Consumer Psychology under Minimalist Aesthetics: a Study of Apple's Design Strategy and Purchasing Behavior

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Abstract. With the widespread application of minimalist design in technology products, the impact of visual style on consumer psychology and purchasing behavior has become increasingly prominent. As a model of minimalist design, Apple has won high brand loyalty with its restrained and unified product language. However, scholars rarely conduct a systematic and in-depth review of how minimalist design constructs the symbolic status of "high-end" and "innovation" in consumers' minds and influences their purchase intentions. Based on a structured literature review, this paper focuses on the main line of "design style-psychological perception-behavioral intention", integrates the core research results in the fields of minimalist design, perceived value, brand cognition, and consumer behavior, and combines industry dynamics and user survey texts for supplementary analysis. The study shows that minimalist design significantly improves consumers' perceived product quality, but also indirectly stimulates purchasing behavior by enhancing the perception of high-end. At the same time, existing research shows that personal innovation tendency may serve as a moderating variable to further strengthen this influence path. This paper aims to construct a complete perceptual path framework to provide theoretical guidance and practical reference for subsequent empirical research and brand design practice.

1 Introduction

Against the backdrop of the rapid development of the digital economy, the consumption of technology products is shifting from being driven by pure functions to being driven by experience with design as the core. Minimalist design, featuring simplicity, restraint, and order, gradually becomes a key tool for shaping brand differentiation and enhancing the sense of premium Ness of products. As a model of minimalist design, Apple's unique visual aesthetics and excellent user experience are widely recognized as important factors driving consumer decisions, which has aroused the academic community's in-depth attention to the mechanism of minimalist design shaping consumer psychology. To verify this trend, the author collected 121 questionnaire texts from Weibo users. The word frequency analysis revealed that keywords such as "sensory of premiumness", "simplicity", and "sense of order"

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appeared frequently, reflecting consumers' consistent positive cognition of minimalist design. This paper focuses on the psychological effects of minimalist design in technology products and systematically explores how it affects consumers' cognition of innovation and the formation mechanism of purchase intention, and attempts to reveal the mediating and moderating role of premiumness and personal innovation tendency in it. Through literature review and combined with empirical data, it aims to construct a theoretical chain of "design style-psychological cognition-behavioral decision-making" to provide a solid theoretical foundation for future research and brand practice.

2 Theoretical basis and brand practice of minimalist design

2.1 Definition and core features of minimalist design

Minimalist design originated from the modernist architecture and industrial design movement in the 20th century. Its core concept is to remove all redundant elements and highlight the essence of function through a streamlined form [1]. This design concept is deeply influenced by the "less is more" proposition of modernist architect Ludwig Mies van der Rohe, emphasizing the use of the least design language to express the most value [2].

In terms of visual characteristics, minimalist design is usually reflected in simple lines, restrained use of colors, unified design elements and white space aesthetics. These features can effectively reduce the user's cognitive burden and highlight the core function of the product [3,4]. Functionality is another core feature of minimalist design. It advocates that beauty should serve function rather than pleasing users through decoration. This is highly consistent with the concept of "function is aesthetics" proposed by Don Norman [5]. In addition, minimalist design also emphasizes consistency and order in brand practice and strengthens brand recognition and professional image through a unified design language [6].

2.2 Theoretical support for minimalist design

The reason why minimalist design is highly praised in modern technology products is not only because it brings a pure visual experience, but also because it contains a solid theoretical foundation. From design psychology to perceptual psychology, and then to user experience theory, all provide deep support for minimalist design.

First, design psychology emphasizes the concept of "function is aesthetics". Don Norman and other scholars believe that when product design can properly balance function and form, beauty will naturally emerge without the need for additional decoration to please users [7]. Minimalist design is precisely to integrate product function and beauty by removing unnecessary elements [7].

Second, the concept of "less is more" in perceptual psychology theory provides an important theoretical basis for minimalist design. This concept originated from the proposition of modernist architect Ludwig Mies van der Rohe, emphasizing the importance on highlighting core values by simplifying design elements, so that users can obtain a purer perceptual experience with less information interference [8]. In addition, a sense of order is believed to enhance trust in perceptual psychology. Through orderly layout, unified elements and restrained use of colors, minimalist design allows users to feel the professionalism and reliability of the product at first sight. This sense of trust directly affects brand recognition and consumption intention [9].

Finally, from the perspective of user experience theory, minimalist design helps to reduce cognitive burden. Complex interfaces and redundant decorations often make users feel confused and tired during use, while simple and intuitive designs allow users to focus on core

functions and improve the smoothness and pleasure of operation [10]. Therefore, minimalist design not only improves the usability of the product but also subtly strengthens users' trust and goodwill in the brand [10].

