CSP650 FYP PRESENTATION

PREDICTIVE ANALYSIS COST OF LIVING IN MALAYSIA

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INTRODUCTION

- The amount of money needed to cover basic expenses such as housing, food, taxes, and healthcare in a specific location and time is referred to as the cost of living (Banton, 2021)
- Often used to identify the expenditure amount of living in one city compare to another city.
- Different area have different cost of goods, services and entertainment which depends on the economy and market (Lane, 2020).
- Cost of living is an index, therefore depending on where you reside, the specific spending may be greater or lower (Amadeo, 2021).

PROBLEM STATEMENT

- Misleading information regarding cost of living issues confused the people who wants to gain information and knowledge of the issues
- Increasing price in food substances, and house pricing issues still being of the main issues in the community as both prices keep on rising over the past decades in Malaysia
- Essential items such as houses, food, and healthcare will get worse if there is no further action is being taking care of.
- Due to numerous elements that influence the cost of living, a predictive analysis is used to uncover trends and information to aid users in making decisions and planning in their everyday lives.

OBJECTIVES

- TO IDENTIFY THE ELEMENTS THAT ARE AFFECTING THE COST OF LIVING IN MALAYSIA
- TO CONSTRUCT THE PREDICTION ANALYSIS ON THE COST OF LIVING INDEX IN MALAYSIA USING VARIOUS MACHINE LEARNING METHODS
- TO VISUALISE THE PROJECT RESULTS USING DASHBOARD

SCOPE

- PREDICTIVE ANALYSIS FOCUSES ON CERTAIN FACTOR THAT WILL HIGHLY AFFECT THE COST OF LIVING IN MALAYSIA
- THE DATASETS ARE COLLECTED GOVERNMENT PORTAL PAGE OF MALAYSIA ONLY
- DATA TO BE OBTAINED AND ANALYSED FROM 10-YEAR SPAN

SIGNIFICANCE

- USERS CAN IDENTIFY AND GAIN KNOWLEDGE ON WHAT ARE THE FACTOR HEAVILY AFFECTING THE COST OF LIVING IN MALAYSIA
- THE PROJECT CAN CREATE AWARENESS TO THE PUBLIC TO MAKE A BETTER CHOICE ON THEIR FINANCIAL STATUS
- THE PROJECT CAN INCREASE THE UNDERSTANDING OF THE USER REGARDING THE ECONOMY STATUS OF MALAYSIA

Summary of Literature Review

(PAWAR ET. AL., 2020)

- Proposed a system to predict the failure of valve leakage based on data acquire.
- Methods such as Fuzzy Logic Control and Predictive Analytics.
- Measure the system using IF-ELSE rule based system using Fuzzy Logic Control and Regression method for the Predictive Analytics

(LIAN & LI, 2018)

- Proposed system to predict the accuracy of the E-commerce enterprise soft operating costs based on the exponential smoothing technique model.
- Methods such as regression analysis (among variables) and time series analysis (estimate future value

(LIN & TSENG, 2017)

- Conducted research to explore the relationship of citizen hotline reporting and actual traffic accidents
- Methods such as correlation and regression analysis to examine the association of variables in their acquired datasets

(CHAN & CHIN, 2016)

- Conducted a research regarding the complexity of modelling the engine system and a non-model based predictive modelling of the marine engine system performance is required.
- Methods such as NN, MLR, BRTM with FCM, KMC used for more effective predictive modelling of the engine performance

