of the articles, 20 articles remained for review. After a careful study of the sources, 13 articles were subjected to content analysis and detailed review, and social and cultural factors and factors in each layer were prioritized based on the repetition count, and based on that, a culture-based design model was proposed.

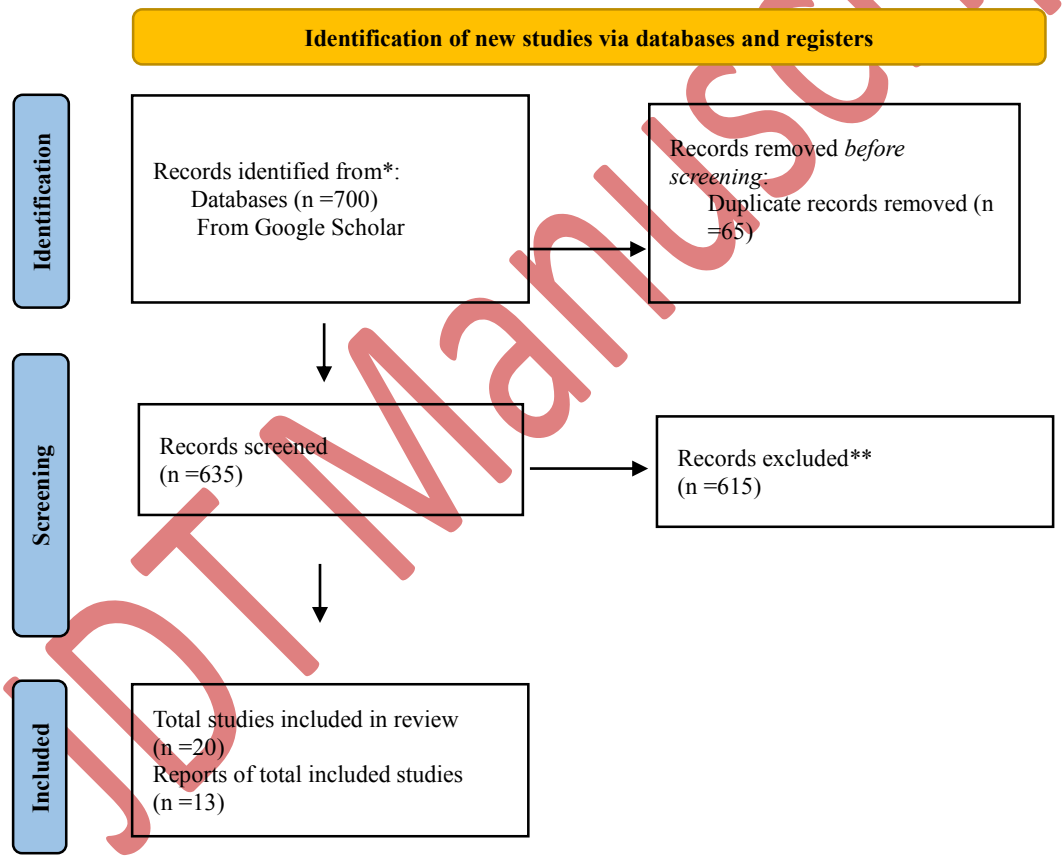

Figure 1: Prisma diagram in the article selection method

2.1 Content analysis

Content analysis has a long history in research. Berelson (Berelson, 2000) believes that analysis is "a research technique for systematic and quantitative purposes" and is the description of the

explicit content of relationships (Berelson, 2000). This topic is discussed in Krippendorff's (Krippendorff, 2018) texts. Burleson's definition distinguished this type of content analysis from other research methods as a new research technique (Leedy & Ormrod, 2023).

In general, there are two different types of content analysis methods that are used in communication science, namely manual methods (using human coders) and automated methods (using computer software to assist in the coding process)(De Graaf & Van Der Vossen, 2013).

As mentioned, the content analysis method is a common method in analyzing systematic studies and is carried out manually and automatically, and software such as Maxqda, NVivo, Leximancer etc. is used in research that studies a large volume of information. Since the sources studied in this research were limited and only the lexical repetition of parameters was considered, and the aim of the research was not to examine the deep relationship between research levels and sources, the content analysis method was used manually.

