

Revamping Potchito's Buns and Cookies with Modern E-Business Essentials

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Abstract: This research focuses on developing the "Web Management Ordering System" for Potchito's Buns and Cookies, a web-based platform aimed at improving the bakery's order management processes. The system primarily facilitates online order-taking, allowing customers to place orders for buns, cookies, and custom cakes. Customization options for cakes include selecting flavors, sizes, uploading reference images, and adding special instructions. Additionally, a business report generation module is included for internal use, enabling management to generate reports based on transaction data. The system is designed to help Potchito's shift from manual order management to a digital solution that simplifies operations, without extending functionality to features like inventory management or real-time payments. While not optimized for multi-device access, the system supports desktop-based operations, fulfilling the immediate needs of the business. The results of the study emphasize the potential of the developed system in enhancing operational efficiency and delivering a more organized customer ordering experience.

Keywords—Web-based order management system; Custom cake ordering; Operational Efficiency; Ordering Platform.

1. INTRODUCTION

In the world of baking, where passion and craftsmanship are poured into every product, the efficiency of operations often plays a crucial but underappreciated role. Potchito's Buns and Cookies, known for its fresh and delicious baked goods, faces challenges in managing orders due to the lack of a modern system. The bakery currently relies on traditional methods for order management and daily operations, leading to inefficiencies that impact its ability to meet customer demands and compete effectively in the market. Operational efficiency is essential for any business to thrive in a competitive environment (Habib et al., 2022). For Potchito's Buns and Cookies, relying on manual processes may not be sufficient to handle the needs of a growing customer base. Implementing a modern order management system can bring several benefits to the bakery. A system that automates order processing and provides real-time information can help reduce human error and improve response times, which are critical for successful operations (HSE Now, 2020). The proposed system will not only enhance operational efficiency but also enable Potchito's Buns and Cookies to better meet customer demands and strengthen its position in the market. This study aims to evaluate how the implementation of a modern order management system can address the operational challenges faced by Potchito's Buns and Cookies. By focusing on optimizing order processing and overall operational efficiency, the researchers aim to provide practical recommendations for the bakery to improve its business processes.

1.1 Objectives of The Study

The goal of this study is to develop and assess the impact of a modern management system on the operational efficiency of Potchito's Buns and Cookies. The researchers are aiming to implement the following:

1. To create an Online Order-taking Website that simplifies the process for customers to place orders, transitioning from using private social media messages. The website will include a homepage, an order detail form, and customer support.
2. To develop a Business Report Generation Module that assists management in collecting data from business transactions and creating reports to support better decision-making. This module will include a dedicated webpage accessible only to management.
3. To ensure compliance with ISO/IEC 25010 standards by evaluating the system against software quality criteria, such as functionality, reliability, usability, performance efficiency, and security, to deliver a robust, effective, and user-friendly solution.

1.2 Scope and Limitations

This study aims to develop and implement Web-Management Ordering System to enhance the operational efficiency and customer experience of Potchito's Buns and Cookies. The system will include a homepage featuring a product showcase, customer feedback, an "About" page, and a secure user management system for logging in and signing up (R. T. Anees et al., 2022). An admin panel will be created for internal management, featuring a dashboard for business metrics and a module for generating business reports to support decision-making. Customer features such as real-time order tracking and user-friendly order forms for placing

orders will be integrated to boost customer satisfaction (Wenbo Niu et al., 2024; K.H. Leung et al., 2020). The scope encompasses the design, development, testing, and implementation phases to assess the system's impact on business operations and customer satisfaction. The limitations of this study include the exclusion of advanced features beyond the core objectives of the developed system. The system will not support inventory management or Point-of-Sales (POS) functionalities, as these are outside the scope of this study. Additionally, the system will not support delivery logistics or real-time online payment integrations, opting for a payment simulation due to cost constraints. Advanced user analytics and native mobile app development are not included, although the system will be mobile-responsive. Furthermore, it will not feature a supplier management portal, concentrating solely on internal order management and customer interaction features.

