

**DEVELOPMENT OF A WEB APPLICATION FOR HOTEL  
REVIEW ANALYTICS**

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**AUGUST, 2023**

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**BY**

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF  
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SCIENCES, COLLEGE OF SCIENCE AND TECHNOLOGY,  
COVENANT UNIVERSITY, OTA, OGUN STATE, NIGERIA.**

**AUGUST, 2023**

## **ACCEPTANCE**

This is to attest that this dissertation is accepted in partial fulfilment of the requirements for the award of the degree of Master of Science in Management Information System in the Department of Computer and Information Sciences, College of Science and Technology, Covenant University, Ota, Nigeria.

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## **DECLARATION**

I, **ADENIJI DAMILOLA PHEBEAN (21PCH02329)**, declare that this research was carried out by me under the supervision of Dr. Olamma Iheanetu of the Department of Computer and Information Sciences, College of Science and Technology, Covenant University, Ota, Ogun State, Nigeria. I attest that the dissertation has not been presented either wholly or partially for the award of any degree elsewhere. All sources of data and scholarly information used in this dissertation are duly acknowledged.

**ADENIJI DAMILOLA PHEBEAN**

**Signature and Date**

## **CERTIFICATION**

We certify that this dissertation titled “**DEVELOPMENT OF A WEB APPLICATION FOR HOTEL REVIEW ANALYTICS**” is an original research work carried out by **ADENIJI DAMILOLA PHEBEAN (21PCH02329)** in the Department of Computer and Information Sciences, College of Science and Technology, Covenant University, Ota, Ogun State, Nigeria under the supervision of Dr. Olamma Iheanetu. We have examined and found this work acceptable as part of the requirements for the award of Master of Science (M.Sc.) in Management Information System.

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## **DEDICATION**

I dedicate this dissertation to God Almighty for His sufficient grace, wisdom, and knowledge given to me throughout my Master's Degree Programme.

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## LIST OF ABBREVIATIONS

OCR	Online Customer Review
NLP	Natural Language Processing
ICT	Information Communication Technology
VADER	Valence Aware Dictionary and Sentiment Reasoner
PRV	Positive Review Valence
NRV	Negative Review Valence
E-WOM	Electronic Word of Mouth
BoW	Bag of Words
NNMF	Non-negative matrix factorization
LDA	Latent Dirichlet Allocation
LSI	Latent Semantic Indexing
PLSA	Probabilistic Latent Semantic Indexing

## ABSTRACT

This research examines the impact of Information Communication Technology (ICT) on the hospitality industry, particularly in the context of online customer reviews (OCRs). The rise of online platforms and mobile apps for booking accommodations has led to an increasing reliance on OCRs by potential customers to make informed decisions. OCRs are currently recognized as a vital source of product details and a significant element that impacts consumer choices. The hospitality industry in Nigeria faces challenges due to the abundance of hotels and a lack of accessible information regarding their quality. The unavailability of detailed and understandable information makes it difficult for tourists and visitors to make informed decisions about hotel selection. This research seeks to bridge this information gap by creating a web-based analytics application that conducts sentiment analysis, topic modeling, word cloud visualization and text summarization for specific hotels in Lagos. The primary aim of this study is to develop a web application that empowers users to quickly understand customer opinions about specific hotels in Lagos. The objectives of the research include gathering and preprocessing data, categorizing reviews into specific topics, classifying reviews into sentiments, generating concise summaries of reviews, and developing a user-friendly web-based application using Streamlit. The resulting web application provides users with a time-saving and convenient way to access condensed and summarized hotel reviews, aiding their decision-making process. In conclusion, this research successfully develops a web application that analyzes and categorizes hotel reviews using NLP techniques. The application's visualizations and summarization tools enhance user experience, allowing users to make informed judgments about specific hotels in Lagos.

**Keywords:** *Information Communication Technology (ICT), Online Customer Reviews (OCRs), Natural Language Processing (NLP), Sentiment Analysis, Topic Modeling, Web Application.*