The final list of articles that underwent content analysis is as follows:

year	Name	The authors
2007	Product Analysis Based on Botswana's Postcolonial Socio-cultural Perspective	Richie Moalosi, Vesna Popovic, Anne Hickling-Hudson
2007	Designing "Culture" into Modern Product: A Case Study of Cultural Product Design	Rungtai Lin, Ming-Xian Sun, Ya-Ping Chang, Yu-Ching Chan, Yi-Chen Hsieh, and Yuan-Ching Huang
2013	Integration of Characteristics of Culture into Product Design: A Perspective from Symbolic Interactions	Yu-Hsiu Hung, Wei-Ting Li, and Yi Sheng Goh
2007	Culture-orientated Product Design	Richie Moalosi, Vesna Popovic and Anne Hickling-Hudson
2020	Socio-cultural factors and capacity building in Interaction Design: results of a video diary study in Botswana	Helen Sharp, Nicole Lotz, Letsema Mbayi-Kwelagobe, Mark Woodroffe, Dino Rajah and Ranganai Turugare
2013	A protocol study of novice interaction design behaviour in Botswana: solution-driven interaction design	Helen Sharp, Nicole Lotz, Richard Blyth, Mark Woodroffe
2018	Designing across cultures	Kim Halskov & Bo T. Christensen
2008	Social Interaction Design in Cultural Context: A Case Study of a Traditional Social Activity	Ko-Hsun Huang and Yi-Shin Deng

2016	How Cultural Knowledge Shapes Design Thinking (A Situation Specific Analysis of Availability, Accessibility and Applicability of Cultural Knowledge in Inductive, Deductive and Abductive Reasoning in Two Design Debriefing Sessions	Clemmensen, Torkil; Ranjan, Apara; Bødker, Mads
2006	Exploring the influence of culture in consumer electronic products	C.J. Kim, H.H.C.M. Christiaans, and J.C. Diehl
2023	Analysing Creative Design Process: A Set of Tools to Understand Activity in its Socio-cultural and Historic Context	Brenda Saris, Stephanie Doyle and Judith Loveridge
2007	Transforming Taiwan Aboriginal Cultural Features into Modern Product Design: *A Case Study of a Cross-cultural Product Design Model*	Rung-Tai Lin
2004	Socio-Cultural Factors That Impact Upon Human-Centered Design in Botswana.	Richie Moalosi

Table 1: List of articles selected for content analysis

2.2 Content Analysis Results

After analyzing the content of 13 sources and extracting factors at each level, the rate of repetition was examined based on the repetition of factors related to culture in different layers. In order to determine the priority of each parameter at each level.

Number of Repetitions	Factor	Row	Number of Repetitions	Factor	Row
10	Social institutions	17	45	Emotional factors	1
58	Family	18	25	Ergonomy	2
10	Education	19	58	Usability	3
52	Language	20	154	Need	4
37	Attitudes	21	78	Aesthetic	5
40	Color	22	26	Pleasure	6
39	Texture	23	191	Values	7
57	Function	24	12	Rituals	8
10	Safety	25	10	Ceremonies	9
7	Love	26	106	Behavior	10

47	Customs	27	78	Symbols	11
40	Religion	28	32	Form	12
15	faith	29	20	Signs	13
37	Art	30	32	Beliefs	14
10	Ideal	31	21	Norms	15
14	Emotional Parameters	32	30	Technology	16

Table 2: Results of content analysis based on effective factors in culture-oriented design

2.3 Cultural parameters and elements effective in culture-centered design

In culture-based design, the first step is to find key cultural characteristics, which can be defined at three levels: external (tangible), middle (behavioral), and internal (intangible). Based on cultural characteristics, the overall environment, such as economic and social issues, is considered (Lin et al., 2007). Culture is not a timeless, static set of value systems that remain unchanged by social change. Rather, it is dialectical, taking on new forms and meanings while simultaneously changing and reshaping traditional meanings. As a result, it is considered a coherent set of beliefs and practices that is dynamic and changes in specific historical periods. Culture is composed of several layers (Moalosi et al., 2007). Stephan (2004) suggested that there are two layers, visible and invisible (Stephan, 2004). Lee proposed three levels (basic assumptions, values, and artifacts) (Lee, 2004). Spencer Oatey defended four layers of basic assumptions and values, beliefs, attitudes, systems and institutions, and artifacts, products, rituals and behaviors (Spencer-Oatey, 2004). Given that it is difficult to draw a precise line between the concepts of "core assumptions and values," Spencer Oatey proposes in his model a combination of these two concepts, since together they form the core layer of culture. "Core assumptions" are deeply held by a society, but are unconscious and invisible. They are the core beliefs that inform the other layers. Meanwhile, "values" comprise the observable culture that a given society has. This level introduces a useful distinction between values and their expression. However, there are no uniform sets of "beliefs", attitudes and conventions form the second inner layer. The second layer in turn influences the third layer, consisting of "systems and institutions". Culture is associated with social groups, and people are simultaneously members of different groups. This layer is surrounded by an outer layer of culture, consisting of "artifacts" products (material objects) on one side, and "rituals and

