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Development of the Fave Cafe Information and Ordering Website: A Case Study in ImprovingRestaurant Service Efficiency

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Abstract*— Student engagement is a crucial factor influencing learning outcomes in both traditional and modern education systems. Traditional approaches often struggle to sustain high levels of motivation and participation, particularly when students have diverse interests and learning preferences. This study explores the integration of a gamification system into the learning process to enhance student engagement at President University. The proposed system comprises three core components: (1) a Gamification App (Android & iOS) designed for students, incorporating game mechanics such as points, leaderboards, and rewards; (2) a Gamification Web Portal, which serves as an administrative bridge to the President University Information System (PUIS); and (3) the Academic Information System (PUIS) itself, providing real-time academic data. By leveraging gamification principles within a mobile-first approach, the system aims to make learning more interactive and rewarding. This paper presents the design and implementation of the gamification framework, with an ongoing evaluation to assess its impact on student engagement, motivation, and academic performance. Initial findings indicate that mobile gamification can effectively enhance participation, foster a sense of achievement, and create a more dynamic learning environment.

Keywords*— Gamification, Mobile Application, Android, IoS, learning motivation

I. INTRODUCTION

Advances in digital technology have brought about significant changes in the way customers interact with business services, particularly in the food and beverage sector. One innovation that is now widely adopted by food and beverage businesses is the table ordering system, a system where customers can place orders directly from their table using digital devices such as smartphones or tablets.approaches to enhance student participation and create a more interactive learning experience.

This system not only offers convenience for customers by allowing them to place orders without having to queue or call a server, but also provides operational benefits for business owners. By reducing manual interactions, the ordering process becomes faster, more accurate, and more efficient. Order data can be directly transmitted to the kitchen and cashier without the risk of recording errors, and it also simplifies the monitoring and reporting of sales.

Fave Cafe, one of the local culinary businesses that is currently growing, recognises the importance of integrating technology to improve service quality. The previous conventional ordering system began to show various challenges, such as long customer waiting times, order recording errors, and high staff workload. Therefore, an innovation was needed in the form of developing a web-based digital ordering system that customers can use after they have been seated.

In this system, customers simply scan the QR code available at each table and place their orders directly through the connected website. Each order is automatically recorded along with the customer's table number, enabling efficient processing by the kitchen and service staff. Additionally, the system allows customers to view an updated menu list, including stock availability information, food descriptions, and estimated serving times.

This research aims to design and develop a web-based digital ordering system with a table ordering approach at Fave Cafe. By adopting this technology, it is hoped that Fave Cafe can improve operational efficiency, reduce staff workload, and provide a faster, more comfortable, and modern customer experience.

II. LITERATURE REVIEW

A. Information System In The Culinary Business

An information system is a combination of technology, people, and processes designed to collect, store, process, and distribute information. In the context of the culinary business, information systems can help speed up the ordering process, improve data accuracy, and provide automatic sales reports. According to Laudon & Laudon (2018), an effectively implemented information system can improve operational efficiency and competitive advantage for a business. Therefore, the digitalisation of ordering systems is an important form of transformation for culinary businesses, especially to improve customer service.

B. Digital Ordering Systems

A digital ordering system is a technology that allows customers to place orders without the need for direct interaction with staff. This system is generally web-based or mobile app-based and provides features such as digital menus, order customisation options, estimated serving times, and digital payment methods. Research by Zhang et al. (2020) shows that digital ordering systems can reduce customer waiting times by up to 30% and increase customer satisfaction through a more personalised and efficient experience. This system is also considered more accurate in recording orders and simplifies kitchen and cashier management.

C. Tabel Ordering System

A table ordering system is a variant of the digital ordering system where customers can order food from their table using their personal devices or tablets provided by the restaurant. This system typically uses a unique QR code at each table that directs customers to a web-based ordering interface or app. According to Gupta & Singh (2021), the table ordering system can help reduce the workload of service staff, minimise communication errors, and speed up table turnover. Additionally, this system can be integrated with a database to record transaction data, customer preferences, and sales analysis.

D. Consumer Behaviour Toward Digital Services

The adoption of digital services in the food sector is greatly influenced by consumer behaviour and readiness towards technology. According to research by Davis (1989) through the Technology Acceptance Model (TAM), the two main factors determining the acceptance of digital systems are perceived usefulness and perceived ease of use. In the context of restaurants, user-friendly and efficient systems will be more readily accepted by customers. A study by Prasetyo et al. (2022) in Indonesia also revealed that younger customers (aged 18–35) have the highest level of acceptance of digital ordering systems due to their familiarity with technology.

