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Lhyn Herbals: An E-Commerce Platform for Herbal and Organic Medicines

Discaya, Rhizza Mae C.1, Geriane, John Loyd E.2, Varilla, Lyka Camille M.3, Avila, Rozel B.4, Cabance, Paul John D.5, Derla, Ken Lordian S.6, Espino Jr, Samuel S.7, Pondare, Urek T.8

National University Philippines
discayarc@students.nu-baliwag.edu.ph1, gerianejle@students.nu-baliwag.edu.ph2, varillalcm@students.nu-baliwag.edu.ph3, rbavila@nu-baliwag.edu.ph4, pjdcabance@nu-baliwag.edu.ph5, ksderla@nu-baliwag-edu.ph6, ssespino@nu-baliwag.edu.ph7, utpondare@nu-baliwag.edu.ph8

Abstract: *Lh/yn Herbals was an e-commerce platform designed to address challenges in managing inventory and sales for herbal and organic medicines. This study proposed an e-commerce solution tailored to Lhyn Herbals, focusing on enhancing operational efficiency through features such as real-time inventory tracking, a user-friendly online shopping interface, and comprehensive sales reporting. The findings underscored the critical need for an integrated e-commerce system at Lhyn Herbals to effectively manage inventory and efficient sales processes.*

Keywords — Ecommerce; Point of Sale System; Herbal; Organic; Inventory Management;

1. INTRODUCTION

In today's digital age, online shopping had become a preferred method for many consumers due to its convenience and accessibility. This shift towards e-commerce was part of a broader trend highlighted by a 2023 Statista report, which showed a significant increase in online retail sales globally, overshadowing traditional brick-and-mortar stores. [1]

The rise of e-commerce significantly impacted the herbal product market. A report by Mordor Intelligence (2020) indicated that the online distribution channel was expected to witness the fastest growth during the forecast period. The convenience of online shopping, coupled with the availability of a wide range of products, made e-commerce a preferred platform for purchasing herbal products. The study also noted that consumer reviews and detailed product descriptions played a crucial role in influencing purchase decisions in the online market. [2]

The demand for herbal products in the Philippines was growing. A report by the Department of Science and Technology (DOST) highlighted that the market for herbal supplements and medicines was expanding as more consumers turned to natural health solutions. This trend was driven by increased health consciousness and the influence of global health trends emphasizing natural and organic products. [3]

Lhyn Herbals, a small business that had been selling herbal products for over five years, faced several issues related to sales tracking and inventory management. The owner struggled with predicting high-demand products, leading to problems with overstocking or understocking. Additionally, restocking was complicated due to the need for reservations and travel time to acquire items.

To address these issues, the researcher aimed to develop a comprehensive system for Lhyn Herbals. This system would include a robust inventory management feature that tracked stock levels in real-time, automatically alerted the owner when stock was low, and generated accurate reports. This would help avoid overstocking and stockouts and streamline the restocking process.

Moreover, the system would feature an easy-to-use shopping interface where customers could browse products, view detailed descriptions, add items to their cart, and reserve them for in-store pickup. For those unable or unwilling to pick up their orders or living far away, the platform would include a delivery option integrated with J&T Express. This would ensure that all customers had a convenient way to receive their purchases. In the research written by Dumael J. (2024), The Beewise online platform has the potential to greatly enhance user experience when it comes to scheduling appointments, streamlining healthcare processes, and promoting proactive sexual health management.

The platform would also include a sales tracking function that provided the owner with visual reports of daily and monthly sales. These reports would help the owner understand sales trends, identify high-demand products, and make informed business decisions. Additionally, customers would have personal accounts to view their order history and leave ratings and feebacks about their purchases, enhancing their overall shopping experience and building customer loyalty.

1.1 Objectives of the Study

The researchers wanted to provide an easy e-commerce platform for Lhyn Herbals that have:

1. Integration of an inventory report that accurately reflects availability of product information.
2. An easy-to-use interface for customers to browse and add products to their cart online.
3. Daily or monthly sales reports to provide the owner with insights into sales trends and performance.

4. A page for customers that displayed a summary and detailed history of their orders.
5. A feature for customers to leave ratings and feedbacks on products they had purchased.
6. A delivery feature that utilized the service of J&T Express.

1.2 Significance of the Study

This study was significant to the following:

Business owner. It showed the owner the stock number of her products and generated a sales report that provided insight into sales trends. This led to improved profitability for the business.

Customers. It provided the convenience of browsing and reserving products online, with transparent availability information. Additionally, customers could easily track their order history.

Access to Quality Products. The community gained access to quality herbal products offered by Lhyn Herbals through an online platform with transparent availability information. This ensured that residents had convenient access to natural remedies and wellness products that promoted health and well-being.

Educational Opportunities. The implementation of a POS system in Lhyn Herbals also created educational opportunities for the community. For example, the business organized workshops or seminars on herbal remedies, wellness practices, and sustainable living, enriching the community's knowledge and promoting healthy lifestyles.

Future researchers. Future researchers could explore the long-term impacts of implementing POS systems in small businesses like Lhyn Herbals, focusing on factors such as profitability, customer retention, and scalability.

