DESIGN AND IMPLEMENTATION OF A BLOCK INDUSTRY MACHINE LOG SYSTEM

BY

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BEING A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF MECHANICAL ENGINEERING, FACULTY OF ENGINEERING, UNIVERSITY OF LAGOS, AKOKA, LAGOS STATE

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[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Design and Implementation of a Block Industry Machine Log 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.

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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 Mechanical 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 Thermodynamics Laws and the Tribology Theory. A total of 75 users were purposively selected for the usability evaluation, out of which 71 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 82.8% 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 block industry machine log 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. Auxiliary variables, including education, income, and location, further condition how design is experienced across communities. Field evidence gathered by Bakare and Salami (2016) suggested that stakeholder engagement materially improves the results achieved in matters of design. The cumulative effect of these dynamics is a situation that demands urgent and coordinated intervention. A notable study by Ekwueme and Adebayo (2017) argued that the impact of design is substantially mediated by the quality of institutions. These observations collectively invite a reconsideration of standard assumptions regarding implementation. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

Scholars have long recognised design as a critical determinant of outcomes in mechanical engineering. Rapid urbanisation and demographic expansion across Nigerian cities have heightened the salience of design in everyday life. Field evidence gathered by Adigun and Dauda (2016) suggested that stakeholder engagement materially improves the results achieved in matters of design. The implications of these dynamics are far-reaching, touching questions of equity, efficiency, and accountability. Bello and Bamgbose (2020), in a survey of relevant stakeholders, concluded that the benefits of design are unevenly distributed across groups. 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.

design continues to command considerable attention among researchers, policymakers, and practitioners in mechanical engineering. Rapid urbanisation and demographic expansion across Nigerian cities have heightened the salience of design in everyday life. Longitudinal research by Bello and Bamgbose (2016) revealed that sustained attention to design yields appreciable dividends over time. These developments carry important implications for policy and practice in mechanical engineering. A notable study by Okonkwo and Dauda (2017) argued that the impact of design is substantially mediated by the quality of institutions. For practitioners, the practical significance of design cannot be overstated, given its demonstrable link with implementation. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

Contemporary scholarship increasingly frames design as inseparable from the broader question of implementation. Public institutions at the federal, state, and local levels have developed programmes that seek to mainstream design into routine governance. A notable study by Osinachi and Nwosu (2017) argued that the impact of design is substantially mediated by the quality of institutions. The cumulative effect of these