

NATURE-INSPIRED ARCHITECTURE: DEVELOPING A BIOMIMETIC SUPER MALL IN MUZON CENTRAL, BULACAN

ABSTRACT

AUTHORS

Zendy Faye Alim
Prince Charrel Arboleda
Marc Andrei Arcenal
John Vincent Canong
Gilbert Diong
Cristoper Esporlaz

RESEARCH ADVISER

Carlito Gabriel

AFFILIATION

Bestlink College of the
Philippines

DISCIPLINE

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Malls contribute significantly to economic growth and urban convenience; however, some areas remain underserved due to issues such as traffic congestion and limited accessibility. Muzon Central in Bulacan is one such area, with the nearest mall located over 7.1 kilometers away, resulting in long and inconvenient travel for residents. This research proposes the development of a biomimetic super mall in Muzon Central to address the lack of accessible commercial infrastructure. By applying principles of nature-inspired architecture, the study aims to promote sustainability, improve access, and support local economic activity. The study employed a quantitative-descriptive research design using purposive sampling. Data were collected through a survey questionnaire designed to assess the level of acceptability of the proposed mall model in terms of construction materials, floor plan, architectural features, structural integrity, and overall presentation. Respondents included five civil engineers and five architects. Statistical tools such as percentage, frequency, weighted mean, and t-test were used to analyze the data and compare the responses of the two professional groups. The proposed biomimetic mall design was rated as “acceptable” across all evaluated criteria. Civil engineers provided an overall mean score of 3.16 with a variance of 0.272, while architects gave an overall mean of 2.94 with a variance of 0.221. Both groups shared the same alpha level (0.05), t-critical value (2.160), and t-computed result (0.713), indicating no statistically significant difference in their assessments. These findings suggest that the model is considered viable by both engineering and architectural professionals. To improve the proposed design further, respondents recommended enhancing specific architectural details and utilizing more durable construction materials to ensure structural longevity and functional accuracy. These suggestions reflect a shared emphasis on sustainability, durability, and performance in the final design. The study demonstrates that nature-inspired architectural principles can be effectively applied to urban infrastructure projects and highlights the feasibility of constructing a biomimetic mall in underserved regions like Muzon Central.

RECOMMENDED CITATION

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