1.3 Scope and Limitations

The scope of this study was to build an easy-to-use online store for Lhyn Herbals. This store let customers browse through a catalog of herbal products, read detailed descriptions, add items to their cart, and reserve them for pickup at the store. For customers who couldn't pick up their orders or lived far away, the store offered a delivery service using J&T Express.

Additionally, the system included an inventory management feature that kept track of stock levels in real-time, sent alerts to the owner when stock was low, and generated accurate reports to help avoid overstocking or running out of products. The platform also created daily and monthly sales reports to help the owner understand sales trends and make better decisions. Customers had personal accounts where they could view their order history and leave ratings and feedbacks about their purchases, making the shopping experience more personalized and engaging.

The limitations included managing only the existing product range, meaning any significant expansion would require further modifications. While standard security measures were implemented to protect customer data, the system was limited by the best practices and technologies available at the time of implementation. Additionally, the system's scalability needed to be considered if there was a significant increase in business volume or a major expansion. Another limitation was the geographic focus; the system was initially optimized for specific locations, potentially restricting its functionality and efficiency in other regions without further adaptation. Despite these limitations, the study aimed to develop a practical and user-friendly e-commerce solution to meet the specific needs of Lhyn Herbals, enhancing both operational efficiency and customer satisfaction.

1.4 Definition of Terms

The following terms were hereby defined in the study:

E-Commerce. An e-commerce platform for online shopping of herbal products and organic medicines. The rise of e-commerce platforms significantly impacted the physical market for herbal products. To adapt to this trend, the researchers created a platform that offered herbal products for delivery.

Herbal. Products that used or contained plant ingredients believed to treat diseases and enhance health and well-being.

Inventory Management. The process of efficiently overseeing the constant flow of herbal and organic medicines into and out of Lhyn Herbals. It involved maintaining optimal inventory levels, tracking stock movements in real-time, and generating reports that provided insights into stock availability and trends.

Organic Medicines. Herbal products used as medical supplements that were believed to help enhance physical well-being.

Point of Sale System. A system that streamlined the checkout experience, allowing for the processing of payments and updating inventory reports of sales.

2. METHODOLOGIES

This section aimed to provide an overview of the methodology that the researchers used to develop and design the website prototype, including how the data was gathered, the instruments utilized, and the analysis done to further the study.

2.1 Research Instrument

ISO 25010 was an evaluation form used to evaluate the quality of the system. It served as the quality model that determined which quality characteristics were taken into account when evaluating the properties of a software product. The functions and UI design of Lhyn Herbals were presented to each user, and a questionnaire through Google Forms was given to the participants to evaluate the system. The instrument had several categories and attributes that the website was required to meet. These served as the basis and criteria for its usefulness. After the data gathering was completed, the researchers compiled the evaluation forms to summarize the findings.

2.2 Waterfall Model Development Methodology

To further help in designing Lhyn Herbals: E-Commerce Platform for Herbal and Organic Medicines, the researchers used the Waterfall Model Development Methodology, a linear, sequential approach to the software development lifecycle (SDLC) that is popular in software engineering and product development.

Planning: In the planning phase, the objectives of the system were defined, with researchers first focusing on interviewing the business owner to understand the challenges faced. Through these interviews, they identified specific problems such as issues with sales tracking and inventory management.

Analysis: During the analysis phase, the researchers detailed the system's functionalities and user interfaces. The researchers prioritized business needs and technical feasibility to ensure that the most critical aspects were addressed first.

Design: After the analysis phase, the researchers began to design the flowchart, entity-relationship diagram, and the use case diagram that served as a guide or blueprint for the researchers to visualize and produce the prototype of the website.

Coding and Implementation: The researchers then progressed to the coding and implementation phase of the system, using tools like Sublime Text along with CSS and JavaScript to develop the Lhyn Herbals prototype website. The project was divided into modules, with tasks assigned to the development team for efficient coding.

Testing: For the testing phase, the researchers distributed evaluation forms to users to test and assess the system. They collected feedback from both users and stakeholders using validated research questionnaires. This feedback was crucial in identifying any issues, gathering suggestions for improvements, and ensuring the system met the needs and expectations of all stakeholders involved in the Lhyn Herbals project.

Operation and deployment: During the operation and deployment phase, the Lhyn Herbals prototype was set up on a localhost environment for initial use and refinement before moving to a live production server.

Maintenance: Maintenance for the Lhyn Herbals system involved ongoing tasks like monitoring, updating, and securing the system post-deployment. It also included optimizing performance and scalability while providing user support as needed. These efforts ensured the system ran smoothly and met user expectations over time.

3. PRESENTATIONS, DISCUSSION, AND INTEPRETATION OF DATA

This section covered the discussion of the potential and limitations of the project along with the results of the project assessment that was answered by the evaluators to further strengthen and assess "An E-Commerce Platform for Herbal and Organic Medicines" as a website.

3.1 Project Capabilities and Limitations

The following are the potential of the website

1. Lhyn Herbals helped offer a convenient platform where customers could browse, select, and purchase herbal products from the comfort of their homes.