METHODOLOGY

MULTIPLE LINEAR REGRESSION

SIMPLE VECTOR REGRESSION MACHINE

PEARSON COEFFICIENT

- Features selection process

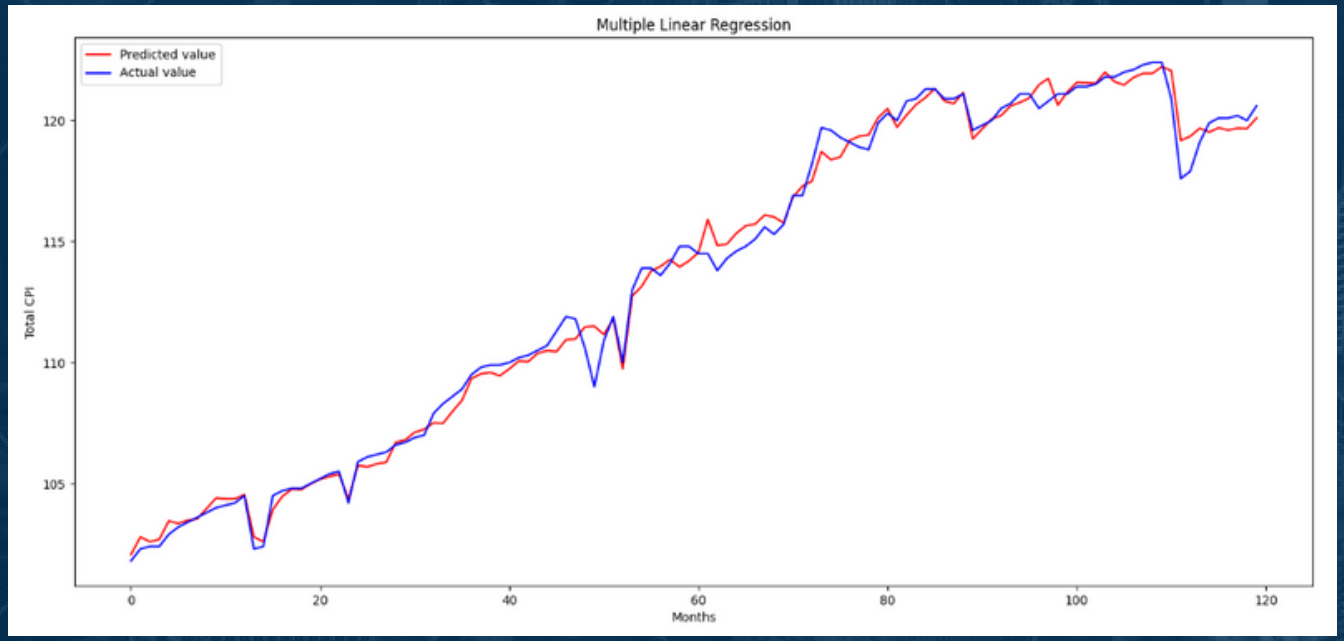
RESULTS AND FINDING

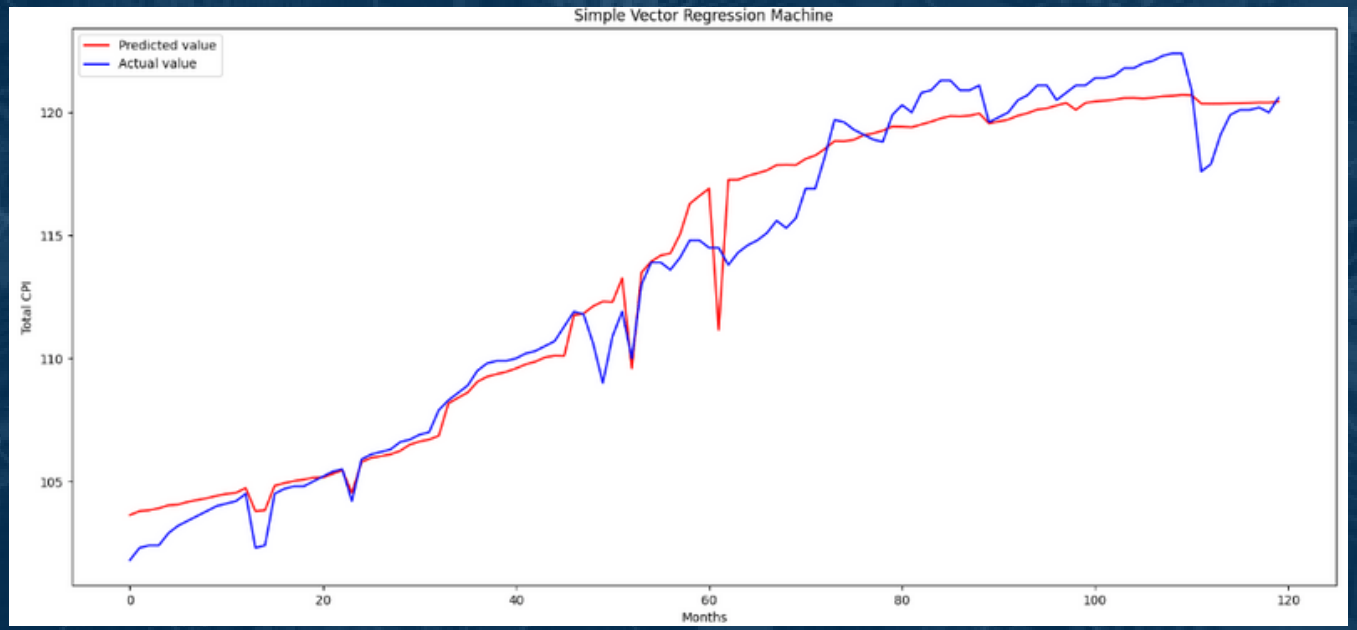
EVALUATION METRICS COMPARISON

	Mean Absolute Error	Mean Squared Error	R-squared	Root Mean Squared Error
Multiple Linear Regression	0.4118	0.3084	0.9931	0.5553
Simple Vector Regression Machine	0.9215	1.5068	0.9665	1.2275

- Multiple Linear Regression method achieve the best evaluation results compared to the SVR method.
- Low value of MAE (0.4118), MSE (0.3084), RMSE (0.5553), and the highest value of R2 (0.9931).

