

PREDICTION USING DATA VISUALIZATION

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ABSTRACT - The prediction of petrol prices in Malaysia is a crucial aspect for individuals, businesses, and policymakers in planning their budgets, and making informed decisions. This project aims to identify data requirements and techniques for the prediction of petrol price data. Next, to develop an interactive dashboard to visualize the historical and petrol price data and fuel stations in Malaysia. Lastly, to evaluate users' experience of this system by utilizing User Experience Testing (UXT). The method used for this study is design science research methodology (DSRM) design science research methodology (DSRM) methods. The tools used in this study are Power BI for dashboard development and Notepad++ for website development. From the User Experience Testing, we can conclude that all users agree that the system is attractive, perspicuity, efficient, dependable, stimulative, and novelty.

Keywords: Prediction of petrol price, Budget Planning, User Experience Testing (UXT), Design Science Research Methodology (DSRM), Power BI

1. INTRODUCTION

The Prediction of Petrol Price in Malaysia Dashboard is developed using Power BI to provide insightful and accurate predictions of petrol prices in Malaysia. This dashboard aims to assist individuals, businesses, and policymakers in making informed decisions related to fuel consumption and budgeting. Through an intuitive and user-friendly interface, the dashboard displays visualizations, graphs, and interactive charts that showcase the predicted petrol prices for different fuel types. Users can explore historical trends, compare prices, and analyze the impact of various factors on petrol price fluctuations. Various statistical and econometric models have been used to predict crude oil prices, including the GARCH model, Naive Random Walk, and the semi-parametric approach (Aloui & Hamdi, 2015). These models consider factors such as the demand and supply of oil, population, and economic aspects. The predictions are often generated through Monte Carlo analysis or using artificial neural networks (ANN) and ARIMA models (Sokkalingam et al., 2021).

2. METHODOLOGY

The Method used in this study is Design Science Research Methodology. The DSRM consists of five main stages which are problem awareness, suggestion, development, evaluation, and conclusion (Haryanti et al., 2022). In the problem awareness stage, researchers identify the practical issue or problem that needs to be addressed, gathering information, and literature review. In the suggestion stage, formulate a design plan to create an artifact that can solve the identified problem. In this project, Figma software has been used to design the prototype of the system. The development stage involves the actual creation or design of the artifact. The tools used are Power BI, Notepad++ and Hive. Once the system is developed, it goes through the evaluation stage, where its effectiveness and utility are assessed. In this study, User Experience Texting has been used. Finally, in the conclusion stage, the research findings and outcomes are summarized, lessons learned are discussed, and recommendations for further improvements or iterations of the artifact are provided.

3. RESULTS AND DISCUSSION

This research used User Experience Testing for the evaluation of the website and dashboard using User Experience Questionnaire. There are 3 parts which are Part A, B, and C. Part A is the personal information of the respondents, Part B is a structured set of questions designed to gather feedback and insights about a user's experience with the system and Part C is suggestion and recommendation to improve the website and dashboard. As a result, we can conclude that all users agree that the system is attractive, perspicuity, efficient, dependable, stimulative, and novelty.

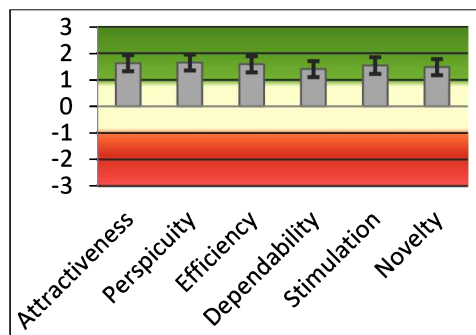


Figure 1. Graph of Mean Score Benchmark

4. NOVELTY OF RESEARCH / PRODUCT

The uniqueness of a website that forecasts petrol prices is found in its capacity to deliver precise and current forecasts of petrol prices. Forecasts are created using cutting-edge statistical and economic models, and real-time data to help consumers make decisions about budgeting and fuel usage. In general, the uniqueness of the website's prediction of the price of petrol lies in its incorporation of cutting-edge prediction models, real-time data, extensive factors, and user-centric features, all of which are intended to deliver precise and useful petrol price forecasts for various stakeholders in the fuel industry.

5. CONCLUSION

The petrol price prediction dashboard offers insightful analyses and projections that enable consumers, companies, and policymakers to make well-informed choices about their fuel usage, financial planning, and budgeting. In conclusion, the petrol price prediction dashboard in Malaysia enhances decision-making, improves efficiency, increases market awareness, offers customization options, provides transparent information, and enables long-term planning.

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