AIOS CommerceSync: Integrated Order Management

Biglete, Iori Kel.1, Chico, Hanz Chrisrome C.2, Mosqueda, Destiny Crile D.3, Sarondo, Aeron Joshua A.4 Avila, Rozel B.5, Cabance, Paul John D.6, Derla, Ken Lordian S.7, Durano, John Ronald B.8, Santos, Carl Justin M.9

National University Philippines

bigleteib@students.nu-baliwag.edu.ph1, chicohc@students.nu-baliwag.edu.ph2, mosquedadd@students.nu-baliwag.edu.ph3, sarondoaa@students.nu-baliwag.edu.ph4,rbavila@nu-baliwag.edu.ph5, pjdcabance@nu-baliwag.edu.ph6, jrbdurano@nu-baliwag.edu.ph7, ksderla@nu-baliwag.edu.ph8, cmsantos@nu-baliwag.edu.ph9

Abstract: *AIOS CommerceSync is a comprehensive web system designed to revolutionize e-commerce operations within our company. This platform integrates advanced order management functionalities to streamline online ordering, real-time inventory tracking, and automated report generation. Through its intuitive interface, customers can easily browse products, place orders, and monitor their purchases, enhancing accessibility and user satisfaction. The system prototype exhibits robust functionality, reliability, and usability, supported by high ratings across key evaluation metrics. Recommendations include expanding delivery coverage and optimizing refund processes to maximize system effectiveness and user experience. This study contributes valuable insights into enhancing digital commerce operations and improving customer engagement through AIOS CommerceSync.*

Keywords— Digitalization; Customer Experience; Automated System; User Interface; Order Tracking

1. INTRODUCTION

Traditional ordering methods present notable drawbacks, particularly in their reliance on manual processes for recording sales, tracking inventories, and managing diverse orders. These outdated techniques not only impede accurate inventory and sales tracking but also contribute to frequent errors and inefficiencies. With these factors in mind, there is a growing demand for a more efficient and dependable way as the world becomes more digitalized.

The shift towards digitalization in e-commerce has significantly transformed traditional business models. Companies are increasingly adopting online systems to streamline their order processing and enhance customer experience. This digital transformation facilitates efficient order tracking, and improved customer service (Rosário & Raimundo, 2021). Similarly, more recent studies such as that by Li and colleagues (2021) on "Social Commerce Information Sharing and Their Impact on Consumers," emphasize the role of digital platforms in enhancing consumer engagement and satisfaction through effective information sharing. By utilizing social commerce strategies, businesses can offer real-time updates and maintain transparent communication, which directly aligns with the objectives of the study. This integration ensures that

customers have immediate access to product availability, can effortlessly place orders, and track their purchases online, thus
significantly improving user experience and maintaining a competitive edge in the market (Li et al., 2021). The computerized system for order tracking aims to reflects these observed benefits, underlining the critical role of digital tools in contemporary commerce to bolster customer satisfaction and streamline operational efficiency.

In the fast evolution of commerce, digitalization has significantly transformed traditional processes, such as order

entry report generation. Modern ordering systems now streamline sales and scheduling, enabling businesses to efficiently add items to carts and manage inventory in real-time. The inputting of orders over the counter has become more seamless, integrating with digital platforms to enhance customer experience.

The researchers aimed to develop a system or website that addresses the current challenges in the business's transaction processes, particularly focusing on ordering and report generation. The primary objective is to digitalize these processes to enhance efficiency and accuracy.

By creating this system, the researchers intended to streamline the entire process of online ordering and report generation. This involves computerizing the input of orders, which are currently handled manually over the counter. By transitioning to a digital platform, the system will ensure real-time updates on inventory levels and provide accurate tracking and reporting of orders from the moment they are placed until they are fulfilled.

