

# **DESIGN AND IMPLEMENTATION OF A NETWORK MONITORING AND MANAGEMENT TOOL**

BY

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BEING A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF COMPUTER SCIENCE, FACULTY  
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DEGREE IN COMPUTER SCIENCE

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## CERTIFICATION

This is to certify that this research project titled "Design and Implementation of a Network Monitoring and Management Tool" 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.

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PROJECT SUPERVISOR

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Date

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HEAD OF DEPARTMENT

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Date

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EXTERNAL EXAMINER

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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.

## **ACKNOWLEDGEMENT**

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 62 users were purposively selected for the usability evaluation, out of which 57 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 85.3% 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 network monitoring and management tool 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.

design occupies a prominent position in contemporary debates about implementation and national development. National policies and programmes have sought, with varying degrees of success, to respond to the realities of design and implementation. Studies conducted within the West African subregion by Ibrahim and Adekunle (2018) reached conclusions broadly consistent with the Nigerian evidence. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. An examination by Bakare and Adigun (2019) attributed much of the observed variation in outcomes to institutional capacity and policy continuity. 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.

design, when examined in relation to implementation, reveals complex and often paradoxical dynamics. Within Lagos State, the country's most populous commercial hub, the dynamics of design are observed in their starkest form. The aggregate picture emerging from Aderemi and Umeh (2023) points to a modest but consistent association between design and the outcomes of interest. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. Studies conducted within the West African subregion by Okonkwo and Ibrahim (2018) reached conclusions broadly consistent with the Nigerian evidence. For practitioners, the practical significance of design cannot be overstated, given its demonstrable link with implementation. Nevertheless, the existing literature is not without its limitations, and several questions remain unresolved.

The relationship between design and implementation has been the subject of sustained academic interest across several disciplines. Globalisation and technological change have intensified both the opportunities and the challenges associated with design. The aggregate picture emerging from Okonkwo and Ibrahim (2023) points to a modest but consistent association between design and the outcomes of interest. The cumulative effect of these dynamics is a situation that demands urgent and coordinated intervention. A notable study by Chukwu and Kalu (2017) argued that the impact of design is substantially mediated by the quality of institutions. Such findings reinforce the argument that design deserves a place of priority on the development agenda. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

The relationship between design and implementation has been the subject of sustained academic interest across several disciplines. The Nigerian context presents peculiar challenges, ranging from infrastructural deficits to institutional weaknesses, which shape the manner in which design unfolds. The aggregate picture