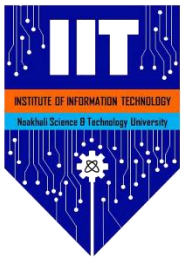
Institute of Information Technology, Noakhali Science and Technology University

Bachelor of Science in Software Engineering

Course Code: SE 4202



Final Year Project Report

Submitted by

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ASH1925005M

Supervised by

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Lecturer
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A Final Year Project Report

Submitted to the Bachelor of Science in Software Engineering Program Office of the Institute of Information Technology, Noakhali Science and Technology University in Partial Fulfillment of the Requirements for the Degree

Date of Submission: October 03, 2024

DECLARATION

I, **Prosanto Deb**, bearing ID: ASH1925005M, a student of Institute of Information Technology (IIT), Noakhali Science and Technology University, enrolled in the BSc. in Software Engineering Program, hereby declare that the work presented in this final year project report titled "" is my own and has been carried out under the supervision of Md. Eusha Kadir, Lecturer.

I affirm that:

(i) This work is original and has not been submitted, in whole or in part, for any other degree or academic purpose.

(ii) All external sources of information and ideas have been clearly and appropriately acknowledged through proper citations and references in accordance with the academic standards and guidelines of Institute of Information Technology (IIT).

(iii) The data, findings, conclusions, and recommendations presented in this report are based on honest and rigorous research, and any potential biases or conflicts of interest have been disclosed.

(iv) I take full responsibility for any errors or omissions in this work.

(v) This project conforms to the ethical standards and guidelines set forth by Institute of Information Technology (IIT), and I have obtained all necessary approvals and permissions for any research involving human subjects or sensitive data.

(vi) I understand that any violation of academic integrity, including plagiarism or fabrication of data, can lead to severe consequences as outlined in the academic integrity policy Institute of Information Technology (IIT), Noakhali Science and Technology University.

I acknowledge that my final year project report will be archived by Institute of Information Technology (IIT), Noakhali Science and Technology University and may be made available to the academic community and the public for reference and research purposes.

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Session: 2018-19
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DEDICATION

I dedicate my research project to my parents, especially my father, **Samir Chandra Deb**, whose unconditional love and support have been my biggest source of strength and motivation. From the onset, my parents have constantly supplied me with encouragement and presented me with every chance to achieve. Their faith in me has allowed me to follow this line of action, and I will long be thankful for their efforts, regardless of their insignificance. Their guidance and continuous support were vital to my improvement.

This work is also dedicated to my faculty members, whose knowledge and dedication have substantially affected my education. Their attention to education and ready to give aid have been essential to me. They not only presented me with the facts essential to finish my project, but they also encouraged a strong feeling of inquiry in me. Especially my supervisor, **Md. Eusha Kadir**, whose advice, expertise, and kindness have been helpful in developing this research. Your mentoring has pushed me to accomplish and has extended my perspectives in ways I could never have imagined. I am blessed to have had the opportunity to work with you, and I sincerely value your valuable time and dedication to my intellectual advancement.

This piece is also dedicated to my friends and companions, who have been at my side during this adventure. I've been inspired by your friendship and support throughout tough circumstances. I am thankful for your support throughout all of my victories and tribulations.

To all those who have inspired me to realize my objectives and never give up, I dedicate my research project in the end. I am thankful to all those who have given me the strength of mind to go through and have supported me. This achievement is both yours and mine.

APPROVAL

This Final Year Project report submitted by Mr. Prosanto Deb, ID No: ASH1925005M to the Chairman of Year 4, Term 2 Examination Committee (Session: 2018-19), Institute of Information Technology (IIT), Noakhali Science and Technology University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approved as to its style and contents.

Dr. Md. Nuruzzaman Bhuiya, Chairman

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ACKNOWLEDGEMENT

This is Prosanto Deb, would like to convey my sincerest thanks to my supervisor, **Md. Eusha Kadir**, for his critical advice, tolerance, and support during the preparation of my research project. His constant support and insightful observations helped me stay focused and motivated, and his skill and talent were crucial to making this research project easier. From the very first day. I never feel any hesitation to reach out when I face any issue in the work or learning process. I feel incredibly privileged to have battled under their supervision. In every hard situation, I found new scopes for learning and getting better.

