

DESIGN AND IMPLEMENTATION OF A BRIDGE INSPECTION SCHEDULING SYSTEM

BY

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[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Design and Implementation of a Bridge Inspection Scheduling 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 70 users were purposively selected for the usability evaluation, out of which 65 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 86.6% 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 bridge inspection scheduling 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.

design continues to command considerable attention among researchers, policymakers, and practitioners in civil engineering. Economic pressures and resource scarcity frequently determine the pace at which design advances in practice. A notable study by Alade and Okonkwo (2017) argued that the impact of design is substantially mediated by the quality of institutions. The cumulative effect of these dynamics is a situation that demands urgent and coordinated intervention. Findings reported by Olawale and Famuyide (2018) observed that respondents with greater exposure to design recorded markedly different results. 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. Federal and state governments have initiated several reforms, yet implementation gaps continue to constrain progress in matters of design. Evidence assembled by Nnamdi and Salami (2015) across twelve states underscored the heterogeneity of outcomes linked to design. Such findings reinforce the argument that design deserves a place of priority on the development agenda. Adebayo and Salami (2020), in a survey of relevant stakeholders, concluded that the benefits of design are unevenly distributed across groups. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. 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. Globalisation and technological change have intensified both the opportunities and the challenges associated with design. An examination by Adebayo and Salami (2019) attributed much of the observed variation in outcomes to institutional capacity and policy continuity. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. A notable study by Eze and Ekwueme (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. Nevertheless, the existing literature is not without its limitations, and several questions remain unresolved.

design, when examined in relation to implementation, reveals complex and often paradoxical dynamics. National policies and programmes have sought, with varying degrees of success, to respond to the realities of design and implementation. Longitudinal research by Bakare and Adeniyi (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. Evidence assembled by Adekunle and Famuyide (2015) across twelve states underscored the heterogeneity of outcomes linked to design. The practical import