IMPLEMENTATION OF GREEN DESIGN STRATEGIES IN THE DEVELOPMENT OF A MUSEUM, ABUJA, NIGERIA

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE (M.Sc) IN ARCHITECTURE OF THE DEPARTMENT OF ARCHITECTURE, COLLEGE OF SCIENCE AND TECHNOLOGY, COVENANT UNIVERSITY, OTA, OGUN STATE, NIGERIA

JULY, 2024

ACCEPTANCE

This is to attest that this dissertation is accepted in partial fulfillment of the requirements for the award of the degree of Master of Science (M.Sc) in the Department of Architecture, College of Science and Technology, Covenant University, Ota, Nigeria, and has been accepted by the School of Postgraduate Studies, Covenant University, Ota, Ogun state.

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Prof. Akan B. Williams
(Dean, School of Postgraduate Studies) **Signature and Date**

DECLARATION

I, ENE, VINCENT ONYEDIKACHI (22PCA02361), declare that this dissertation is a representation of my work, and is written and implemented by me under the supervision of Dr. Bukola A. Adewale of the Department of Architecture, Covenant University, Ota, Nigeria. I attest that this dissertation has in no way been submitted either wholly or partially to any other university or institution of higher learning for the award of a master's degree. All information cited from published and unpublished literature has been duly referenced.

ENE, VINCENT ONYEDIKACHI

Signature and Date

CERTIFICATION

This is to certify that this dissertation titled "**IMPLEMENTATION OF GREEN DESIGN STRATEGIES IN THE DEVELOPMENT OF A MUSEUM, ABUJA, NIGERIA**" is an original research work carried out by **ENE, VINCENT ONYEDIKACHI (22PCA02361)** in the Department of Architecture, College of Science and Technology, Covenant University, Ota, Ogun State, Nigeria under the supervision of Dr. Bukola A. Adewale. This dissertation has met the required standard for the award of Master of Science (M.Sc) in Architecture.

Dr. Bukola A. Adewale
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(Head of Department) **Signature and Date**

Prof. Adetokunbo O. Ilesanmi
(External Examiner) **Signature and Date**

Prof. Akan B. Williams
(Dean, School of Postgraduate Studies) **Signature and Date**

DEDICATION

This research work is dedicated first and foremost to God Almighty, the custodian of all wisdom, knowledge, and understanding, for His grace and favour throughout carrying out this research. Then to my family for their endless support and love.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF MAPS

LIST OF CHARTS

LIST OF ABBREVIATIONS

AAM	American Alliance of Museums
AR	Augmented Reality
ICOM	International Council of Museums
SDGs	Sustainable Development Goals
NGOs	Non Governmental Organizations
HVAC	Heating, Ventilation, Air-Conditioning
A.D.	After Death (of Christ)
NCMM	National Commission for Museums and Monuments
B.C.	Before Birth (of Christ)
MoMA	Museum of Modern Art
BREEAM	Building Research Establishment Environmental Assessment
LEED	Leadership in Energy and Environmental Design
EDGE	Excellence in Design for Greater Efficiencies
IGCC	International Green Construction Code
HPSB	High Performance and Sustainable Building
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
DOI	Diffusion of Innovations
SCT	Social Cognitive Theory
MM	Motivational Model
ARCON	Architects Registration Council of Nigeria
SPS	School of Postgraduate S
CO_2	Carbon Dioxide
ROM	The original Royal Ontario Museum
AMAC	Abuja Municipal Area Council
NMDC	National Museum Directors' Council

ABSTRACT

This study investigates green design strategies in Nigerian museums to minimize energy consumption and environmental impact while preserving cultural heritage. Adopting a qualitative approach, the research employed interviews and case studies, focusing on three Abuja museums: Discovery Museum, Nike Art Gallery, and Retro Africa Gallery. Purposive sampling selected the three museums, while snowball sampling facilitated the selection of the 8 architects which were interviewed. The case studies were evaluated using LEED and EDGE guidelines. Findings revealed partial implementation of sustainable practices, with effective passive design strategies like cross ventilation and vegetation, yet limited integration of renewable energy and advanced water management systems. Six case studies, including three international museums, were assessed using LEED and EDGE guidelines. Results highlighted both achievements and gaps, particularly in renewable energy and water conservation techniques. The study recommends enhanced renewable energy integration, advanced water management systems, education and training for professionals, policy support and incentives, collaboration for knowledge sharing, and regular assessments and upgrades. These measures aim to foster sustainability in Nigerian museums, serving as models for environmental conservation while enhancing user experience and preserving cultural heritage. The study's implications extend beyond architectural practice, as sustainable museums can serve as models for environmental conservation and cultural stewardship in Nigeria and beyond. By enhancing user experience and preserving cultural heritage, these initiatives contribute to broader societal and sustainable development goals.

Keywords: Green design strategies, Museum, Sustainable design, Sustainability