PREDICTION RESULTS COMPARISON





MULTIPLE LINEAR REGRESSION

Month	Actual Value	Predicted Value
Jan 2020	122.4	121.9
Feb 2020	122.4	122.2
Mar 2020	120.9	122.0
Apr 2020	117.6	119.2
May 2020	117.9	119.3

SIMPLE VECTOR REGRESSION MACHINE

Month	Actual Value	Predicted Value
Jan 2020	122.4	120.7
Feb 2020	122.4	120.7
Mar 2020	120.9	120.7
Apr 2020	117.6	120.4
May 2020	117.9	120.4

DASHBOARD

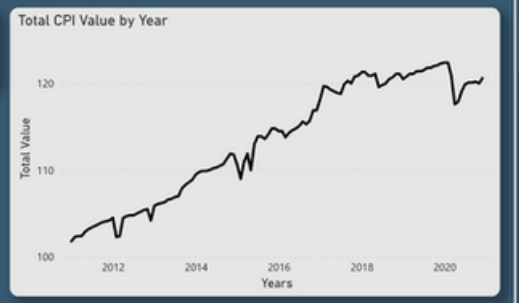
2011-2020

Prediction Analysis Cost Of Living Malaysia

Average Total CPI

113.48

"The cost of living is the amount of money needed to cover basic expenses such as housing, food, taxes, and healthcare in a certain place and time period. It is frequently used to compare the cost of living in one city to that in another" - Caroline Banton



Year
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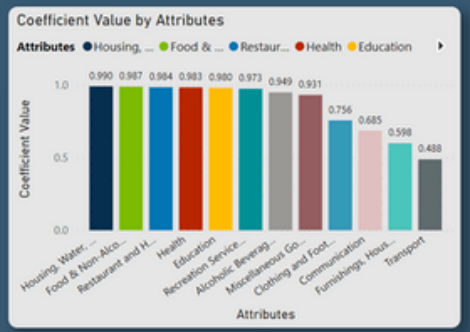
Main Group CPI Attributes

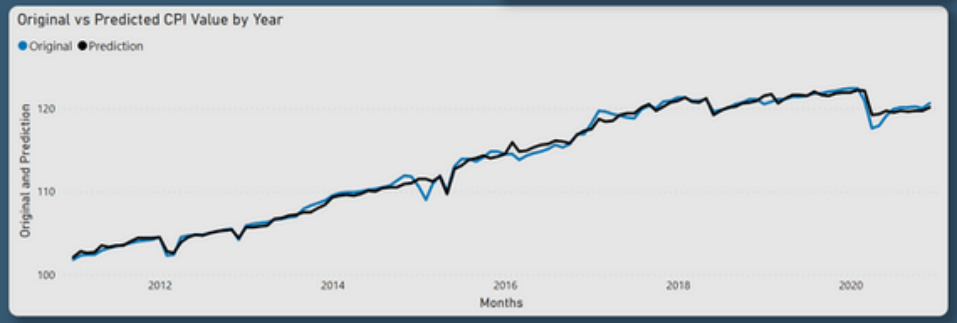
Alcoholic Beverages & Tobacco	Clothing and Footwear	Communication	Education	Food & Non-Alcoholic Beverages	Furnishings, Household Equipment & Routine Household Maintenance	Health	Housing, Water, Electricity, Gas & Other Fuels	Recreation Services & Culture	Restaurant and Hotels	Transport	Miscellaneous Goods & Services
104.60	99.90	100.00	101.00	102.60	101.00	101.50	100.80	99.70	103.20	103.20	101.10
104.60	99.80	100.00	101.90	103.70	101.10	102.00	101.20	100.40	104.70	103.60	101.20
104.60	100.10	100.00	101.60	103.70	101.10	102.10	101.10	100.50	104.20	103.50	101.00
104.60	99.80	99.80	102.10	104.90	101.40	102.40	101.60	101.90	105.60	104.90	101.70
104.60	99.80	99.90	102.10	104.00	101.20	102.20	101.20	101.90	105.10	104.20	101.30
104.70	99.80	99.70	102.20	104.70	101.60	102.50	101.70	101.90	105.90	104.80	101.90
104.60	99.60	99.70	102.30	105.10	102.10	102.80	101.80	102.30	106.40	104.70	102.40
104.60	99.30	99.60	102.40	105.10	102.10	103.10	102.30	102.90	106.50	104.80	103.20
104.60	99.80	99.60	102.40	105.50	102.30	103.40	102.30	102.90	106.80	104.70	103.90
104.60	99.70	99.50	102.50	106.30	102.30	103.60	102.30	103.00	107.10	104.80	103.50

Multiple Linear Regression

MLR Evaluation Metrics

Metrics	Evaluation Value
Mean Squared Error	0.3084
Mean Absolute Error	0.4118
Root Mean Squared Error	0.5553
R-squared	0.9931





Year
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2020

Month
January
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December

CONCLUSION

In brief, the project managed to accomplish all the research objectives stated earlier. The result of the predictive analysis is able to predict the consumer price index. Furthermore, the dashboard has displayed the prediction result and the data related to cost of living successfully. Overall, this project can be improved furthermore with better approach in future work.

THANK YOU