behaviors" (non-material elements) on the other. Artifacts include the observable and describable elements of culture that have an immediate emotional impact (Moalosi et al., 2007; Schein, 1999; Stephan, 2004). In general, designers tend to neglect incorporating the inner core layers of culture and instead design products that are primarily based on the outer layer (Lee, 2004). Social and cultural factors as cultural parameters influence all aspects of user behavior. Cultural values and underlying assumptions in design are often taken for granted or even considered unquestionable. Sociocultural factors become important to designers when they develop the features, functionality, interaction, and form of a product. Especially for a specific user group (Moalosi et al., 2007). But recognizing these issues comes first. The fundamental problem here is that sociocultural factors can be so intrinsic that even when they are expressed, their significance may not be appreciated (Moalosi et al., 2004). They include reference groups, family, roles, and statuses. Social class and social factors are clearly influenced by cultural factors (Kotler, 1994). This means that designers must consider sociocultural factors in their work and pay attention to the subtle and ineffable issues that are critical to the identity and behavior of each specific user group. Products succeed when they align with the values, norms, and behaviors of their users. When a product is appealing to an individual, it is likely to be acceptable to that individual's cultural framework, worldview, past, and everyday life experiences (Moalosi et al., 2007). Social activities are directly or indirectly related to the product, its aesthetic value and emotions, and sociocultural factors are divided into three topics: material artifacts, emotional factors and social practices. Emotional factors include expressing a strong feeling towards the designed product. Such as beauty, friendship, joy and love and elements of traditional aesthetics such as patterns, colors, shapes and forms. This acceptance provokes positive emotional factors such as beauty, pleasure, fun, excitement, satisfaction, spirituality, love, friendship and joy. Beauty is very important. Beauty is associated with animals and plants, as well as the use of color. One aspect of designing beautiful products is the use of colors that resonate with the culture of the users. Color is considered one of the most useful and powerful design tools. Users respond differently to different colors, and these responses occur at subconscious and emotional levels. Colors are a reflection of society, and the emotional and cultural context in which products are designed. This requires designers to be vigilant when choosing and applying colors to products, as they can easily undermine users' fundamental aesthetic values (Moalosi et al., 2007). Cultural design approaches must go beyond the obvious. They must originate from a serious source (Lee, 2004). Some sociocultural factors are related to

family values, including unity, mutual respect, helping, social gathering, storytelling, a spirit of communal use or sharing, and a spirit of community (Moalosi et al., 2007). “The hidden message in a product is often more important than its surface beauty.” Responses to products often create a combination of internal and external meaning. A product cannot express its own meaning; meaning is therefore constructed through discourse and sociocultural practices. This means that products are no longer seen simply as functional objects but as what they symbolize, meaning, connection, and their participation in the construction of the users themselves. Products are a form of social interaction that participates in a social language. They may represent a memory that represents the user's past, an indication of the user's current identity, or a symbol of what the user hopes to become (Goodman & Cohen, 2003). Design features, such as forms, shapes, colors, and patterns, are borrowed from nature. Features of nature are used to enhance design and decoration. The user receives messages from the designer through the product. Cultural messages are encoded with a common set of sociocultural factors (symbols, form, signs, values, norms, and beliefs). Due to the dynamic nature of culture, the goal is not to return to the past, but to use the past to create a new future with products designed to meet the social and cultural needs of current users. The factors can be categorized into three themes: social practices, affective factors, and material factors. These cultural factors are not only functionally or technologically driven, but are also eclectic and generate rituals or emotions (Moalosi et al., 2007). Usability and ergonomics have been discussed as a reason to address cultural aspects in design. Considering the evolution of ergonomics, it can be a concern of the cultural era in the current era (Aryana & Øritsland, 2010)

