

# MERGING LANES: WHERE E-LEARNING DIVERSITY MEETS FUTURE TRENDS

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## **MERGING LANES: WHERE E-LEARNING DIVERSITY MEETS FUTURE TRENDS**

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## A STUDY ON THE FORECASTING PRODUCT DEMAND AT Q MART IN KUALA TERENGGANU

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### ABSTRACT

*Product demand forecasting is an important process that helps businesses plan production, manage inventory, and meet customer needs. However, many organizations face difficulties in accurately predicting product demand. This study aims to identify the common problems that affect the accuracy of product demand forecasting at Q Mart Kuala Terengganu, is to address the issues of inadequate stock management and erroneous demand forecasting that frequently arise in small retail enterprises. Because decisions are typically dependent on experience and manual checking, Q Mart confronts issues including overstock and stockouts. The research focuses on factors such as inaccurate historical data, changes in customer preferences, seasonal demand, and market uncertainties. The manager will be able to see whether goods are in high or low demand by utilizing Power BI to display the prediction results on an interactive dashboard. Additionally, it shows how predictive analytics may help small retailers transition from manual to data-driven decision-making in order to increase long-term productivity and profit. The findings show that poor data quality and unexpected market changes are among the main challenges faced by businesses when forecasting product demand.*

**Keywords:** *Power BI, forecasting, business analysis, data driven decision making, prediction*

### Introduction

Nowadays, a lot of businesses employ business analytics and business intelligence to help them make better decisions. In contrast to business analytics, business intelligence focuses more on analysing historical data to determine what has previously occurred. Utilize data to forecast future events and provide recommendations to enhance performance (Syntetos et al., 2020). Business analytics and business intelligence both assist in transforming data into insightful knowledge that can improve managers' planning. These tools can be used in retail businesses to monitor stock performance,

consumer behaviour, and sales trends (Chen et al., 2022). Business analytics and business intelligence are crucial for small and medium-sized businesses to maintain their competitiveness and run their operations more effectively. The retail sector is highly competitive and constantly evolving. Demand from customers can vary based on trends, festivals, and seasons. Convenience businesses in Malaysia, such as Q Mart, FamilyMart, and 99 Speedmart, struggle to control inventory due to shifting consumer demand. When deciding how much to order, many small retailers still employ a manual procedure, which can lead to overstock or stockout issues. Because predictive analytics can forecast which products will be in high demand and when, it can assist in resolving this problem (Adebisi et al., 2014). This enables retailers to correctly arrange their inventory, cut waste, and boost sales. Many small and micro retail enterprises in Malaysia still rely on manual inventory procedures that are not supported by data analytics tools, which presents similar issues, according to Rahman et al. (2023). Additionally, the study noted that employing digital technology can enhance inventory management and stop needless losses. In a different study, Bakri (2020) discovered that Malaysian merchants' operational effectiveness and decision-making speed are impacted by their poor adoption of technology for inventory and sales management because of a lack of knowledge and financial constraints. As a result, Q Mart's present procedure makes it evident that predictive analytics must be used to help managers analyze data more quickly, minimize human labor, and make better inventory decisions going forward.

### **Current Business Process**

Sales and inventory are still managed manually at Q Mart Kuala Terengganu. This procedure begins with gathering sales and stock data, which are entered into Excel spreadsheets, as shown in figure 1.1. Following everyday activities, employees enter this data, which is subsequently saved on the manager's computer. The manager will have to manually access each Excel sheet to verify and compile the data because there is no system that will update or integrate the stock data automatically. This is a long process that could result in human error, particularly when there are many different product categories and daily transactions. The manager then manually examines the data to determine which items are selling quickly and which are selling slowly. The management must rely on their own expertise and experience to identify trends because there is no automated alert or data visualization mechanism. The manager uses Excel to manually produce graphs to help analyze sales success, but these graphs are basic and don't provide deeper insights like demand patterns or seasonal trends. The manager uses experience to forecast what has to be refilled and how much to order after examining the graphs. Since the choice is made using human judgment rather than data-driven or predictive analysis, this is the most crucial stage of the process.

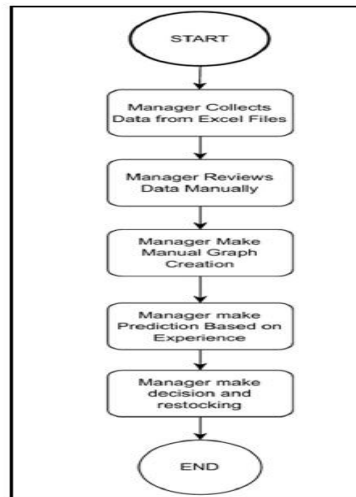


Figure 1: Flowchart How Q Mart Make Predictions for Their Product

### Problem statement

Due to Q Mart Kuala Terengganu's ongoing stock and sales management issues, the retail industry is still complex today. The incapacity to implement a data-driven, integrated system to address the increasing complexity of the retail sector is still a problem. Excel spreadsheets, handwritten notes, and shelf inspections appear to be outdated methods of tracking recorded stock. Q Mart maintains an uneven inventory as a result of management's inability to analyze such data and make data-driven decisions due to outdated techniques and technologies. As a result, operational effectiveness is hindered, making it impossible to properly satisfy client demand. Rather than an empirical analysis of the sales data, restocking decisions are usually dependent on the manager's personal forecast or what the supplier recommends. Inaccurate demand forecasting is mostly caused by such short-sighted decision-making. As a result, some products in particular categories are sold out, while others remain unopened for months. This is a significant factor in the stockout situation and revenue shortfall for customers and sales. Overstocking, especially with regard to perishables, leads to a significant waste of resources, and overusing storage resources raises expenses (Wang et al., 2016).

The lack of a management decision-making visualization dashboard is the second issue. There is no system in place at Q Mart that can provide any kind of visual data regarding product performance, sales patterns, or category trends. Top management will find it difficult to keep an eye on current stock levels and which products are doing better without a dashboard. The issue slows down decision-making and the potential for a strategic approach to sales in the future because managers are not visible and must rely on conjecture.

## Conclusion

The goal of this study on Product Demand Forecasting at Q Mart Kuala Terengganu project is to enhance Q Mart's current inventory management and decision-making process. There are several issues with Q Mart's present manual process, including stockouts, overstocking, and sluggish decision-making. The project's goal is to use business intelligence tools like Power BI and predictive analytics to accurately forecast future product demand. The results will be shown in an interactive dashboard. Through the program, Q Mart managers and owners would be able to better plan for stock replenishment, monitor category sales success, and understand customer purchase trends. This lowers losses brought on by inadequate inventory management and promotes high business productivity. Predictive analytics is crucial for helping businesses plan resources ahead of time and satisfy customer demand, according to Alhassan et al. (2023). In a similar vein, Trisolvena et al. (2024) hypothesize that Power BI dashboards can convert unstructured data into insightful information that improves management choices in retail settings. In conclusion, the initiative improves Q Mart's operations through data-driven planning and reporting. Additionally, it demonstrates how predictive analytics may benefit small retail businesses without the need for expensive or complex systems. The project's results are anticipated to assist Q Mart in making the shift to more contemporary, data-driven decision-making, which will increase productivity, accuracy, and customer happiness.

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