

**ADOPTION OF GREEN RETROFITTING TECHNOLOGIES IN THE
NIGERIAN CONSTRUCTION INDUSTRY**

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AUGUST, 2024

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BY

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF
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REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE (M.Sc)
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MANAGEMENT) COLLEGE OF SCIENCE AND TECHNOLOGY,
COVENANT UNIVERSITY, OTA, NIGERIA**

AUGUST, 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 in Facilities Management in the Department of Building Technology, College of Science and Technology, Covenant University, Ota, Ogun State, Nigeria.

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DECLARATION

I, **MOHAMMED, TANKO ABDULLAHI (22PCB02403)** declare that this research was carried out by me under the supervision of Dr. Raphael Ojelabi of the Department of Building Technology, College of Science and Technology, Covenant University, Ota, Ogun State, Nigeria. I attest that the dissertation has not been presented either wholly or partially for the award of any degree elsewhere. All sources of scholarly information used were duly acknowledged.

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Signature and Date

CERTIFICATION

We certify that this study titled “**ADOPTION OF GREEN RETROFITTING TECHNOLOGIES IN THE NIGERIAN CONSTRUCTION INDUSTRY**” was carried out by **MOHAMMED, TANKO ABDULLAHI (22PCB02403)** of the Department of Building Technology, College of Science and Technology, Covenant University, Ota, Ogun State, Nigeria, under the supervision of Dr. Raphael Ojelabi and it is adequate in scope and quality for the partial fulfillment of the requirements for the award of the degree of Master of Science in Facilities Management.

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DEDICATION

With gratitude and great joy in my heart, I dedicate my Masters dissertation to the Almighty ALLAH who has made everything possible for me to pursue the programme to a successful cause. Also, to my wonderful wife, Mrs. Rukayat Tanko for the patience and support and to the management of The Federal Polytechnic, Ado Ekiti, for the financial support in undertaking this course, and lastly to my children, colleagues and friends.

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ABSTRACT

The construction industry across the globe is setting green building technology as a standard for its products. To this end, measures have been taken to bring existing structures to acceptable standards of compliance, this is the essence of green retrofitting technology. This research work studied the imperatives of adopting green retrofitting technology in the Nigerian construction industry. It assessed the awareness of green retrofitting technologies among professionals in the Nigerian construction industry, assessed the green retrofitting technologies used by professionals in the Nigerian construction industry, identified the areas of application of green retrofitting technologies in buildings and determined the challenges to adoption of green retrofitting technologies among professionals in the construction industry. The study hypothesized that there is no significant difference in the awareness of construction industry professional of the various retrofitting components. A well-structured questionnaire was administered face to face and electronically via Google Forms on 102 samples consisting of construction professionals in selected private and public sector organizations in Ado Ekiti, the Ekiti State capital. These samples were selected using cluster sampling technique and interviews were also conducted on 15 willing respondents to determine the areas of application of green retrofitting technologies. The retrieved data were analyzed using mean scores while Structural Equation Modelling (SEM) was conducted to test the hypothesis, and the results of the interviews were analyzed descriptively by categorizing responses into various groups based on their similarities. The results obtained were presented in tables and charts and necessary interpretations and inferences discussed. The research work showed that the respondents are sufficiently aware of the existence green retrofitting technologies, especially those of the electrical and enclosure categories while there was low level of awareness in the mechanical and renewables categories. It was further observed that electrical retrofitting components are the highest ranked components used in the Nigerian construction industry, however, most renewables and mechanical components have not been satisfactorily employed in the Nigerian construction industry. The survey further showed that limited knowledge, cost, skills gap, reluctance to adapt and poor infrastructure are the major factors limiting the adoption of green retrofitting technology in Nigeria. It was recommended that government should provide more enabling environment for training and education aimed at familiarising professionals in the construction industry on new and emerging technologies in the global community, also, individual professionals in the construction industry were advised to invest in personal development towards getting abreast of information on new and emerging technologies globally, and professional bodies were advised to sponsor training courses, workshops and seminars on new and emerging technologies for the benefit of their members and professionals were advised to encourage their prospective clients on the use of green retrofitting technologies in their development projects.

Keywords: *electrical retrofitting, enclosure, green retrofitting technology, mechanical retrofitting, Nigerian construction industry, renewables*