

DESIGN AND IMPLEMENTATION OF A CABLE SIZING CALCULATION SYSTEM

BY

[STUDENT'S FULL NAME]

[MATRIC NUMBER]

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[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Design and Implementation of a Cable Sizing Calculation 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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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 83.6% 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 cable sizing calculation 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.

A growing corpus of literature draws attention to the pivotal role of design in shaping developmental trajectories. Within Lagos State, the country's most populous commercial hub, the dynamics of design are observed in their starkest form. Comparative work by Famuyide and Ogunlana (2022) across several states uncovered a consistent pattern linking design with implementation. Accordingly, there is a growing consensus that deliberate policy action is required. Comparative work by Famuyide and Olawale (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. Nevertheless, the existing literature is not without its limitations, and several questions remain unresolved.

In both global and African literatures, design is now regarded as a key index of institutional performance. Public institutions at the federal, state, and local levels have developed programmes that seek to mainstream design into routine governance. Comparative work by Eze and Adekunle (2022) across several states uncovered a consistent pattern linking design with implementation. Such findings reinforce the argument that design deserves a place of priority on the development agenda. Empirical evidence from Famuyide and Dauda (2021) suggests that positive developments in implementation are associated with improvements in design. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

A growing corpus of literature draws attention to the pivotal role of design in shaping developmental trajectories. Globalisation and technological change have intensified both the opportunities and the challenges associated with design. Evidence assembled by Famuyide and Dauda (2015) across twelve states underscored the heterogeneity of outcomes linked to design. The implications of these dynamics are far-reaching, touching questions of equity, efficiency, and accountability. Comparative work by Kalu and Aderemi (2022) across several states uncovered a consistent pattern linking design with implementation. Such findings reinforce the argument that design deserves a place of priority on the development agenda. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

Scholars have long recognised design as a critical determinant of outcomes in electrical engineering. The Nigerian context presents peculiar challenges, ranging from infrastructural deficits to institutional weaknesses, which shape the manner in which design unfolds. Research by Adekunle and Chukwu (2021) using mixed methods provided particularly rich insight into the mechanisms connecting design and implementation. The implications of these dynamics are far-reaching, touching questions of equity, efficiency, and accountability.