The implementation of digitalized transactions will enhance the user experience by allowing customers to view product availability online and place orders for delivery, aligning with the objective of developing a user-friendly interface for seamless online ordering. This reduces the inconvenience associated with physical purchases, addressing the traditional limitations of ordering methods. Additionally, the system or website will bolster the business's online presence, providing customers with 24/7 accessibility, which supports the objective of implementing an online ordering functionality. This increased accessibility can help maintain a

competitive edge in the local market, ensuring the business remains responsive to customer needs and preferences. Furthermore, by automating sales and inventory reporting, the system can provide valuable insights for business owners and managers, facilitating informed decision-making and enhancing operational efficiency.

1.1. Objective of the Study

This project aimed to develop a website featuring a user-friendly interface and a dynamic system for online ordering. The researchers aim to accomplish the following with the development of the website:

1. Developed a system that tracks multiple ordered products of the customer in real-time. This allowed the system to capture multiple ordered products collected into one order, for easy tracking of the transactions that are happening on the website.

2. Implemented online ordering functionality to overcome the ordering limitations. Developed a user-friendly interface that allows customers to browse and order products digitally and online. For inquiries, a page for requesting survey for installations of CCTV or Solar Panels is provided.

3. Built an automated reporting capabilities capable of compiling reports needed, specifically sales reports and inventory reports. This feature allowed the system to capture the data to provide reports on sales performance and revenue. Keep updated about the stocks of the products, providing insights for decision-making.

1.2. Significance of the Study

The study intended to develop a website utilizing an online ordering system. This study was significant to the following:

Customers: will benefit from improved user experience and convenience because of digitized transactions and online ordering options. They will have access to a user-friendly platform that allows them to browse products, place orders, and track their purchases in real time. Increased accessibility and convenience will boost customer satisfaction and loyalty.

Business Owners: The development of the system or website will benefit business owners and managers by streamlined operations, increased efficiency, and provided valuable insights for decision-making. Computerized tracking of multiple item purchases, online ordering functionality, and automated reporting capabilities will allow business leaders to make more informed decisions and drive growth.

Investigating User Experience in Digital Transactions: This study developed the field of user interface design and customer relationship management by focusing on improving user experience through digitized transactions. Future researchers can investigate user preferences, behaviors, and satisfaction levels in online shopping environments, resulting in advances in user-centric design principles.

Digitalization in Business Operations: This study developed the field of user interface design and customer relationship management by focusing on improving user experience through digitized transactions. Future researchers can investigate user preferences, behaviors, and satisfaction levels in online shopping environments, resulting in advances in user-centric design principles.

Future Researchers: The findings of this study will add to the body of information in fields such as digital business operations, e-commerce, and user experience design. Future researchers and academics can use the insights and methodologies developed in this study to investigate related topics and advance research in these areas.

1.3. Scope and Limitations

The study focused on the development of an online ordering system, which includes features such as online ordering, online inquiries and request for survey, and automated report generation. The primary focus is to computerize the ordering process to improve efficiency and accuracy. Customers will be able to browse products, place orders, and make inquiries regarding installations of CCTV and solar panels through a user-friendly interface. The system will also generate real-time sales and inventory reports, offering valuable insights for decision-making and business management.

However, there are some limitations to this study. The scheduling of delivery for ordered products will remain a manual process, which may result in delays and inefficiencies. Furthermore, geographic delivery coverage is limited, which means that the online ordering system's service area is restricted and may not cater to customers outside of this predefined area. Computerized scheduling capabilities will not be implemented during this phase of the project, requiring manual intervention to manage delivery schedules.

1.4. Definition of Terms

The following terms are hereby defined in the study:

Digitalization. Transform of traditional business processes into digital formats, enhancing efficiency through online systems.

Customer Experience. Overall perception of customer based on interactions and transaction, influenced by service quality and product delivery.

Automated System. System operating with minimal human intervention, handling tasks specifically report generation automatically.

User Interface. Graphical layout and controls allowing users to interact with a system, design for intuitive and user-friendly navigation.

Order Tracking. Monitoring and tracing of order status, providing real-time updates.

Operational Efficiency. Optimization of resources and processes to maximize output while minimizing waste, time, and costs.

