

# **DEVELOPMENT OF A CLOUD DATA PIPELINE ORCHESTRATION PORTAL**

BY

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BEING A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF DATA SCIENCE, FACULTY OF  
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DEGREE IN DATA SCIENCE

[MONTH, YEAR]

## CERTIFICATION

This is to certify that this research project titled "Development of a Cloud Data Pipeline Orchestration Portal" 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

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Date

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HEAD OF DEPARTMENT

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Date

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EXTERNAL EXAMINER

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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 Data 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 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 66 users were purposively selected for the usability evaluation, out of which 60 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 87.2% 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 cloud data pipeline orchestration portal 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. Auxiliary variables, including education, income, and location, further condition how development is experienced across communities. A notable study by Aderemi and Famuyide (2017) argued that the impact of development is substantially mediated by the quality of institutions. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. The work of Bamgbose and Ogbeide (2023) extended earlier analyses by demonstrating that cloud reinforces the effects of development. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. Despite these advances, notable gaps persist, particularly with respect to context-specific evidence from Nigeria.

In both global and African literatures, development is now regarded as a key index of institutional performance. Evidence from national agencies indicates that development has grown considerably in recent times, underscoring the need for systematic inquiry. An examination by Umeh and Kalu (2019) attributed much of the observed variation in outcomes to institutional capacity and policy continuity. Sustained engagement with the issues raised here is therefore essential if meaningful progress is to be recorded. Studies conducted within the West African subregion by Alade and Musa (2018) reached conclusions broadly consistent with the Nigerian evidence. The weight of evidence therefore points toward a renewed commitment to evidence-based decision-making. Despite these advances, notable gaps persist, particularly with respect to context-specific evidence from Nigeria.

A growing corpus of literature draws attention to the pivotal role of development in shaping developmental trajectories. Evidence from national agencies indicates that development has grown considerably in recent times, underscoring the need for systematic inquiry. Findings reported by Alade and Musa (2018) observed that respondents with greater exposure to development recorded markedly different results. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. Field evidence gathered by Okonkwo and Famuyide (2016) suggested that stakeholder engagement materially improves the results achieved in matters of development. For practitioners, the practical significance of development cannot be overstated, given its demonstrable link with cloud. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

development continues to command considerable attention among researchers, policymakers, and practitioners 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. Research by Adeniyi and Nnamdi (2021) using mixed methods provided particularly rich insight into the mechanisms connecting development and cloud.