SCHOOL OF COMPUTING
Faculty of Engineering

Project Proposal Form MCST1043

Sem: 2 Session: 2024/25

SECTION A: Project Information.

Program Name:	**Masters of Science (Data Science)**
Subject Name:	**Project 1 (MCST1043)**
Student Name:	Chen Junhao
Metric Number:	MCS241030
Student Email & Phone:	chenjunhao@graduate.utm.my & 60-1168122912
Project Title:	Amazon Best Seller Rank Prediction Using Machine Learning
Supervisor 1:	
Supervisor 2 / Industry Advisor(if any):	

SECTION B: Project Proposal

Introduction:

With the thriving of e-commerse, platforms such as Amazon have revolutionised consumer purchasing behaviour. Millions of products compete for visibility, contributing to the “Best Seller Rank” has become an essential indicator of a product’s success. It not only reflects the popularity of a product but also significantly affects buyer trust and decision-making. Understanding and predicting the factors that contribute to BSR can offer valuable insights to businesses and sellers aiming to improve their product positioning.

Problem Background:

Amazon’s ranking system is dynamic and influenced by a range of features including product price, customer star rating, the number of reviews, and geographical marketplace (country). However, the actual mechanism by which these variables impact the BSR is not publicly disclosed, making it difficult for sellers to optimise their listings effectively. This lack of transparency contributes to an opportunity for data science techniques to uncover meaningful patterns and predict BSR based on historical data.

Problem Statement:

There is insufficient understanding of how individual product attributes affect Amazon's Best Seller Rank.

Despite the availability of key features such as price and customer feedback, sellers struggle to predict or

influence their rank effectively. This project seeks to solve this problem by applying machine learning

algorithms to model and predict a product's BSR using publicly available data.

Aim of the Project:

To develop and evaluate a machine learning model that accurately predicts the Best Seller Rank of Amazon products using features such as price, star rating, number of reviews, and country of sale.

Objectives of the Project:

1. To clean and preprocess the Amazon best seller dataset for analysis.
2. To explore and visualise relationships between product attributes and ranking.
3. To engineer relevant features for effective model training.

Scopes of the Project:

This project will focus on supervised learning techniques within the machine learning domain, specifically regression analysis. It will involve data cleaning, exploratory data analysis, and the implementation of predictive models. The scope is limited to the dataset provided and will not include live data integration or web scraping. The findings will be relevant primarily to the product categories represented in the dataset.

Expected Contribution of the Project:

1. Insights into Key Drivers:

Price sensitivity, rating thresholds, and feature preferences for top-selling products.

2. Regional Recommendations:

Tailored pricing or marketing strategies for specific countries (e.g., lower prices in India vs. the UK).

3. Product Optimization:

Recommendations for highlighting features (e.g., "Unlimited VPN") to improve sales.

Project Requirements:

Software: Python

Hardware:

Technology/Technique/ Methodology/Algorithm: Machine Learning

Type of Project (Focusing on Data Science):

[ ] Data Preparation and Modeling

[ ] Data Analysis and Visualization

[ ] Business Intelligence and Analytics

[ ] Machine Learning and Prediction

[ ] Data Science Application in Business Domain

Status of Project:

[√] New

[ ] Continued

If continued, what is the previous title?

SECTION C: Declaration

I declare that this project is proposed by:

[ ] Myself

[ ] Supervisor/Industry Advisor ( )

Student Name:

Signature **Date**

SECTION D: Supervisor Acknowledgement

The Supervisor(s) shall complete this section.

I/We agree to become the supervisor(s) for this student under aforesaid proposed title.

Name of Supervisor 1:

Signature **Date**

Name of Supervisor 2 (if any):

Signature **Date**

SECTION E: Evaluation Panel Approval

The Evaluator(s) shall complete this section.

Result:

[ ] FULL APPROVAL [ ] CONDITIONAL APPROVAL (Major)*

[ ] CONDITIONAL APPROVAL (Minor) [ ] FAIL*

* Student has to submit new proposal form considering the evaluators' comments.

Comments:

Name of Evaluator 1:

Signature **Date**

Name of Evaluator 2:

Signature **Date**