2. METHODOLOGY

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

2.1. Research Instrument

ISO 25010:2011 is a standard that sets forth design principles for multimedia user interfaces. The researchers used this standard to create an evaluation form in line with its guidelines. The UI Design of AIOS Enterprises was shown to each participant, who then completed a questionnaire rating the system. The instrument included multiple categories and attributes that the UI Design needed to satisfy, forming the basis for evaluating its usefulness. After collecting the data, the researchers compiled the completed assessment forms to summarize the results.

2.2. Waterfall Model Development Methodology

In the development of AIOS CommerSync, the researchers utilized the Waterfall methodology, a structured framework that ensured a systematic and sequential approach for creating and designing. Each phase was completed before proceeding to the next, ensuring thoroughness and clarity throughout the development process.

The initial phase involved comprehensive planning for product development. This included defining the overall strategy, with a focus on the user interface and usability aspects of the AIOS CommerSync web system. The researchers examined existing booking systems, identified gaps in the literature, particularly emphasizing user interface and interactions, and collected data for the system's design conceptualization. Detailed requirements were documented to ensure a clear understanding of the project goals and user needs.

Following the planning phase, the researchers created the structural flowchart and incorporated professional processes within the AIOS CommerSync web system. This flowchart served as a visual guide for developing the system's prototype, outlining processes such as account creation, booking inquries for solar panel and CCTV installations, and accessing information and guidance on purchasing tech products, ensuring user interaction without apprehension.

Detailed design documents were prepared to guide the development phase.

With the design documents in hand, the researchers proceeded to gather the necessary resources to design AIOS CommerSync. They explored existing booking systems, e-libraries, and online communities for inspiration and insights on design, features, and functionalities. They developed a prototype by utilizing HTML, CSS, JavaScript, PHP, AJAX, and integrating it with a MySQL database. This process involved creating interactive user interfaces and connecting wireframes according to the flowchart, effectively bringing AIOS CommerSync to life.

AIOS CommerSync underwent usability testing and evaluation for validation. The prototype was rigorously tested to ensure it met all specified requirements and functioned correctly. Feedback from users and stakeholders, gathered through a validated research questionnaire, informed improvements and refinements to the prototype. This phase ensured that all components worked seamlessly together, and that the system was user-friendly and effective.

Once the testing phase confirmed that the system met all requirements and functioned as intended, AIOS CommerSync was prepared for deployment. The researchers planned the launch, ensuring that the system was installed and accessible to users. This phase also involved training users and providing necessary documentation to facilitate the system's use.

Post-deployment, the researchers engaged in ongoing maintenance to fix any issues that arose and to update the system as needed. Continuous monitoring and feedback collection ensured that the system remained relevant and functional, with periodic updates to enhance its performance and user experience.

3. PRESENTATIONS. DISCUSSION, AND INTERPRETATION OF DATA

3.1. Project Capabilities and Limitations

AIOS CommerceSync Ordering System provided the following capabilities and functions:

1. The system provides a streamlined ordering process by using a cart for multiple product orders. To make things easier for customers, the system also allows for order cancellation and refund.
2. The system displays an update to the user on the progress of their orders, from pending to delivered and completed.
3. The system generates reports with user-friendly interface, enabling administrators to produce reports such as sales and inventory report.
4. The system also contains a function that would cater to on-site clients, allowing over-the-counter

digitalized transactions to be handled immediately through an interface within the system.

5. Administrators can accept and approve transactions like customer orders, refund requests, and survey requests.

The following are the limitations of the ordering system prototype:

1. The company only offers limited geographic range, making the system have limited delivery coverage.
2. AIOS CommerceSync doesn't provide automated scheduling capabilities for surveying the customer's house.
3. The process of scheduling the orders is still manual, potentially leads to delays and inefficiencies.

3.1. Project Evaluation Result

The system's prototype demonstration was evaluated in terms of functionality, security, reliability, compatibility, and usability.

The following is the interpretation for the range of Mean scores gathered from the evaluation answered by its customers and IT professionals.

Table 1

Mean range interpretation scale.