2.3 Apple's minimalist design practice

As a model of minimalist design, Apple has always adhered to the concept of "simplicity is beauty" in product design, forming a unique design language. First, in terms of appearance design, Apple focuses on smooth lines and simple shapes. For example, the rounded rectangular body of the iPhone and the thin and light body of the MacBook show the ultimate simplicity and modernity. In terms of color, Apple mainly uses neutral tones such as black, white, and gray, supplemented by a small amount of decorative colors to ensure the unity and elegance of the overall visual [11]. Secondly, in terms of interface design, Apple's iOS system advocates flat design, with simple and clear icons and clear functional levels, which greatly reduces the cognitive burden of user operations and improves the smoothness and comfort of user experience [12]. In addition, functional design focuses on core needs, abandons redundant functions, and improves overall efficiency and user satisfaction through intelligent operation and seamless collaboration between products. Finally, in terms of packaging design, Apple adopts a simple and exquisite packaging style, uses environmentally friendly materials, and has a reasonable internal layout, which not only enhances the unboxing experience, but also reflects the brand's sense of social responsibility [13]. Apple's minimalist design strategy not only shapes its unique brand image, but also successfully influences consumers' psychological cognition and purchasing behavior.

3 Consumer psychology under minimalist aesthetics

3.1 Minimalist design and perceived sense of luxury

Minimalist design conveys a sense of quality and luxury to consumers through concise and restrained visual expression. Studies have shown that consumers often directly associate simple lines, restrained colors and orderly layouts with high-end and high-quality brand images [14]. This sense of luxury not only comes from the material and function of the product itself, but is also a psychological cognitive structure and a subjective feeling of consumers about brand value and identity symbolism. In Apple's product design, the visual language of "white + gray + straight line" strengthens the sense of refinement and professionalism, allowing users to trust and like it at the first time [15]. The sense of luxury created by minimalist design can enhance consumers' perception of product value, thereby enhancing their willingness to buy and brand loyalty. In addition, the transmission of a sense of luxury does not rely on high prices, but relies on the unique aesthetic experience and emotional resonance created by the design language, which is also one of the important reasons for the success of minimalist design in the market.

3.2 Minimalist design and perceived innovation

Minimalist design not only conveys a sense of luxury visually but also strengthens the innovative perception of the product in the minds of consumers. Simple design language is often closely related to modernity, technology and futurism, which can enable consumers to associate the product with innovative attributes in their first impression [16]. Especially in the field of technological products, minimalist style is regarded as a manifestation of technological progress and cutting-edge design, because it often means more efficient

functional integration, smarter interactive experience and aesthetic concepts that are more in line with future trends [17]. Apple's products are particularly outstanding in this regard. Whether it is the extreme simplification of physical buttons or the high degree of uniformity of the operating interface, users can feel the innovative charm of the integration of technology and art. This perceived innovation not only enhances consumers' trust in the brand but also enhances their recognition of the product value, thereby stimulating their willingness to buy. Research has also found that the "sense of technology" and "sense of the future" embodied in minimalist design will subconsciously guide consumers to explore and try new products, which makes minimalist design have a significant advantage in shaping the brand's innovative image [18].

3.3 The behavioral effect of minimalist design on purchase intention and brand loyalty

Minimalist design not only affects consumers' psychological perception through visual and functional simplification but also has a profound impact on their actual purchase intention and brand loyalty. First, the simple and orderly design style helps consumers quickly form a positive first impression when they first come into contact with the product, which directly enhances their motivation to buy. The sense of luxury, technology and future conveyed by minimalist design makes it easier for consumers to believe that the product has high quality and high value, and thus they are willing to pay a premium for it. The packaging and unboxing experience of Apple products, which are known for their simplicity, further stimulates consumers' emotional value and makes purchasing behavior a self-reward.

In addition, minimalist design strengthens the brand image through consistent and unified brand language and improves consumers' recognition and trust in the brand, which is crucial to the formation of brand loyalty. When users continue to experience consistent design language and a high-level experience in different products, their emotional dependence on the brand and willingness to repurchase will naturally increase. Research shows that design consistency not only reduces user learning costs but also invisibly enhances users' sense of belonging and emotional identification with the brand. This also explains why brands such as Apple can build strong user stickiness based on minimalist design.

