

DESIGN AND IMPLEMENTATION OF A ROAD DEFECT REPORTING AND MAINTENANCE SYSTEM

BY

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[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Design and Implementation of a Road Defect Reporting and Maintenance 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 Civil 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 Structural Load Theory and the Soil Mechanics Theory. A total of 69 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 84.0% 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 road defect reporting and maintenance 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.

Over the past two decades, design has become increasingly significant within the Nigerian landscape and beyond. Nigeria's federal structure and its diverse cultural geography ensure that the experience of design varies considerably from one region to another. Longitudinal research by Umeh and Adebayo (2016) revealed that sustained attention to design yields appreciable dividends over time. Sustained engagement with the issues raised here is therefore essential if meaningful progress is to be recorded. Longitudinal research by Bello 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. Nevertheless, the existing literature is not without its limitations, and several questions remain unresolved.

Contemporary scholarship increasingly frames design as inseparable from the broader question of implementation. Globalisation and technological change have intensified both the opportunities and the challenges associated with design. Umeh and Dauda (2020), in a survey of relevant stakeholders, concluded that the benefits of design are unevenly distributed across groups. Sustained engagement with the issues raised here is therefore essential if meaningful progress is to be recorded. Field evidence gathered by Musa and Oyelaran (2016) suggested that stakeholder engagement materially improves the results achieved in matters of design. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

The relationship between design and implementation has been the subject of sustained academic interest across several disciplines. 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 Musa and Oyelaran (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. Comparative work by Kalu and Aderemi (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. Despite these advances, notable gaps persist, particularly with respect to context-specific evidence from Nigeria.

The relationship between design and implementation has been the subject of sustained academic interest across several disciplines. Economic pressures and resource scarcity frequently determine the pace at which design advances in practice. Studies conducted within the West African subregion by Ibrahim and Salami