Some researchers prefer methods that are specifically developed for their specific topics. They define culture in a specific context. This context can be a physical infrastructure such as a house or a conceptual system such as language (Aryana & Øritsland, 2010). When identifying aesthetic stereotypes such as national shape or color preferences, design in culture should extend beyond material culture and, on the other hand, attention should be paid to the invisible and intangible aspect of culture in design, such as user interaction with the product (Lee, 2004; Taoka et al., 2021). Culture is a broad term that includes customary beliefs, traditions, social norms, habits, and values that are reflected in human actions and behaviors, as well as in religion and art. Culture reflects the expected or correct way to think and act and determines what is acceptable or unacceptable (Griffin et al., 2017; Halskov & Christensen, 2018). In culture, the identified differences include: communication style preference, anthropometry (body measurements and

related features), user cognition (perception, search), information organization, temporal and spatial cognition, problem-solving approaches, and of course language (Halskov & Christensen, 2018). With the growth and development of information and communication technology, relationships, societies, and cultures have been formed. Social activities are inherently embodied in a culture. Cultural characteristics are integrated into the social life of individuals, influencing and deepening the social life of individuals (Huang & Deng, 2008). People's behaviors, attitudes, and motivations are largely influenced by cultural context. This can be applied to social interaction plans for a specific region or to achieve cultural competency. Social nuances, cultural values, and traditional characteristics of a society are very important and considered. Individual social attitudes, such as those related to a sense of belonging and personal identity such as distance, emotional connections, and a sense of community, rely heavily on the individual's social context and cultural background (Hofstede, 1984; Minkov & Kaasa, 2021). Cultures are primarily characterized by specific social facts, including religion, politics, rituals, values, and language (Huang & Deng, 2008). Religious, historical, linguistic, or aesthetic features are considered important in a culture. Localization in design may refer to various things such as: cultural dimensions of usage requirements, preferences, metaphors, appearance, mental models, and navigation of different designs. However, inherent concerns, expectations, values, and perceptions that reflect cultural biases are difficult to uncover (Hofstede, 1984). In cultures, factors such as individuals' background, education level, and social habits determine how they interact with others. Understanding between people and, as a result, having similar attitudes, behaviors, or reactions in certain situations indicates a shared culture (Huang & Deng, 2008). The ability to be aware of the details and nuances of social interactions, and their behavior is strongly determined by situations. People interact with others through many factors. Social cues, including those determined by facial expressions, eye contact, gestures, tone of voice, and mood, have a direct impact on communication to ensure that they are mutually understood (Goffman, 2023). All of which refer to culture. The four socio-cultural factors (material, technological/design, social, practical, and emotional) become product characteristics. Function, knowledge, gender, connotation and aesthetics lead to enhanced user experience. Designers use socio-cultural factors such as symbols, myths, images and rituals to create designs (Yang, 2003). Traditional socio-cultural factors help people understand what has been observed before and this is the basis for the development of new experiences. Traditional socio-cultural factors are important because some

cultural practices that are valuable to society are disappearing and need to be revived and preserved (Moalosi et al., 2010). Considering the material mentioned in this section, various socio-cultural parameters, each of which can be a subject for design discussion, were examined from the perspective of different texts. In the next section, a conceptual model was presented based on the results of content analysis and the findings mentioned in this section.

3. Discussion and Results

the purpose of this study is to analyze the content of important texts on culture-based design and to examine the importance of factors in each layer and rank them based on the extracted sources. The highest number of repetitions in the texts is related to the internal and intangible layer. According to the results the highest repetition in the content analysis is related to the value element with 191 repetitions, which is the most basic parameter in the 3 layers. Beauty is the second most important element in the internal layer after the value factor with 78 repetitions. According to the text, emotional factors and religion are related to the internal layers of culture, which have 45 and 40 repetitions, respectively. Art and attitudes are two other important factors that have been repeated 37 times. Beliefs and pleasure are two other effective factors in the internal layer of culture, which have been repeated 32 and 26 times. Ideals and love are two other important factors that have been repeated 10 and 7 times. These repetitions show the importance of each parameter in this innermost layer. On the other hand, at the second level, which is the middle layer in culture, behavior is the most important factor with 106 repetitions. After that usability, familial norms, performance, language, Customs, ergonomics, norms, rituals, safety and ceremonies, are in the next levels of importance with 58, 57,52, 47, 25, 21, 12 and 10 repetitions respectively. At the most superficial layer, which is the outermost layer, the factors are visual and appearance, which are related to the appearance of the product. Symbols are repeated as the most important factor 78 times. Color, texture, form, technology, Sign are in the next levels of importance with 40, 39, 32,30 and 20 repetitions respectively. According to the results of content analysis, it was found that the word need is very important with 154 repetitions. The selection of sources in this study was based on a systematic study. These articles are very important and original sources in the study of cultural and social factors in culture-centered design. The results obtained from these sources are consistent with recent studies on this topic, and this confirms the reliability and authority of the findings.