2. Lhyn Herbals had efficient tracking of stock in real-time that helped prevent stockouts.

3. Lhyn Herbals provided customers with the flexibility to choose between convenient delivery options or in-store pickup for their purchases.

The following are the limitations of the website:

1. Connecting the POS system with current accounting or inventory software might have needed technical skills and could have caused problems if they didn't work well together.

2. Lhyn Herbals might not have offered personalized customer service to assist individuals in finding products that suited their needs.

3.2. Project Evaluation Result

The website prototype demonstration was evaluated in terms of functionality, reliability, performance efficiency, compatibility, usability, security, maintainability, and UI design.

The following was the interpretation for the range of Mean scores gathered from the evaluation answered by business owners or customers and IT professionals:

Table 1

Mean range interpretation scale.

Scale	Description	Range
1	Strongly Disagree	1.00 - 1.80
2	Disagree	1.81 - 2.60
3	Neutral	2.61 - 3.40
4	Agree	3.41 - 4.20
5	Strongly Agree	4.21 - 5.00

Table 2
Evaluation results computation.

INDICATORS	MEAN	DESCRIPTIVE RATING
A. FUNCTIONAL STABILITY		
1. The system cover all necessary functionalities for an e-commerce POS system.	4.52	Strongly Agree
2. The user friendliness of the system's interface for users to access order data.	4.92	Strongly Agree
B. RELIABILITY		
1. Level of trust that the system securely stores your order-related information and remains accessible whenever you need to access it for review needs.	3.56	Agree
2. The system's capability to handle a high volume of order data without any data loss	3.28	Neutral
C. PERFORMANCE EFFICIENCY		
1. System quick responses to user inputs and process transactions.	3.84	Agree
2. The system's ability to operate smoothy without causing unnecessary delays.	3.48	Agree
D. COMPATIBILITY		
1. Ability to access the system using your preferred browser.	3.84	Agree
2. The system's compatibility with the web operating systems that you use.	3.64	Agree
E. USABILITY		
1. The system is easy for users to understand, learn and navigate the system.	4.80	Strongly Agree
2. The system's user interface is pleasant and conducive to effective use	4.84	Strongly Agree
F. SECURITY		
1. The system require secure login credentials to ensure only authorized individuals can access records.	4.16	Agree
2. Actions can traced to the responsible party.	4.16	Agree
G. MAINTAINABILITY		
1. The system can be easily modified, updated, and extended to meet the shop's needs	3.40	Neutral
2. The system is easy to test for issues and errors	2.96	Neutral
OVERALL	3.96	Agree

Table 2 presented the mean range computation of the evaluation conducted by the researchers. The overall mean score was calculated across all indicators as 3.96, falling within the "Agree" range as per Table 1's interpretation scale. This indicated that, on average, the system generally met the expectations and requirements specified in the evaluation criteria.

4. SUMMARY OF FINDINGS CONCLUSION AND RECOMMENDATION

4.1 Summary of Findings

The researchers conducted a survey involving 25 target users, including (10) IT professionals and (15) business owners or customers. The purpose was to assess the strengths, weaknesses, and potential of the evaluation method used to gauge the capabilities of Lhyn Herbals as an e-commerce website.

The findings indicated that the system performed well in most categories, particularly in Functional Stability, Usability, and Security, with high ratings of "Strongly Agree." However, there were areas identified for improvement, especially in Reliability and Maintainability. The overall mean score of 3.96 suggested that while the system was generally well-received and effective, there were significant aspects that needed enhancement to ensure it met all user needs and expectations comprehensively.

4.2 Conclusion

In consideration of the objectives of the study, the following conclusions were reached after testing the prototype and assessment were completed:

1. The e-commerce POS system for Lhyn Herbals demonstrated high functionality and usability. Users strongly

agreed that the system covered all necessary functionalities for an e-commerce platform and found the user interface to be user-friendly and pleasant.

2. While the system generally performed well, it showed notable weaknesses in reliability and maintainability. The capability to handle a high volume of order data without loss and the ease of modifying and testing the system were areas rated as neutral. These aspects needed further development to enhance the overall validity and adaptability of the system.

3. The overall mean score of 3.96 reflected a positive reception from users, suggesting that the system met a majority of user needs effectively. However, continuous improvements, especially in identified weaker areas, were crucial to maintain and potentially increase user satisfaction and system effectiveness in the long term.

4.3 Recommendations

Based on the conclusion and results of the evaluation of this study's prototype, the following recommendations for An E-Commerce Platform for Herbal and Organic Medicines were made:

1. Strengthened database management practices, improved server performance, and implemented strong data backup protocols to enhance the system's reliability, especially in handling high volumes of order data securely.
2. Simplified procedures for modifying, updating, and testing the system to improve its maintainability, addressing the identified areas for enhancement in the evaluation.
3. Integrated regular user feedback loops to continuously improve usability and functionality, ensuring the system remained user-friendly and met the evolving needs of both customers and business owners effectively.

5. REFERENCES

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