2. METHODOLOGIES

This chapter outlines the research methodology for this study, detailing the research design and data collection procedures. It describes the study's respondents, the instruments used, and the methods of gathering data. Ethical considerations are also addressed, along with the statistical techniques employed for data analysis. This overview provides a clear framework for understanding the research approach.

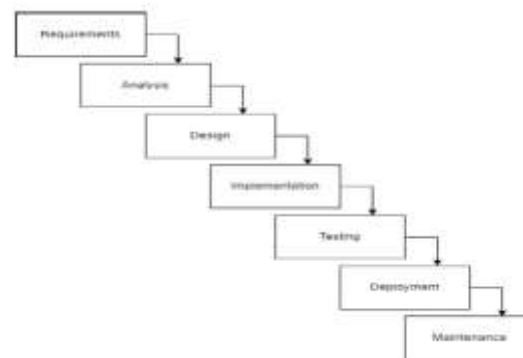
2.1 Research Design

The researchers utilized the quantitative method in developing the Potchito's Buns and Cookies Web-Ordering System. The quantitative method is a research approach that involved collecting numerical data to test and answer research questions. Statistical analysis was employed to draw conclusions based on the gathered data. Along with this, the observation approach was used to verify the findings that helped achieve the initial objectives of the study.

2.2 System Development Design

End-users, including Potchito's Buns and Cookies personnel, business owners, and IT professionals, provided essential input for the development of the system. Surveys and video demonstrations were used to gather insights, ensuring the system's features aligned with user needs and expectations. This feedback informed the initial system design, enhancing its functionality and relevance.

The Waterfall Development Methodology was used to guide the structured, step-by-step development process for the Potchito's Buns and Cookies Web-Based Order Management System. Each phase was completed before moving to the next, allowing for thorough planning and implementation.



Requirement Analysis: Surveys were distributed to customers, small business owners, and IT professionals. This step gathered detailed requirements for the system, including order management, customer interaction, and feedback mechanisms. The feedback ensured the system addressed real operational challenges.

System Design: The researchers created detailed system specifications and design documents based on the gathered requirements. The design included flowcharts and diagrams that visualized user interactions and the system's architecture. Emphasis was placed on usability, accessibility, and security to meet user expectations.

Figure 1: Waterfall Development

in accordance with the predefined design specifications. Features like custom cake order processing, cart payment systems, and feedback management were implemented to cater to user requirements and streamline order operations.

Testing: Selected users participated in testing the system through user acceptance testing (UAT). Feedback on functionality and usability was gathered, but a formalized, extensive testing process was not conducted. Instead, feedback during UAT was analyzed for further refinement.

Deployment and Maintenance: While the system is fully functional, it has not yet been officially deployed or adopted by Potchito's Buns and Cookies. The maintenance phase focuses on addressing feedback from testing sessions and refining the system's features. Future updates will be based on continuous feedback to ensure adaptability and performance.

2.3 Population and Sample of the Study

The respondents for this study were carefully selected to represent three key groups: customers, small business owners, and IT professionals. Specifically, the study engaged fifteen (15) customers who frequently use online ordering systems, five (5) small business owners who have integrated web-based management systems into their operations, and five (5) IT professionals with expertise in system development and management.

The customers were selected through convenience sampling to gain insights into user experiences and

satisfaction with the Web-Ordering System. Small business owners were purposively chosen based on their familiarity with the operational challenges of implementing web-based solutions. IT professionals were also purposively selected to ensure that individuals with technical expertise in system evaluation and development provided feedback on system functionality and performance.

The researcher used a structured survey to collect responses, measured using a five-point Likert scale, which was analyzed to evaluate the system's effectiveness in meeting business needs and user expectations.

Table 1.