For example, in a study by Rasoulivalajoozi and Farhoudi in 2025, they proved that the user's comfort in using a wheelchair is not only influenced by ergonomic factors, but also by socio-emotional aspects that shape the user's experience. The aim of this study was to investigate how socio-emotional factors are integrated into the representational aspects of wheelchairs, and with quantitative results, they proved that the aesthetic factor is in the first place, factors related to social connection in the second place, and symbolic and appearance features in the third place. This indicates the centrality and prioritization of these factors from the perspective of the wheelchair product user(Rasoulivalajoozi & Farhoudi, 2025).

Another study conducted in 2025 highlighted the importance of considering cultural levels in technological design, and three levels of elements emerged in sociocultural technology development research. Each type of element has important implications for technology design. Understanding and incorporating these elements into the design process can lead to more relevant, inclusive, and effective technology solutions(Chan et al., 2025). Cultural symbols and representations: Incorporate cultural symbols and representations into the design. It is important to choose colors, images, and symbols that resonate with specific cultural contexts(Chan et al., 2025; Kimura-Thollander & Kumar, 2019). This is consistent with research reporting that symbols have cultural significance and points to the outer layer of culturally-informed design.

Cultural nuances in language and communication are important. Content must be culturally appropriate. Technology designs must be able to provide linguistic support for seamless and intuitive interaction (Chan et al., 2025; Hamdiui et al., 2022). This parameter corresponds to the second and middle layer of Culture-centric design

Contextual adaptation: The design of technologies should be adapted to different cultural contexts and preferences. Users should be able to adjust certain aspects of the technology according to their cultural values and practices(Boucher et al., 2018; Chan et al., 2025). This refers to the cultural internal layer.

Develop a deep understanding of the socio-cultural context in which the technology will be used. Factors such as social norms, customs, and traditions are considered to design technology that seamlessly integrates into users' lives(Aiswarya & Ramasundaram, 2024; Aljaroodi et al., 2023; Chan et al., 2025). These findings emphasize the need to develop cultural sensitivity frameworks to effectively integrate cultural elements into designs and to conduct user-centered studies in

culture, promoting inclusion and cultural awareness in design to create more relevant and respectful experiences for users from diverse backgrounds.

These results are consistent with the findings obtained in the research. Based on the research findings, we can present a design model.