I would also like to thank my faculty members, who had a major effect on my research project. Their teaching and ideas have substantially helped my grasp of the problem and the construction of my research project. I am grateful to my friends for their useful remarks and appealing conversations. Their contributions helped me refine my thoughts, extend my viewpoints, and enhance the overall quality of my work. I am thankful for their contributions that have substantially enhanced my research project.

I want to thank my family and friends for their affection, support, and understanding throughout this journey. Their encouragement has helped me stay motivated and focused. I am appreciative of their support.

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Abstract

I

TABLE OF CONTENTS

LIST OF FIGURES

No table of figures entries found.

LIST OF TABLES

No table of figures entries found.

List of Abbreviations

SBU	Strategic Business Unit
BS	Brain Station
BS23	Brain Station 23

Chapter One

Introduction

Chapter One: Introduction

In today's competitive business world, predicting future sales is very critical for making quick and accurate decisions. If someone knows how much of a product could sell in the future, definitely will help businesses manage inventory, establish marketing campaigns, and increase revenue. My final year project aims to create a system that predicts future sales data based on previous patterns. This application estimates sales trends using machine-learning approaches based on past data. This prediction model may help organizations anticipate demand variations, reduce the risk of excess or shortages, and prepare more effectively. The goal of this project is to provide a platform that generates accurate sales projections and can be updated when new data becomes available, enabling enterprises to make better decisions.

1.1 Background and Motivation

In any company, predicting future sales is crucial for smooth operations. Companies or business owners need to know how much of their things will sell in the future so that they may make informed choices about getting supplies, controlling stockpiles, and planning marketing activities. Businesses that can properly estimate their sales may avoid normal concerns such as buying too much, which loses money and room, and getting too little, which may result in missed chances and unhappy clients. Traditionally, sales planning was performed in simple ways such as basic figures or even guessing based on experience. However, these methods have limits. They may not always take into consideration smart patterns in data and may struggle to adjust to changes in market trends. As a result, many firms fight to change too quickly changing customer wants and market situations.

With the growth of technology, especially data analysis and machine learning, companies or business owners now have the ability to make more accurate predictions based on past sales data. Machine learning can review vast amounts of data, find secret trends, and create more accurate estimates than standard methods [1]. This approach helps firms to quickly change their plans, which is increasingly crucial in today's fast-paced market.

The idea for this attempt comes from the requirement for companies to make better future choices. Accurate sales forecasts may help companies improve their operations in a number of ways. Companies may ensure that companies have adequate goods, avoid waste, plan ahead of time for seasonal swings, and reply quickly to consumer requests. This not only saves

companies money but also supports client pleasure by ensuring that things are available when asked. To stay competitive and increase profits, businesses are always looking for better ways to analyze and manage important data [2]. This applies to my personal life as well. My father owns a retail electronics shop, where the products are quite expensive. Sometimes, stocking too many products can lead to losses. If the products don't sell in time, we have to pay high warehouse costs, which affects the business.

This project tries to create a system that uses current sales data to estimate future sales. The goal is to offer groups a tool that would help them to plan more effectively and make better choices. Using machine learning, this system will be able to continually learn from new data, improving prediction accuracy over time. The skill to predict sales trends is a vital edge in today's tough market, and our project seeks to aid businesses gain that advantage. This project is spurred by the desire to better sales forecasts utilizing new data methods. It tries to help firms avoid standard inventory and supply management issues while also giving them the tools they need to stay competitive in a continually changing global environment.

Chapter Two

Introduction

References

[1] Q. Huang and F. Zhou, "Research on retailer data clustering algorithm based on spark," in *AIP Conference Proceedings*, 2017.

[2] A. Sayli, I. Ozturk and M. Ustunel, "Brand loyalty analysis system using K-Means algorithm," *Journal of Engineering Technology and Applied Sciences,* vol. 1, pp. 107-126, 2016.