E. Previous Studies This

Several previous studies have also shown the success of implementing digital ordering systems in the food and beverage industry. For example, Wahyudi (2020) conducted a study on fast food restaurants in Yogyakarta and found that QR code-based ordering systems were able to increase daily orders by up to 20%. Another study by Nuraini and Ardiansyah (2021) on culinary MSMEs in Surabaya showed that online ordering systems helped entrepreneurs manage inventory, financial reports, and customer service more effectively. These studies provide a basis for the conclusion that the implementation of a table-based digital system has great potential for application at Fave Cafe.

III. METHODOLOGY

This study uses a software engineering approach with the Waterfall system development method. This method was chosen because of its systematic and structured flow, in which each stage of system development is carried out sequentially, starting from needs analysis to final evaluation. This approach is considered appropriate because the requirements of the system to be developed have been clearly defined from the outset, based on the results of observations and interviews with end users.

3.1 Data Collection Techniques

To gain a comprehensive understanding of the conditions and needs of the ordering system at Fave Cafe, several data collection techniques were used, as follows:

3.1.1 Field Observation

Researchers directly observed the ordering process taking place at Fave Cafe. The focus of the observation was on interactions between customers and staff, waiting times, order recording processes, and common challenges encountered. The results of this observation were used to create a manual ordering process map, which will be developed into a digital system.

3.1.2 Interviews with Stakeholders

Interviews were conducted with the café owner, cashiers, and service staff. The aim was to gather information about expectations for the system to be built, required features, and weaknesses of the current ordering system. The interview results were used as a reference in determining the main functions of the system to be developed.

3.1.3 Distribution of Questionnaires to Customers

Some Fave Cafe customers were given a short questionnaire to determine the extent to which they were ready to use a digital system, as well as the features they considered important in an ordering system. Their answers helped the researchers design a system that suited the habits and needs of the end users.

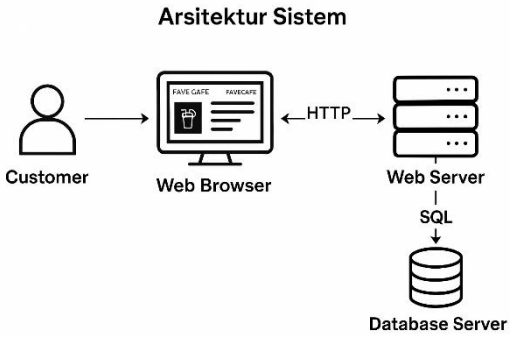
3.2 System Development Stages

The system development was carried out in five stages according to the Waterfall model:

a. *Requirements Analysis* - In this stage, researchers summarised all system requirements, both technical and non-technical. These requirements included key features such as QR code scanning, digital

b. *System Design* - After the system requirements are collected, a comprehensive system structure design is carried out. The design includes:

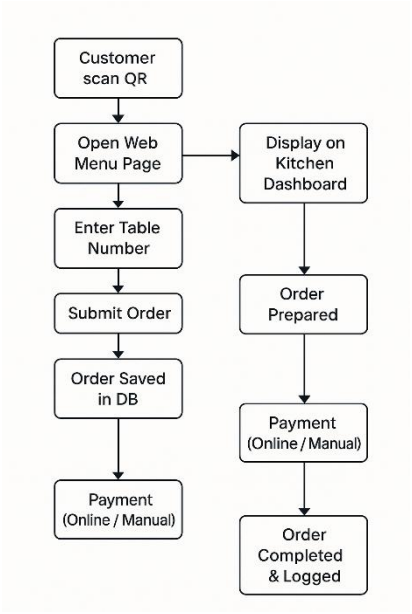
- System architecture, including module division and how data flows from one process to another.
- Database structure, using an entity-relationship diagram (ERD) to illustrate the relationships between data such as orders, menus, and tables.
- Process flow diagrams (flowcharts) that illustrate the sequence of system operations, from the customer scanning the QR code to recording the transaction and serving the food.



c. System Implementation- At this stage, the system is built according to the design that has been created. The technologies used include:

- Web programming languages such as HTML, CSS, and JavaScript for the system display.
- Server-side languages such as PHP or JavaScript (Node.js) for data processing logic.
- Database management systems such as MySQL for storing order and transaction data.

Customers will access the system by scanning a QR code at their respective tables, which will redirect them to the digital menu page. After selecting their food, customers can directly submit their orders through the system. The orders will be automatically stored on the server and can be viewed by staff through the admin page.



d. System Testing - The completed system is then tested to ensure that all functions are working as planned. Testing is carried out in two stages:

- Functional testing uses the black box testing method to ensure that every feature, such as ordering, data storage, and order list display, is working as it should.
- End-user testing is conducted by asking a number of customers and staff to try out the system. Their feedback is used to assess whether the system is easy to use and meets operational needs.

e. Evaluation and Revision - After the testing phase, an evaluation of the system implementation results is conducted. This evaluation includes an analysis of the speed of the ordering process, data recording accuracy, and staff work efficiency after the system is implemented. If any shortcomings or user feedback are identified, the system will be revised for improvement and performance enhancement.

