DEVELOPMENT OF A DEFECT DENSITY AND RELIABILITY PREDICTION DASHBOARD

BY

[STUDENT'S FULL NAME]

[MATRIC NUMBER]

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

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc.) DEGREE IN SOFTWARE ENGINEERING

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Development of a Defect Density and Reliability Prediction Dashboard" 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.

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 Software 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 development 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 73 users were purposively selected for the usability evaluation, out of which 69 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 87.0% 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 development of a defect density and reliability prediction dashboard 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.

Few subjects attract as much policy interest in contemporary Nigeria as the question of development. National policies and programmes have sought, with varying degrees of success, to respond to the realities of development and defect. Empirical evidence from Adebayo and Kalu (2021) suggests that positive developments in defect are associated with improvements in development. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. Comparative work by Osinachi and Okonkwo (2022) across several states uncovered a consistent pattern linking development with defect. For practitioners, the practical significance of development cannot be overstated, given its demonstrable link with defect. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

Few subjects attract as much policy interest in contemporary Nigeria as the question of development. Public institutions at the federal, state, and local levels have developed programmes that seek to mainstream development into routine governance. Findings reported by Bello and Nnamdi (2018) observed that respondents with greater exposure to development recorded markedly different results. These developments carry important implications for policy and practice in software engineering. A notable study by Okonkwo and Aderemi (2017) argued that the impact of development 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.

Contemporary scholarship increasingly frames development as inseparable from the broader question of defect. Nigeria's federal structure and its diverse cultural geography ensure that the experience of development varies considerably from one region to another. Empirical evidence from Okonkwo and Aderemi (2021) suggests that positive developments in defect are associated with improvements in development. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. An examination by Adeniyi and Bello (2019) attributed much of the observed variation in outcomes to institutional capacity and policy continuity. These observations collectively invite a reconsideration of standard assumptions regarding defect. Nevertheless, the existing literature is not without its limitations, and several questions remain unresolved.

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