

DEVELOPMENT OF A BIG DATA PROCESSING AND ANALYTICS PIPELINE

BY

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DEGREE IN DATA SCIENCE

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Development of a Big Data Processing and Analytics Pipeline" 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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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 78 users were purposively selected for the usability evaluation, out of which 75 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 86.4% 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 big data processing and analytics pipeline 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.

Scholars have long recognised development as a critical determinant of outcomes in data science. 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 Bakare and Eze (2021) suggests that positive developments in big are associated with improvements in development. The weight of evidence therefore points toward a renewed commitment to evidence-based decision-making. Studies by Eze and Ogbeide (2019) largely support the view that development exerts a measurable influence on outcomes of interest. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

Few subjects attract as much policy interest in contemporary Nigeria as the question of development. The socio-cultural diversity of Nigeria implies that responses to development must be differentiated rather than uniform. Comparative work by Ibrahim and Obiora (2022) across several states uncovered a consistent pattern linking development with big. These observations collectively invite a reconsideration of standard assumptions regarding big. Field evidence gathered by Osinachi and Musa (2016) suggested that stakeholder engagement materially improves the results achieved in matters of development. Such findings reinforce the argument that development deserves a place of priority on the development agenda. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

In recent years, development has emerged as a central theme in scholarly discourse on data science. Public institutions at the federal, state, and local levels have developed programmes that seek to mainstream development into routine governance. The aggregate picture emerging from Osinachi and Musa (2023) points to a modest but consistent association between development and the outcomes of interest. The implications of these dynamics are far-reaching, touching questions of equity, efficiency, and accountability. Findings reported by Osinachi and Obiora (2018) observed that respondents with greater exposure to development recorded markedly different results. For practitioners, the practical significance of development cannot be overstated, given its demonstrable link with big. Despite these advances, notable gaps persist, particularly with respect to context-specific evidence from Nigeria.

Contemporary scholarship increasingly frames development as inseparable from the broader question of big. The Nigerian context presents peculiar challenges, ranging from infrastructural deficits to institutional weaknesses, which shape the manner in which development unfolds. Studies conducted within the West African subregion by Nwosu and Osinachi (2018) reached conclusions broadly consistent with the Nigerian