3.3 Research Object and Subject

- The research object is a web-based food and beverage ordering system implemented at Fave Cafe.
- The research subjects are customers, service staff, and cafe owners who act as users and provide feedback on the system.

3.4 Supporting Tools and Devices

Some of the tools used during the system research and development process include:

- Computers/laptops for system development
- Web browsers for testing
- Programming applications and local servers such as XAMPP
- Data processing applications for documentation and reporting.

IV. RESULT AND DISCUSSION

A. Result of Website Fave Café

The Fave Café website has been successfully developed with a modern and user-friendly appearance that supports convenience in accessing the café's digital services. The visual design uses an elegant dark color scheme combined with bold and professional typography. Upon first access, users are greeted with an inspirational slogan and an appealing interior design of the café.Customer Ordering Interface (Website Front - End).

Some of the key features that have been successfully implemented on this website include:

- Complete Menu Navigation There are several informative pages such as Home, About, Menu, Specials, Events, Chefs, Gallery, and Contact that make it easy for visitors to explore information about the cafe.
- Responsive Design This website is designed to perform optimally across various devices, including desktop, tablet, and mobile phone.
- QR Code Table Integration Each table in the cafe is equipped with a QR code that, when scanned, will direct customers to a dedicated ordering page. This makes it easier for customers to order food/drinks without needing to call a waiter.
- Reservation Feature / Booking Available reservation button on the homepage that directly directs users to the online booking form.
- Interactive Menu PageFood and drink menus are displayed with attractive designs, complete with images, names of the dishes, prices, and brief descriptions, making it easier and clearer for customers to choose.
- Contact and Social Media Information Email and WhatsApp number are listed at the top of the page, making it easy for customers to communicate directly with the cafe.

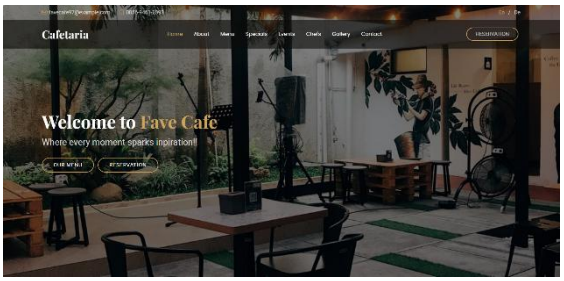


Figure 1. example of website display on tablet/laptop

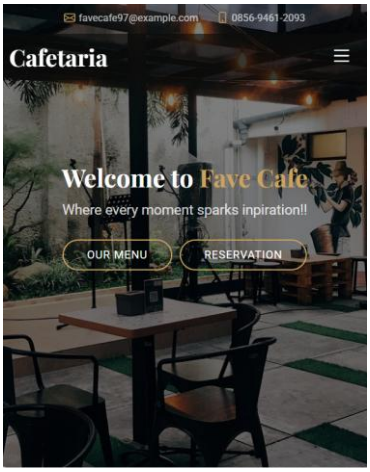


Figure 2. Example of website display on mobile phones.

- **On tablets**, the website display remains neat and proportional with the menu positioning adjusting to the screen width, without losing its original functionality or design.
- **On mobile phones**, the menu changes to a dropdown form (hamburger menu) to save screen space. Text, images, and buttons are arranged vertically to be easily accessible with fingertip touches. The font size and buttons are also adjusted to remain comfortable to see and use.

B. Discussion

The creation of the Fave Cafe website has a positive impact on how customers interact with the café's services. Through an attractive design and clear navigation, visitors can easily find the information they need, such as the food menu, special events, and table reservations. One of the most helpful features is the ordering via QR code, which directly links to the order page without having to wait for a server or go to the cashier. This not only increases the efficiency of services within the café but also gives a modern and professional impression to customers. During the testing process, the website ran smoothly on various devices and screen sizes, showing that the responsive design has been successfully implemented. Visitors can access the website through their smartphones without losing display quality or functionality.

V. CONCLUSION

Fave Cafe website has successfully been realized as a digital medium that not only displays information about cafes but also facilitates the ordering process and interaction between customers and the café. The presence of features such as an interactive menu display, ordering through QR codes, and an online reservation system provides real convenience for users.

In addition, a responsive website design is also an important added value because it can adjust displays to various devices, including tablets and mobile phones. This supports customer convenience in accessing services anytime and anywhere.

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