Population Group and Size of the Study

Respondents	Frequency	Percentage
Customers	15	60%
Business Owners	5	20%
IT Professionals	5	20%
Total	25	100%

2.4 Research Instrument

The study utilized a survey questionnaire and the ISO/IEC 25010 software quality model. The survey gathered feedback from respondents using a five-point Likert scale, assessing aspects like usability and satisfaction. ISO/IEC 25010 was employed to evaluate the system's quality based on functionality, performance, usability, and security. This combination allowed for a thorough assessment of both user experience and technical quality.

Table 2.

Research Instrument Guidelines Adapted from ISO/IEC25010

Factor	Description
Functionality	Assesses whether the system provides the required features and meets user needs effectively.
Reliability	Measures the ease of use, learnability, and overall user satisfaction with the system.
Performance Efficiency	Evaluates how well the system performs in terms of speed, responsiveness, and resource usage.
Compatibility	Assesses how well the system integrates and operates with other systems and platforms.
Usability	Measures the ease of use, learnability, and overall user satisfaction with the system.
Security	Examines the system's capacity to protect data, resist unauthorized access, and ensure data integrity.
Maintainability	Evaluates how easily the system can be updated, modified, and maintained.

4. RESULTS AND DISCUSSION

This chapter presents the methodology used in developing Potchito's Buns and Cookies Web-Based Order Management System, along with an analysis of the results obtained from its evaluation. The methodology outlines the step-by-step processes for gathering input from users, developing the system's functionalities, and assessing its performance. The results are presented according to the objectives outlined in Chapter I, focusing on the system's ability to streamline order management, improve customer interaction, and enhance overall business operations.

3.1 Objectives Analysis

Objective 1: *To create an Online Order-taking Website that simplifies the process for customers to place orders, transitioning from using private social media messages. The website will include a homepage, an order detail form, a section for reviews and feedback, and customer support.*

Table 4.

Objective 1 Interpretation

Evaluation Criteria	Mean Score	Remarks
Usability Item 13: The system is user-friendly and easy to navigate for both staff and customers.	4.10	Agree
Functionality Item 1: The system allows me to perform all necessary tasks, such as ordering and managing orders.	4.52	Agree

For the first objective, which was to create an Online Order-taking Website that simplifies the process for customers to place orders, the system's usability was positively received. The mean score of 4.10 for usability indicates that the system generally provides ease of use and navigation, making it simple for both customers and staff to interact with the website. This suggests that the interface is user-friendly and intuitive, aligning with the objective of transitioning from private social media messages to a more efficient platform. Additionally, the system scored 3.90 in functionality, confirming that users were able to perform essential tasks like placing and managing orders without significant issues. This demonstrates that the system successfully fulfills its goal of simplifying the order process for customers.

Objective 2: *To develop a Business Report Generation Module that assists management in collecting data from business transactions and creating reports to*

support better decision-making. This module will include a dedicated webpage accessible only to management.

Table 5.

Objective 2 Interpretation

Evaluation Criteria	Mean Score	Remarks
Functionality Item 1: The system allows me to perform all necessary tasks, such as ordering and managing orders.	4.52	Strongly Agree
Reliability Item 4: The system consistently functions without errors or crashes.	4.10	Agree
Functionality Item 2: The features provided by the system meet my specific needs (e.g., custom orders, tracking).	4.41	Agree

The second objective aimed to develop a Business Report Generation Module that assists management in collecting data from business transactions and generating reports to support decision-making. The system's performance efficiency received a high mean score of 4.52, indicating strong agreement that the module processes tasks, such as report generation, quickly and without delays. This suggests that the module effectively supports management by providing timely data for business analysis.

In terms of reliability, the system scored 4.45, showing that users agreed the system functions consistently without errors or crashes. This reinforces the module's dependability in generating accurate business reports, which is crucial for supporting decision-making. The functionality score of 4.41 further demonstrates that the module successfully allows management to perform necessary tasks, affirming that Objective 2 has been well achieved.

