# DESIGN AND IMPLEMENTATION OF AN AI-BASED CREDIT CARD FRAUD DETECTION SYSTEM

BY

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

[MONTH, YEAR]

# CERTIFICATION

This is to certify that this research project titled "Design and Implementation of an AI-Based Credit Card Fraud Detection 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.

# 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 76 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 86.8% 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 an ai-based credit card fraud detection 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 computer science. Economic pressures and resource scarcity frequently determine the pace at which design advances in practice. Longitudinal research by Obiora and Ogunlana (2016) revealed that sustained attention to design yields appreciable dividends over time. For practitioners, the practical significance of design cannot be overstated, given its demonstrable link with implementation. An examination by Dauda and Eze (2019) attributed much of the observed variation in outcomes to institutional capacity and policy continuity. 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. Evidence assembled by Chukwu and Ogbeide (2015) across twelve states underscored the heterogeneity of outcomes linked to design. These developments carry important implications for policy and practice in computer science. Studies conducted within the West African subregion by Bamgbose and Nwosu (2018) reached conclusions broadly consistent with the Nigerian evidence. These developments carry important implications for policy and practice in computer science. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

Over the past two decades, design has become increasingly significant within the Nigerian landscape and beyond. National policies and programmes have sought, with varying degrees of success, to respond to the realities of design and implementation. An examination by Bamgbose and Nwosu (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 implementation. Okonkwo and Dauda (2020), in a survey of relevant stakeholders, concluded that the benefits of design are unevenly distributed across groups. 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.

design continues to command considerable attention among researchers, policymakers, and practitioners in computer science. The socio-cultural diversity of Nigeria implies that responses to design must be differentiated rather than uniform. Evidence assembled by Olawale and Okonkwo (2015) across twelve states underscored the heterogeneity of outcomes linked to design. Accordingly, there is a growing consensus that