

**INTEGRATION OF SMART BUILDING STRATEGIES IN THE
DESIGN OF A MIXED-USE BUILDING IN LAGOS STATE**

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DESIGN OF A MIXED-USE BUILDING IN LAGOS STATE**

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF
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COLLEGE OF SCIENCE AND TECHNOLOGY, COVENANT
UNIVERSITY.**

SEPTEMBER, 2021

ACCEPTANCE

This is to attest that this dissertation is accepted in partial fulfilment of the requirements for the award of the degree of Master of Science in the Department of Architecture, College of Science and Technology Covenant University, Ota, Nigeria.

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DECLARATION

I, **ALUGAH KING-DAVID (15CA03329)** declare that this research was carried out by me under the supervision of **DR. ANTHONY B. SHOLANKE**, of the Department of Architecture, College of Science and Technology, Covenant University, Ota, Nigeria. I attest that the dissertation has neither been presented wholly nor partly for the award of any degree elsewhere. All data sources and scholarly information used in this dissertation are duly acknowledged.

ALUGAH KING-DAVID

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Signature and Date

CERTIFICATION

I certify that this dissertation titled “**INTEGRATION OF SMART BUILDING STRATEGIES IN THE DESIGN OF A MIXED-USE BUILDING IN LAGOS STATE**” is an original research work carried out by **ALUGAH KING-DAVID (15CA03329)**, in the Department of Architecture, College of Science and Technology, Covenant University, Ota, Ogun state, Nigeria, under the supervision of Dr. Anthony B. Sholanke. We have examined and found this work acceptable as part of the requirements for the award of Master of Science (M.Sc.) in Architecture.

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DEDICATION

I dedicate my thesis to the all-knowing God, who freely gives guidance and all wisdom to those who seek it without finding anything wrong with it. Many thanks to my friends and family members who have been nice and supportive during my academic journey.

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ABSTRACT

To help the world move towards sustainability, new developments will need to do more to address environmental issues. Energy savings may now be accomplished without compromising quality of life by utilising more efficient techniques to give a higher level of living. Little studies showed the significance of smart building technology in the development of mixed-used apartments in Nigeria (Granqvist, 2014). This study aims at identifying smart building strategies in order to implement its features in the design of a mixed-use building in Lagos State, Nigeria towards promoting the development of sustainable environments that meets user's needs. The objectives of this study were to examine smart building strategies incorporated in the design of buildings; determine the extent to which smart building strategies are incorporated in existing mixed-use buildings; examine how effective smart building strategies incorporated in mixed-use buildings meet user's comfort and design a mixed used building which adopts the various smart building strategies. The research was conducted using both quantitative and qualitative methods. Data collection Instruments consisted of questionnaires and observation schedules across three selected Mixed-use buildings across Lagos, Nigeria. The data collected was analysed using the descriptive statistical frequency tool which is the Statistical Product and Service Solutions (SPSS). The results were presented using tables, charts and figures. The findings indicated the level to which various smart building strategies were incorporated into the selected mixed-use buildings which gives a view to how smart building strategies are incorporated into the design of mixed-use buildings in Nigeria. Results also showed the effect on the existing smart building features in the mixed-use buildings on users' comfort. Future mixed-use building designs should incorporate smart building strategies, according to the findings of the study, in order to reduce the total energy consumption of the building while also creating a more sustainable environment and improving the comfort of users in a space. This research also resulted in the development of an architectural design for a Mixed-use building that incorporates effective smart building strategies to ensure that the building is a smart Mixed-use building.

Keywords: Smart Building, Smart Building Strategies, Sustainability, Mixed-use Apartment, Users' Comfort.