Objective 3: *To ensure compliance with ISO/IEC 25010 standards by evaluating the system against software quality criteria, such as functionality, reliability, usability, performance efficiency, and security, to deliver a robust, effective, and user-friendly solution.*

Table 6.

Objective 3 Interpretation

Evaluation Criteria	Mean Score	Remarks
Functionality Item 2: The features provided by the system meet my specific needs (e.g., custom orders, tracking).	3.52	Agree

Functionality Item 3: I can complete my tasks without encountering missing features or functionality.	3.40	Neutral
Reliability Item 4: The system consistently functions without errors or crashes.	4.10	Agree
Reliability Item 5: I can rely on the system to perform tasks accurately and without disruptions.	3.80	Agree
Evaluation Criteria	Mean Score	Remarks
Security Item 16: My personal or business data is protected and secure within the system.	3.60	Agree
Security Item 17: The system employs proper security measures (e.g., password protection, encryption).	3.93	Agree

The third objective aimed to ensure compliance with ISO/IEC 25010 standards by assessing the system against key software quality criteria: functionality, reliability, usability, performance efficiency, and security. The evaluation results indicate a generally positive reception, particularly in terms of reliability and security. The mean score of 4.10 for reliability suggests that users feel confident in the system's stability, consistently performing tasks without errors or crashes. Additionally, a score of 3.93 in security demonstrates that users perceive the system as adequately protecting their personal and business data through established security measures.

However, the functionality scores, with mean values of 3.52 and 3.40, indicate that while the system meets some user needs, there is still room for improvement, particularly regarding the completeness of its features. Overall, the system largely aligns with ISO/IEC 25010 standards, highlighting its robustness, effectiveness, and user-friendliness while pointing out specific areas for enhancement to fully achieve its compliance.

3.2 Data Gathering Results

The demonstration Potchito's Buns and Cookies Web-Ordering Management System was evaluated in accordance with the ISO/IEC 25010:2011 standards. The system was evaluated in terms of its Functionality, Reliability,

Performance Efficiency, Usability, Security, and Maintainability.

Table 8.

Mean range interpretation scale

Scale	Description	Range
1	Strongly Disagree	1.00 – 1.50
2	Disagree	1.51 – 2.50
3	Neutral	2.51 – 3.50
4	Agree	3.51 – 4.50
5	Strongly Agree	4.51 – 5.00

Table 8 is for interpreting the range of Mean scores gathered from the evaluation answered by its end users, from customers, business owners and IT Professionals.

Evaluation Results

Table 9.

System Functionality Interpretation

Item	Mean	Descriptive Interpretation
A. FUNCTIONALITY		
1.The system allows me to perform all necessary tasks, such as ordering and managing orders.	4.52	Strongly Agree
2.The features provided by the system meet my specific needs (e.g., custom orders, tracking).	3.52	Agree
3. I can complete my tasks without encountering missing features or functionality.	3.40	Neutral
Total Mean	3.81	Agree

Table 9 The total mean score for the functionality of the system is **3.81**, which falls under the "Agree" category according to the revised scale. This indicates that users generally find the system functional, supporting tasks like ordering and managing orders effectively. However, some aspects, such as completing tasks without encountering missing features, were rated slightly lower (closer to Neutral), implying room for improvement.

Table 10.

System Reliability Interpretation

Item	Mean	Descriptive Interpretation
B. RELIABILITY		
4. The system consistently functions without errors or crashes.	4.10	Agree

5. I can rely on the system to perform tasks accurately and without disruptions.	4.20	Agree
6. The system handles unexpected interruptions (e.g., power outages) and recovers without data loss.	3.80	Agree
Total Mean	4.03	Agree

Table 10 The mean score indicates that users generally agree that the system consistently functions well without errors or crashes. The high score of 4.10 for the statement regarding system reliability further reinforces users' confidence in its accurate performance. Additionally, the mean score of 4.20 shows that users feel they can rely on the system to execute tasks without disruptions. Overall, the system is perceived as reliable, with some opportunities for improvement in handling unexpected interruptions.

