

Analysis of Architectural Decoration Engineering Design Strategies in Engineering Economy

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Abstract: With the continuous improvement of people's living standards, there is a growing demand for higher living standards in residential environments. Particularly, as the scale of modern high-rise and super high-rise construction continues to expand, creating a livable environment in complex and dynamic high-rise spaces has become an important topic of concern for many consumers. This article primarily analyzes the inherent connection between engineering economics and architectural decoration engineering design. It explores strategies for architectural decoration engineering design based on the concept of engineering economics, aiming to provide reference opinions for further enhancing the economic and practical value of architectural decoration engineering.

Keywords: Construction engineering; Engineering economics; Decorative design strategies

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1. Introduction

Against the backdrop of diversified social and economic development, the demand for engineering construction and engineering decoration is evolving towards multiple directions. Modern architectural decoration engineering not only ensures the safety and practical value of the project but also considers the cost, aesthetics, and social value incurred during the decoration design process. Additionally, architectural decoration engineering is closely associated with modern science and technology, with an increasing integration of cutting-edge scientific technologies into the field, providing more convenient avenues for architectural decoration design^[1]. Engineering economics is not only a discipline related to engineering types but also an important category based on the exploration of economic value. The concept of economic feasibility proposed in engineering economics has been widely applied to architectural decoration design. In the current development context, the inherent connection between the design of architectural decoration engineering and engineering economics has become a hot topic of interest. Therefore, further exploring the correlation between the two and promoting the sustainable development of architectural decoration engineering design under scientific principles has become a crucial topic for consideration in the industry's development process.

2. Overview of Engineering Economics and Its Relationship with Architectural Decoration Engineering Design

(1) Overview of engineering economics

Essentially, the design of architectural decoration in construction projects is an integral part of the engineering process. Many aspects and steps in the selection and design process are inherently linked to engineering

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economics. The concept of engineering economics aims to explore how to efficiently utilize decorative resources to further enhance the economic feasibility of architectural decoration. With the further development of the market economy, there are significant differences in the demand for decorative projects. Engineering economics has strong theoretical independence, comparative selectivity, and predictability, providing important foundational conditions for guiding the development direction of subsequent architectural decoration designs. In reality, architectural decoration design not only considers its aesthetics and subsequent application stability but also emphasizes economic cost analysis in the initial analysis stage. Engineering economics, as an interdisciplinary subject integrating engineering technology, management elements, and economic elements, provides important reference standards for subsequent architectural decoration designs and content selection related to economic factors. Moreover, a combination of quantitative and qualitative analysis methods is applied in the in-depth exploration of engineering economics, ensuring the scientific and rational value of engineering decoration design. Additionally, engineering economics has become a frontier element in the process of engineering projects, providing anticipatory insights into potential conflicts and issues that may arise during subsequent engineering design processes. In essence, engineering economic analysis based on actual engineering situations comprehensively assesses various types of risks or changes in subsequent engineering decoration projects, providing effective informational support for the overall direction of the project.

(2) Inherent relationship between engineering economics and architectural decoration engineering design

To a certain extent, engineering economics encompasses the concept and important discipline associated with financial information in the process of engineering development. For example, in the process of engineering decoration, various economic issues such as cost estimation and financial accounting are significant for the final design results of architectural decoration engineering. Strictly speaking, engineering economics is the most crucial part of architectural decoration engineering design and an indispensable preliminary step in the entire project development process, significantly contributing to the overall quality enhancement of architectural decoration engineering. Moreover, engineering economics can also operate independently of projects, highlighting its economic orientation value outside the project. For most architectural decoration enterprises in the market, the initial purpose of contracting projects is to obtain profits, subsequently expanding market development and acquiring larger platforms for growth. Engineering economics is inherently linked to the profits that can be obtained from architectural decoration engineering design, effectively achieving the goal of controlling design cost in the preliminary stage and helping architectural decoration enterprises achieve higher economic benefits. Additionally, analyzing the development trends in the current architectural decoration market, under the background of technological investment in the industry, competition is becoming more intense. Only by emphasizing early-stage engineering economic management can the feasibility of engineering design be ensured while obtaining efficient profits, which is significant for promoting the virtuous cycle of the entire industry. Therefore, engineering economics plays a crucial role in architectural decoration engineering design and serves as a key entry point for controlling the cost of engineering decoration design, greatly promoting the development and progress of engineering decoration design work.

