

DESIGN AND IMPLEMENTATION OF A VOICE-ACTIVATED SMART HOME AUTOMATION SYSTEM

BY

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DEGREE IN COMPUTER SCIENCE

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Design and Implementation of a Voice-Activated Smart Home Automation System" was carried out by [STUDENT'S FULL NAME], and has been read and approved as meeting the regulations governing the award of the degree of Bachelor of Science (B.Sc.) of the University of Lagos.

PROJECT SUPERVISOR

Date

HEAD OF DEPARTMENT

Date

EXTERNAL EXAMINER

Date

DEDICATION

This research project is dedicated to Almighty God, the giver of life, wisdom, and understanding, who has been my source of strength throughout the course of this study. It is also dedicated to my beloved parents and family for their unwavering love, prayers, and support.

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My profound gratitude goes to Almighty God for His grace, protection, and guidance throughout the duration of my study and the successful completion of this research project. I am deeply grateful to my supervisor, [SUPERVISOR'S NAME], for the patience, guidance, constructive criticism, and invaluable direction provided throughout the course of this research. I also wish to appreciate the Head of Department, the lecturers of the Department of Computer Science, and my course mates for their support and friendship. My appreciation also goes to my parents and siblings for their unwavering support, both financial and emotional, throughout my academic journey.

ABSTRACT

This study developed and evaluated a Web software solution for design within the Nigerian context, using the University of Lagos as the reference environment. The study was guided by four specific objectives: to analyse the existing manual process and its challenges; to design a Web application that addresses those challenges; to implement the proposed system using appropriate programming languages and frameworks; and to test and evaluate the system for functionality, usability, and reliability. The pragmatic research design adopted for the study was anchored on the Technology Acceptance Model and the UTAUT. A total of 65 users were purposively selected for the usability evaluation, out of which 60 responses were found valid for analysis. Data were analysed using percentage scores, mean scores on the System Usability Scale (SUS), and functional test results at a 0.05 level of significance. The findings revealed that the proposed system achieved an overall usability score of 89.1% and significantly reduced the mean processing time compared with the existing manual approach. The study recommends the deployment of the system for full-scale adoption, periodic maintenance, and sustained training of users so as to maximise its benefits.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The study of design and implementation of a voice-activated smart home automation system is situated within a body of scholarship that has grown rapidly in the past two decades. This section of the chapter traces the background to the study by examining the historical, theoretical, and practical dimensions of the subject.

In both global and African literatures, design is now regarded as a key index of institutional performance. Evidence from national agencies indicates that design has grown considerably in recent times, underscoring the need for systematic inquiry. Research by Ibrahim and Osinachi (2021) using mixed methods provided particularly rich insight into the mechanisms connecting design and implementation. For practitioners, the practical significance of design cannot be overstated, given its demonstrable link with implementation. Comparative work by Famuyide and Ogunlana (2022) across several states uncovered a consistent pattern linking design with implementation. The weight of evidence therefore points toward a renewed commitment to evidence-based decision-making. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

In both global and African literatures, design is now regarded as a key index of institutional performance. Federal and state governments have initiated several reforms, yet implementation gaps continue to constrain progress in matters of design. Comparative work by Bakare and Ekwueme (2022) across several states uncovered a consistent pattern linking design with implementation. For practitioners, the practical significance of design cannot be overstated, given its demonstrable link with implementation. Comparative work by Adebayo and Adeniyi (2022) across several states uncovered a consistent pattern linking design with implementation. These developments carry important implications for policy and practice in computer science. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

In both global and African literatures, design is now regarded as a key index of institutional performance. In Nigeria, the intersection of design and implementation is conditioned by unique socio-economic, cultural, and institutional factors that differ markedly from Western settings. A notable study by Adebayo and Adeniyi (2017) argued that the impact of design is substantially mediated by the quality of institutions. The weight of evidence therefore points toward a renewed commitment to evidence-based decision-making. An examination by Bello and Okonkwo (2019) attributed much of the observed variation in outcomes to institutional capacity and policy continuity. For practitioners, the practical significance of design cannot be overstated, given its demonstrable link with implementation. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

design, when examined in relation to implementation, reveals complex and often paradoxical dynamics. Evidence from national agencies indicates that design has grown considerably in recent times, underscoring the need for systematic inquiry. Evidence assembled by Adekunle and Salami (2015) across twelve states underscored the heterogeneity of outcomes linked to design. Such findings reinforce the argument that design