Table 11.

System Performance Efficiency Interpretation

Item	Mean	Descriptive Interpretation
C. PERFORMANCE EFFICIENCY		
7. The system processes actions (e.g., placing orders) quickly.	3.93	Agree
8. I have not experienced significant delays when using the system, even during peak times.	4.17	Agree
9. The system operates efficiently, even when multiple users are active.	3.93	Agree
Total Mean	4.01	Agree

Table 11 The average score suggests that users agree that the system processes actions efficiently, with a mean of 3.93 for processing actions quickly. Furthermore, a score of 4.17 reflects that users have not experienced significant delays even during peak times. The consistency in performance across multiple users is also positively perceived, reinforcing the system's ability to operate efficiently. This indicates a strong level of user satisfaction regarding performance efficiency.

Table 12.

System Compatibility Interpretation

Item	Mean	Descriptive Interpretation
D. COMPATIBILITY		
10. The system is able to run smoothly in various environments where it is tested (e.g., different	3.30	Neutral

computers or devices in offline mode).		
11. The system's compatibility with web operating systems that you use.	3.97	Agree
12. The system works well with the software and hardware setups that are available for testing purposes.	4.03	Agree
Total Mean	3.77	Neutral

Table 12 The overall mean score indicates a neutral stance toward the system's compatibility, with a score of 3.30 showing mixed feelings about running smoothly across various environments. While users agree that the system is compatible with web operating systems (mean score of 3.97) and works well with existing software and hardware (mean score of 4.03), the lower score on running in different environments suggests that there may be some issues to address. This neutrality highlights the need for improvements to ensure the system's flexibility across different platforms.

Table 13.

System Usability Interpretation

Item	Mean	Descriptive Interpretation
E. USABILITY		
13. The system is user-friendly and easy to navigate for both staff and customers.	3.90	Strongly Agree
14. The layout and design make it simple to find the features I need.	4.28	Agree
15. The system is intuitive and does not require extensive training to use effectively.	4.10	Agree
Total Mean	4.09	Agree

Table 13 The average score indicates that users generally agree on the system's usability. The highest score of 4.28 for the layout and design suggests that users find it easy to locate the features they need, contributing to a positive user experience. The score of 4.10 for intuitiveness further demonstrates that the system is easy to use without requiring extensive training. While the mean score of 3.90 indicates strong agreement that the system is user-friendly, there is still room for enhancements to further improve navigation for both staff and customers.

Table 14.

System Security Interpretation

Item	Mean	Descriptive Interpretation
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F. SECURITY		
16. My personal or business data is protected and secure within the system.	3.60	Agree
17. The system employs proper security measures (e.g., password protection, encryption).	3.90	Agree
18. I have not experienced any security issues or breaches while using the system	4.17	Agree
Total Mean	3.89	Agree

Table 14 The total mean indicates that users agree with the system's security measures. The score of 3.60 shows that users feel their personal and business data is generally protected within the system, suggesting a satisfactory level of confidence in data security. The score of 3.90 reflects agreement that proper security measures, such as password protection and encryption, are in place. The highest score of 4.17 for the absence of security issues or breaches reinforces users' trust in the system's ability to maintain security, although there is potential for improving user confidence further.

Table 15.

System Maintainability Interpretation

Item	Mean	Descriptive Interpretation
G. MAINTAINABILITY		
19. The system is easy to update and maintain over time.	3.20	Neutral
20. Changes or updates to the system are carried out without causing disruptions.	3.86	Agree
21. The system is designed in a way that makes future improvements or modifications straightforward in a non-hosted environment.	3.40	Neutral
Total Mean	3.82	Agree

Table 15 The average score suggests a general agreement regarding the system's maintainability. A score of 3.20 indicates neutrality about the ease of updating and maintaining the system over time, which suggests that users see potential challenges in this area. However, the score of 3.86 shows agreement that changes or updates can be made without disruptions, indicating a positive aspect of the system's maintenance process. The score of 3.40 suggests that while the design allows for future improvements, there may still be some limitations. Overall, the system appears

manageable with opportunities for enhancements in maintainability.