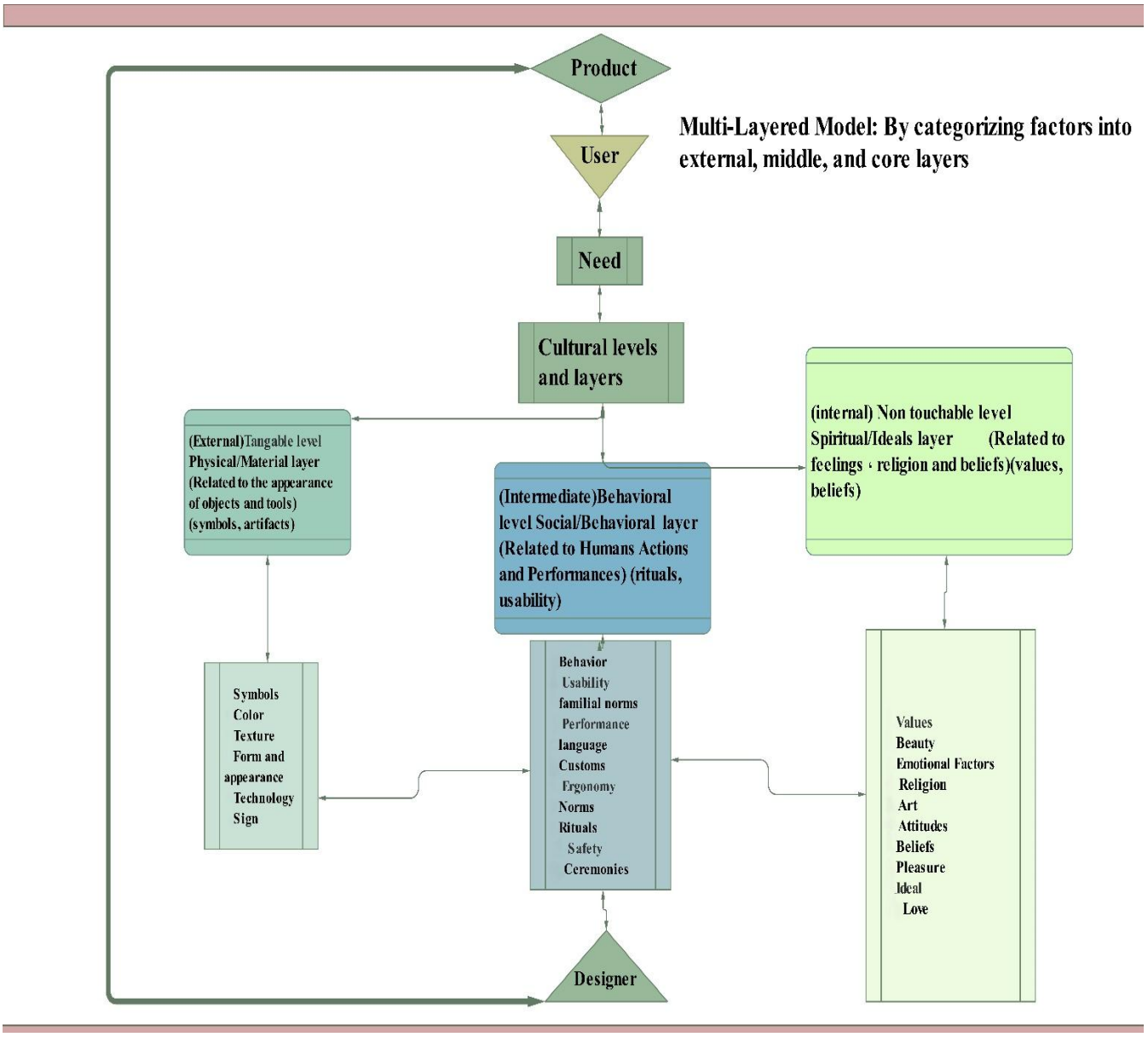

Figure 2: Multi-Layered Model: By categorizing factors into external, middle, and core layers

This model shows the interrelationship of needs, cultural layers, and important factors in each layer on the designer, user, and the cultural product. Each of these factors is important at each level and

on the other hand, the importance of the culture level increases from the first level to the second and the third level. At the same time, these cultural factors affect the classification of user needs and the way the designer designs the product in a reciprocal manner. It is very significant to pay attention to this issue in culturally oriented design.

4.Conclusion

This study explored the role of socio-cultural factors in culture-oriented product design, proposing a hierarchical model based on a systematic content analysis of 13 key articles. The findings highlight that cultural influences in design operate across multiple layers tangible (symbols, artifacts), behavioral (rituals, usability), and intangible (values, beliefs) with varying degrees of importance.

The proposed model emphasizes that effective culture-based design must move beyond superficial visual attributes (e.g., color, form) to incorporate deeper socio-cultural dimensions, including familial norms, language, and rituals. Notably, intangible factors (e.g., emotional connections, social institutions) were prioritized higher than functional or tangible elements, suggesting that culturally resonant design requires an understanding of users' underlying value systems.

It should be noted, however, that this model is a general proposition and is based solely on lexical findings about cultural parameters.

Culture is a highly interactive, dynamic, and broad subject, and within the broad realm of culture-based design, there are dynamic and interactive communication factors (Chan et al., 2025). For this reason, further studies in this area are needed based on international and national research sources. Because each new research leads to the discovery of knowledge and the creation of a broader and more dynamic model.

5.Suggestions:

This content analysis was conducted only based on the examination of lexical repetition and on limited and selected sources, and deep coding was not performed between levels. It is recommended that future studies address this issue and examine broader international and national sources, as well as test a dynamic and interactive model based on these factors.

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