3. Strategies for Architectural Decoration Engineering Design Based on Engineering Economics

From the perspective of the development of engineering economics, the design of architectural decoration engineering needs to consider not only its practical application value and aesthetics but also comprehensively take into account the upfront investment costs, involving various factors^[4]. These factors include the topography of the region where the building is located, the orientation of the building, and the technological input in architectural decoration design, among others. In line with the preceding discussion, this article specifically proposes several types of strategies for architectural decoration engineering design. The intention is to integrate the concept

of engineering economics into architectural decoration engineering design and provide valuable insights for professionals in related industries.

(1) Effectively exploiting geographical advantages

The geographical conditions and regional location where architectural decoration engineering projects are situated determine the differences in the initial design of decoration projects. Under the guidance of the concept of engineering economics, the design of architectural decoration engineering projects needs to delve into the developmental advantages of different regions. For instance, the design for decoration in flat areas differs from that with inclined angles. By incorporating the concept of engineering economics into the design process, better economic and aesthetic benefits can be achieved. In-depth considerations during the design phase allow designers to highlight the topographical advantages of different regions, utilizing the value of orientation or topography. Through the strategic arrangement of decorations, utilizing visual and angular differences, the interior space can become three-dimensional and rich.

For example, a residential community in China maximized the use of local topographical advantages. The region where the community is located has a certain slope. Leveraging the slope difference, areas with varying slopes were designed as internal storage spaces, surrounded by green belts. This created a livable environment for the community, integrating economic value, practical value, and aesthetic value. The community received positive feedback from residents, as it also expanded storage space for them. In the design of the kindergarten within the community, the architectural decoration project preserved the water and greenery within the designated construction area, achieving a high degree of integration between economic and environmental values, aligning with the theoretical foundations of engineering economics. The community utilized the topographical differences and environmental advantages to create a well-designed landscape. Through the rational layout of the decorative design, it harmonized the economic value with the surrounding natural environment, presenting a high artistic atmosphere. This model community serves as an exemplary construction for livable residential areas and contributes to the development of architectural decoration design enterprises, aiding in establishing new brands and supporting the industry's growth.

(2) Incorporating green technology into architectural decoration design

With the rapid development of the current socio-economic environment, the expansion of industrial scale has come at an environmental cost, making the natural environment more challenging. Integrating the concept of green ecological technology into various industries has become a crucial consideration for the country's promotion of high-quality economic development. In today's economic system, green ecology has become a mainstream trend, and incorporating the concept of green ecology into the design of architectural decoration projects can not only effectively reduce the energy consumption in the subsequent operation of buildings but also utilize green materials to a certain extent, promoting the sustainable development of enterprises. According to statistics, the integration of green design concepts into decoration projects can save at least 30% of energy during the subsequent operation of buildings, highlighting the application value of green ecological environmental protection technology in architectural decoration engineering design.

The incorporation of green technology concepts into architectural decoration design is more in line with the actual needs of human living environments. Adding green materials to the decoration design can effectively improve the indoor air circulation system, avoiding potential health risks associated with the inhalation of chemical materials during residents' occupancy. It not only has a high value in green protection but also reflects the subsequent economic cycle value ^[5]. Therefore, design managers in architectural decoration engineering should recognize that knowledge related to economic and green management, responding to the country's call for green ecological environmental protection, can start from the material selection stage. Actively applying green materials in architectural decoration design, integrating green concepts into different construction environments, and balancing

green and economic values in the architectural decoration design industry lay a good foundation for the sustainable circulation of human society and the industry.

Governments in different regions should fully leverage their macro-control functions and responsibilities, stimulate market dynamics through the issuance of corresponding green design and green engineering legal norms, encourage architectural decoration engineering companies to actively participate, and promote the application of green ecological technology in these enterprises. Providing policy support and incentives to such architectural decoration companies can stimulate green ecological values and related extended consumption in the industry.

(3) Achieving optimized design of spatial layout

The development of architectural decoration engineering design no longer simply pursues economic value and returns; it now emphasizes the completeness of supporting functions, aesthetics, and the integration of green concepts. Supported by the concept of engineering economics, the design of architectural decoration engineering should not focus solely on specific points but also consider overall layout and spatial planning. It should define the overall direction and goals during the development process, integrate more modern design concepts, and emphasize the rational layout of spaces and harmony with the surrounding ecological environment.