Table 16.
System Overall Interpretation

Characteristic	Mean	Descriptive Interpretation
FUNCTIONALITY	3.81	Agree
RELIABILITY	4.03	Agree
PERFORMANCE EFFICIENCY	4.01	Agree
COMPATIBILITY	3.77	Neutral
USABILITY	4.09	Agree
SECURITY	3.89	Agree
MAINTAINABILITY	3.82	Agree
Overall Mean	3.92	Agree

Table 16 The table presents the descriptive interpretation of the system's overall quality, combining results from evaluations of functionality, reliability, performance efficiency, compatibility, usability, security, and maintainability. The overall mean score is **3.92**, which falls under the category of "Agree." This suggests that respondents generally perceive the system as effective, meeting the majority of its intended objectives across various evaluation criteria. Although the system performs well in most areas, there is room for improvement, particularly in enhancing **compatibility** and **other usability aspects** to better cater to a wider range of users. Minor adjustments could further optimize the system's overall user experience and performance.

4. CONCLUSIONS AND RECOMMENDATIONS

This presents the conclusions drawn from the development and implementation of the web-based order management system for Potchito's Buns and Cookies. It summarizes the key findings related to the system's effectiveness in improving the bakery's operational efficiency and customer experience. The conclusions are based on the evaluation of the system against the objectives outlined in Chapter 1, as well as the feedback gathered from users. Additionally, this chapter offers recommendations for further system improvements and possible future enhancements, ensuring that Potchito's Buns and Cookies can continue to grow and meet evolving customer demands while optimizing their internal processes.

Conclusions

This section summarizes the key outcomes of developing the web-based order management system for Potchito's Buns and Cookies. The system's implementation

has been evaluated in terms of its ability to enhance operational efficiency and customer satisfaction. Based on the findings, the conclusion reflects how well the system has met the project's objectives and its potential impact on the business moving forward.

1. The web-based order management system for Potchito's Buns and Cookies successfully the order-taking process for both standard and custom products.
2. The system improved customer convenience by allowing online ordering, leading to a better overall customer experience.
3. Implementing the system reduced manual work in handling orders, contributing to increased efficiency in daily operations.
4. The integration of features such as flavor selection, custom cake message input, and reference image upload simplified the custom cake order process.
5. The system's responsive design ensured usability across multiple devices, enabling customers to place orders from desktops, tablets, and smartphones.
6. The secure checkout system, which handles different payment requirements for buns, cookies, and custom cakes, met business needs effectively.
7. The use of PHP and MySQL provided a stable and scalable platform for managing customer data and orders.
8. The system met the project's primary objectives by providing a reliable and efficient method for managing customer orders online.

Recommendations

This section offers suggestions for further improvements and future developments based on the findings from the system's implementation for Potchito's Buns and Cookies. These recommendations aim to optimize the system's performance, address any identified limitations, and provide guidance for potential enhancements that could further benefit the business and its operations.

1. Explore the option of integrating delivery services directly into the system for a more seamless customer experience.
2. Periodically update the website's design and content to reflect new products, promotions, and seasonal offers.
3. Ensure that regular system maintenance is performed to keep it running smoothly and securely.
4. Offer customer support options such as live chat or a FAQ section to assist users with common issues during the order process.
5. Consider adding a notification feature to update customers on order status and completion via email or SMS.

6. Introduce discount or loyalty programs to reward returning customers and increase retention.
7. Continuously gather customer feedback to identify potential areas for improvement and new features.

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