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

Table 2

Evaluation results computation.

INDICATORS	MEAN	DESCRIPTIVE RATING
A. FUNCTIONALITY		
1. The system accurately records and retrieves customer inquiries and orders.	4.68	Strongly Agree
2. The system's interface is user-friendly for browsing products and services.	4.76	Strongly Agree
3. The instructions provided by the system for user registration and authentication are clear.	4.76	Strongly Agree
B. RELIABILITY		
1. The system can handle a high volume of inquiries and orders without data loss.	4.52	Strongly Agree
2. The system has safeguards in place to prevent data loss or unauthorized access.	4.52	Strongly Agree
3. I trust that the system securely stores customer data and maintains accessibility.	4.64	Strongly Agree
C. PERFORMANCE EFFICIENCY		
1. The system processes inquiries and orders quickly.	4.68	Strongly Agree
2. The system notifies staff and customers promptly about inquiry status.	4.64	Strongly Agree
3. The system operates smoothly without causing delays.	4.72	Strongly Agree
D. COMPATIBILITY		
1. The system is adaptable to devices such as computers or laptops.	4.68	Strongly Agree
2. The system can be accessed through different web browsers.	4.72	Strongly Agree
E. USABILITY		
1. The system is simple and navigable, especially for users who lack technical expertise.	4.84	Strongly Agree
2. Users can understand the information options provided by the system.	4.8	Strongly Agree
3. Guidance or help is available when needed.	4.68	Strongly Agree
F. SECURITY		
1. Information is kept private and protected from unauthorized access.	4.68	Strongly Agree
2. Secure login credentials ensure authorized access only.	4.68	Strongly Agree
3. The system complies with privacy regulations to safeguard personal information.	4.8	Strongly Agree
G. MAINTAINABILITY		
1. Perception of the system being designed to receive regular updates and improvements to meet business needs.	4.64	Strongly Agree

2. The system can effectively meet dynamic customer requirements.		Strongly Agree
	4.64	
OVERALL	4.68	Strongly Agree

Table 2 shows how the researchers computed the mean range for the evaluation. The overall mean of 4.68 shows that a many of the respondents "Strongly Agree" with the performance when it comes to the AIOS system prototype.

4. SUMMARY OF FINDINGS CONCLUSION AND RECOMMENDATIONS

4.1. Summary of Findings

The researchers conducted a survey with 25 users in different perspectives of (10) IT Professionals and (15) Business Related Customers, to assess the strengths, weaknesses, and potential of the system. The listed findings from the evaluation used to measure the capabilities of the AIOS system prototype.

First, the functionality, reliability, and performance efficiency part of the AIOS prototype all resulted with the descriptive rate of Strongly agree, meaning that, there are minimal improvements to be made in terms of the system's functions, how it handled multiple user interactions, and how fast the system can process the inputs made by the user. Consistently, the performance of the system's compatibility, usability, security, and maintainability also appears to satisfy the users, giving them all "Strongly Agree" descriptive interpretation, which means small improvements are needed to further improve the user's experience when using the system.

4.2. Conclusion

In being assessed of the objectives of the study, the subsequent conclusions were reached upon completion of the testing the prototype and assessment.

1. The AIOS system has the potential to further boost the user experience when it comes to ordering, managing user's orders, and providing necessary reports to help the owner in decision making.
2. Offered an efficient and optimal ordering system to help both customer purchasing products and aid the owner in managing their business.
3. Enhanced user experience by providing more user-friendly interface making the ordering smoother and more efficient.

4.3. Recommendations

Based on the conclusion and results of the evaluation of the study's prototype, the following recommendations for AIOS ordering system:

1. To further enhance the system's value and impact, widening the scope of delivery service available to the user will help the system attract more customers.
2. Optimizing the process of refund function instead of creating a function for it, implementing an API for this will make it efficient and optimal.
3. It is recommended to implement a feature where the user can give their insight about the product they've ordered or their experience using the system. Which will help the to further improve the quality of service the system can give.

5. REFERENCES

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