For instance, in a case study of the decoration project for a new school campus in China, considering the school's inherent functional value, the architectural decoration could not merely emphasize beauty or economy. It had to consider the practical value and functionality of the spatial layout. The project set rigorous requirements for the overall practical value and functionality, aiming to maximize the value of the space layout while conserving internal space resources. The company retained the original greenery and water features within the school during construction, planning the office area, tiered classrooms, and student training space within the same scope. This achieved a reasonable division of functional areas, ensured the rationality of different teaching buildings, and provided ample and broad sports platforms for students between different teaching buildings. This spatial layout not only ensured an overall sense of space within the campus, meeting aesthetic requirements, but also guaranteed the practical value of the architectural decoration design. Based on the concept of engineering economic management, it achieved the optimized layout of the internal space within the campus.

In conclusion, the integration of engineering economics into architectural decoration engineering design provides a systematic approach to optimize the utilization of resources, achieve economic feasibility, and enhance the overall value of the projects. The strategies mentioned, including exploiting geographical advantages, incorporating green technology, and achieving optimized spatial layouts, demonstrate the importance of considering economic, environmental, and functional aspects in the design process.

4. Improvement of Architectural Decoration Engineering Design System Based on Engineering Economics

(1) Establishment of a robust internal control mechanism

In the context of refining the internal work system and reward-penalty system of architectural decoration design companies, it is imperative to ensure that every design professional incorporates the principles of green development and engineering economics into every stage of their work. Additionally, they should be able to promptly identify deficiencies in the design process under the conditions of scientific and rational evaluation, thereby avoiding subsequent issues in project implementation. Encouraging architectural decoration design professionals to conscientiously adhere to industry norms and respond to the nation's call for green environmental development is essential to drive a virtuous cycle of industry and corporate development.

(2) Emphasis on the cultivation of architectural decoration design talent

Talent is the lifeblood that propels the advancement and development of enterprises. The comprehensive qualities of talents and the experiences accumulated during their work directly influence the ultimate direction of architectural decoration engineering design and industry development. In the context of architectural decoration engineering design based on the principles of engineering economic management, it is crucial to introduce more professionals with relevant expertise, forming a high-caliber engineering economic management team. This team should seamlessly transfer and apply theoretical knowledge of engineering economics to practical engineering decoration design work, effectively connecting the understanding of engineering economics with the practical activities of engineering decoration design. Through continuous experience accumulation and the development of managerial capabilities, it can create greater economic benefits for architectural decoration enterprises and better balance their social and ecological values.

5. Conclusion

In summary, architectural decoration engineering design guided by the principles of engineering economics is more scientific and rational. It can highlight the practical and aesthetic values of architectural decoration design while sensibly considering the underlying economic and ecological values. Therefore, it is crucial to deepen the understanding of the close relationship between architectural decoration engineering design and the principles of engineering economics. By incorporating green ecological concepts into architectural decoration design, leveraging the topographical and spatial advantages of different regions, and planning spatial layouts sensibly, the industry can be propelled towards benign development and progress.

References

- [1] Zhang Yu. Forum on the High-Quality Development of China's Architectural Decoration Industry and the Third Session of the Ninth Council and the Fourth Session of the Standing Council of the China Architectural Decoration Association Held in Wuhan — Report on the Work of the China Architectural Decoration Association by Wang Zhongqi, President of the China Architectural Decoration Association[J]. China Architectural Decoration and Decoration, 2024, (01): 16-19.
- [2] Liu Minmin, Su Yunbo. Research on the Design of Cultural and Creative Products Based on Minnan Red Brick Architectural Decoration Art[J]. Packaging Engineering, 2023, 44(24): 492-500.
- [3] Li Yonghong. Innovative Application of Traditional Patterns in Architectural Decoration Art Design[J]. Architectural Science, 2023, 39(11): 193-194.
- [4] Qi Guiyun. Exploration and Practice of Ideological and Political Education in Higher Vocational Colleges under the Concept of "Three All-Round Education" — Taking the Course of Architectural Decoration Construction Drawing as an Example[J]. Modern Business and Industry, 2023, 44(23): 237-239.
- [5] Zhang Yidie, Min Guo, Liang Hanbing. Cost Prediction Method for Architectural Decoration Engineering Projects Based on Improved Grey Model[J]. Jushe, 2023, (32): 85-88.
- [6] Yang Shijie. Architectural Decoration Engineering Design Strategy Based on Engineering Economics[J]. Cooperation Economy and Technology, 2017, (14): 126-127.