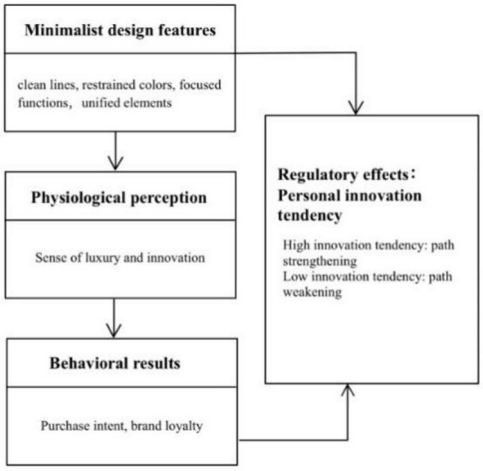

Fig. 1. Schematic diagram of the impact of minimalist design on consumer perception and behavior

As shown in Figure 1, minimalist design indirectly drives purchase intention and brand loyalty by influencing consumers' psychological perception of luxury and innovation, while personal innovation tendency plays an important moderating role.

4 Integration and research gaps

Although there are many studies on minimalist design, brand perception and consumer behavior, there are still some obvious research gaps in the academic community in terms of how the minimalist aesthetics of technology brands such as Apple systematically affects consumer psychology and purchasing behavior. Through a comprehensive review of relevant literature, it can be found that existing research is mainly concentrated on the following aspects:

First, many studies emphasize the optimization effect of minimalist design on user experience, such as reducing cognitive burden and improving operational convenience. However, these studies often stay at the user perception level of function and pay insufficient attention to how minimalist design constructs brand value perceptions such as "sense of luxury" and "innovation" in the minds of consumers, and lack in-depth discussion of its psychological mechanism.

Second, existing brand research on minimalist design is mainly based on the description of overall brand image or aesthetic characteristics, and lacks a systematic review and empirical support for the causal path relationship between design characteristics and consumer purchase intention and brand loyalty. In particular, the moderation and mediating mechanisms, such as variables such as consumers' innovation tendency and sense of luxury perception, are mostly not included in the overall path framework in existing models.

In addition, literature is also relatively weak in terms of cross-brand comparison and cultural differences. Most studies focus on the relationship between design and consumer behavior in the context of the European and American markets. There is still a lack of in-depth discussion on how global brands represented by Apple can create a unified and powerful brand identity through minimalist aesthetics in different cultural contexts.

Therefore, future research urgently needs to be based on a systematic theoretical framework, incorporating minimalist design features, psychological perceptions, behavioral outcomes, and moderating variables into the overall path model, and verifying it through cross-brand and cross-cultural empirical analysis. This will not only make up for the shortcomings of existing theories but also provide valuable practical references for technology brands to carry out design management and brand strategy in the global market. Table 1 summarizes the main focuses of existing research and the supplementary perspectives of this review study

Table. 1 Comparison of existing literature focus and supplementary directions of this study

Current research focuses	Focus of this review
User experience at the functional level	Psychological perception (sense of sophistication, innovation)
Single brand or single market	Cross-brand comparison and cross-cultural applicability
Lack of system path model	Building a complete perception-behavior path framework

5 Conclusion

Based on a systematic review of the core literature in the field of minimalist design, consumer psychological perception and behavioral intention, this paper constructs a perceptual path

framework of how minimalist aesthetics affects consumer behavior in brand strategy around the main line of "design style-psychological perception-behavioral intention". The study shows that Apple, as a representative of minimalist design, effectively shapes the premium and innovative perception of its products through simple lines, restrained colors and highly consistent language design. This perception not only significantly enhances consumers' purchase intention but also further promotes the formation of brand loyalty by enhancing brand recognition and trust. In addition, individual traits such as personal innovation tendency play a moderating role in this process, resulting in different perception paths of minimalist design for different consumers. Based on the integration of existing literature results, this review study proposes a systematic theoretical framework for the mechanism of minimalist aesthetics on consumer psychology and behavior, providing a clear logical main line and theoretical support for subsequent research. Although this study strives to comprehensively sort out the research results in related fields and integrate them into the theoretical framework, there are still some limitations. First, due to the limitations of literature sources and length, this study has not yet fully explored cross-cultural comparisons and design language differences of different categories of electronic products. Future research can further expand the sample range, test the path of minimalist design on consumer psychology and behavior through empirical data, and examine the applicability and differences of path models under different cultural and market backgrounds. Secondly, the existing literature pays less attention to moderating variables (such as cultural orientation, lifestyle, aesthetic preference, etc.), which provides a rich space for subsequent research. In addition, future research can strengthen multidisciplinary cross-disciplinary research, combine methods from fields such as neuroscience and behavioral economics, and further reveal the deep mechanisms of minimalist aesthetics on consumer psychology and behavior.

In terms of brand design practice, when applying minimalist aesthetics, technology companies should pay attention to the perceptual preferences and cultural backgrounds of different markets and consumer groups and flexibly adjust design strategies to achieve the best balance between brand globalization and localization. Minimalist design is not only a visual language, but also a strategic tool for conveying brand values and concepts, which is worthy of continuous exploration and optimization by enterprises.

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