DESIGN AND IMPLEMENTATION OF A POWER OUTAGE NOTIFICATION SYSTEM

BY

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[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Design and Implementation of a Power Outage Notification 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

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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 Electrical Engineering, 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 Signal Processing Theory and the Power System Stability Theory. A total of 61 users were purposively selected for the usability evaluation, out of which 53 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 80.9% 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 power outage notification 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.

The relationship between design and implementation has been the subject of sustained academic interest across several disciplines. The colonial and post-colonial legacies of the Nigerian state continue to influence contemporary patterns of design. Empirical evidence from Alade and Olawale (2021) suggests that positive developments in implementation are associated with improvements in design. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. Evidence assembled by Ogunlana and Dauda (2015) across twelve states underscored the heterogeneity of outcomes linked to design. Sustained engagement with the issues raised here is therefore essential if meaningful progress is to be recorded. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

The salience of design in national discourse has grown steadily, driven by changing social conditions and technological penetration. The socio-cultural diversity of Nigeria implies that responses to design must be differentiated rather than uniform. The work of Aderemi and Adekunle (2023) extended earlier analyses by demonstrating that implementation reinforces the effects of design. For practitioners, the practical significance of design cannot be overstated, given its demonstrable link with implementation. The aggregate picture emerging from Musa and Eze (2023) points to a modest but consistent association between design and the outcomes of interest. For practitioners, the practical significance of design cannot be overstated, given its demonstrable link with implementation. Despite these advances, notable gaps persist, particularly with respect to context-specific evidence from Nigeria.

A growing corpus of literature draws attention to the pivotal role of design in shaping developmental trajectories. Evidence from national agencies indicates that design has grown considerably in recent times, underscoring the need for systematic inquiry. Longitudinal research by Musa and Eze (2016) revealed that sustained attention to design yields appreciable dividends over time. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. An examination by Famuyide and Aderemi (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. 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. Globalisation and technological change have intensified both the opportunities and the challenges associated with design. Findings reported by Olawale and Adigun (2018) observed that respondents with greater