

DESIGNING A DRINKING WATER DELIVERY SERVICE SYSTEM APPLICATION USING DYNAMIC PRICING AND POINT SYSTEM INTEGRATION

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ABSTRACT

The increasing demand for refillable drinking water requires service providers to optimise operational efficiency. However, most drinking water depot operations currently rely on conventional methods, such as ordering via text message and manual record-keeping. These practices often lead to data inaccuracies, delivery delays, and a lack of customer retention strategies amid intense competition. This research aims to design and develop an integrated, mobile-based drinking water delivery service system. The proposed solution incorporates two key features: Dynamic Pricing, an automatic price adjustment algorithm based on ordering time to manage demand spikes; and a Point System, a gamification mechanism that awards reward points for each transaction to enhance customer loyalty. The application was developed using the Waterfall methodology, employing the Flutter framework for the user interface, ReactJS for the administrative interface, and Firebase as a Backend-as-a-Service (BaaS) for real-time database management. System testing, conducted using Black Box Testing, demonstrated that all functions—including dynamic price calculations and the point redemption mechanism—performed as intended. This system is expected to serve as a significant digital solution for improving depot operational efficiency and strengthening customer relationships.

Keywords: Refill Drinking Water, Dynamic Pricing, Point System, Mobile Application, Flutter, Firebase.