

## Nurdaya Craft Shop (Online Store System)

Muhammad Haqimi Harun<sup>1</sup>, Nur Liyana Sulaiman<sup>1\*</sup>

<sup>1</sup> *Fakulti Sains Komputer dan Teknologi Maklumat,*

*Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, 86400, MALAYSIA*

\*Corresponding Author: [nrliyana@uthm.edu.my](mailto:nrliyana@uthm.edu.my)

DOI: <https://doi.org/10.30880/aitcs.2025.06.01.067>

### Article Info

Received: 30 July 2024

Accepted: 18 June 2025

Available online: 30 June 2025

### Keywords

Nurdaya Craft Shop, Management,  
UAT, Craft and Gift

### Abstract

This project addresses the development of the Nurdaya Craft Shop Online Store System (NCS Online Store), which addresses a critical business need for Nurdaya Craft, a Malaysian handcrafted and gift item firm, by transitioning from an inefficient order process reliant on WhatsApp to a dedicated e-commerce platform. The objectives are to design the NCS Online Store based on an object-oriented approach, to develop a web-based NCS Online Store System, and to test using alpha and beta testing on the NCS Online Store System. By utilising an incremental prototyping methodology, Figma and Visual Studio were employed. During testing, the overall test result of the test cases was 97.22% pass and only 2.78% fail. Alpha testing achieved a 100% pass rate, and beta testing achieved 69.22% positive values. Continuous improvements based on user feedback and technological advancements are crucial to maintaining the platform's competitiveness in the e-commerce landscape.

## 1. Introduction

Nurdaya's Craft Shop (NCS) is a registered company specializing in handcrafted products and customized designs. NCS has been facing challenges in reaching and engaging potential customers, primarily due to the diminishing impact of social media platforms like Facebook and Instagram [1]. Situated in Pasir Puteh, Kelantan, the company currently depends on social media platforms to reach customers; however, its efficacy has diminished over time. The identified issues include an unorganized order information system, reliance on WhatsApp for customer communication, and a lack of transaction data storage, all of which hinder efficient order management, product promotion, and informed decision-making.

The objectives of the proposed NCS Online Store System are outlined to address these challenges. There are three key objectives: designing the system using an object-oriented approach, developing a user-friendly web-based application, and implementing alpha and beta testing for system validation. The project scope encompasses the development of a web-based application catering to Malaysian crafters as the primary customer base. The system includes modules for user registration, administration, product management, product browsing, online payment, real-time data inventory, stock inventory, AI chatbot, pickup system, and instant advertising.

The result of the project was six modules of NCS Online Store system aims to enhance product management, customer engagement, and transaction tracking, ultimately improving the overall customer experience, increasing sales, and streamlining organizational efficiency. The significance of the project lies in its ability to address NCS's challenges, provide solutions to the unorganized order system, improve customer convenience, expand the customer base, and serve as a model for similar businesses [2].

## 2. Related Work

In this section, we delve into the literature review for the NCS Online Store, covering the domain background, the transition from physical to digital store systems, online craft, gift, and souvenir store website development, the integration of modern technology in online store systems, the study of NCS gift and souvenir manual shop system processes, and a comparative analysis between the developed online store system and four existing systems.

## 2.1 NCS Domain Background

Nurdaya's Craft Shop (NCS), located in Pasir Puteh, Kelantan, specializes in handcrafted products and customized designs. Operating primarily through social media platforms like Facebook, Instagram, and WhatsApp, NCS faces challenges with manual order management and lacks a system for tracking transactions and customer information. To address these limitations and enhance customer engagement, NCS aims to transition to an online store website. This shift is intended to offer a broader customer base the convenience of online shopping while retaining the charm of the traditional store. The proposed online store system includes modules for user registration, product management, online payment, and an AI chatbot for customer support. The transition is anticipated to improve the overall customer experience and facilitate better business decision-making through data tracking and analysis.

## 2.2 Digital Transformation for Shop System

The shift from traditional physical store systems to digital ones is crucial for businesses, emphasizing the importance of seamless integration between online and physical channels. This transition is a strategic response to changing consumer preferences in the digital age, aiming for increased visibility, engagement, and sales in the online marketplace [3]. For NCS Online Store, embracing digital transformation aligns with modern marketing management strategies, providing access to real-time consumer data for more informed decision-making [4]. The proposed online store system for NCS was developed using HTML, CSS, JavaScript, and PHP, representing a combination of languages perfect for web-based system development.

HTML, as a standard hypertext language, has evolved with HTML5, offering more agile and lean approaches for incorporating user ideas into standardization procedures [5]. CSS serves to separate display from content, allowing customization of websites through layout, color, and typeface, but its complexity requires standards for measurement and control [6]. JavaScript, a scripting language, interfaces with web browser features, enabling real-time modifications to web applications, and is widely used in designing internet apps [7]. PHP, a server-side scripting language, designed for the web, allows developers to add dynamic elements to HTML pages, executing each time the page is visited [8].

## 2.3 Comparative Analysis

This section provides a comparative analysis of four existing applications which are JV Craft and Gift [9], Pro Art Craft [10], BubbleGifts.Com [11], and Giftr [12]. Table 1 shows the comparison between the four existing systems and the proposed system. The compared features include user registration, administration, product management, product browsing, online payment, real-time data inventory, stock inventory, AI chat Box, pickup module, and instant advertising.

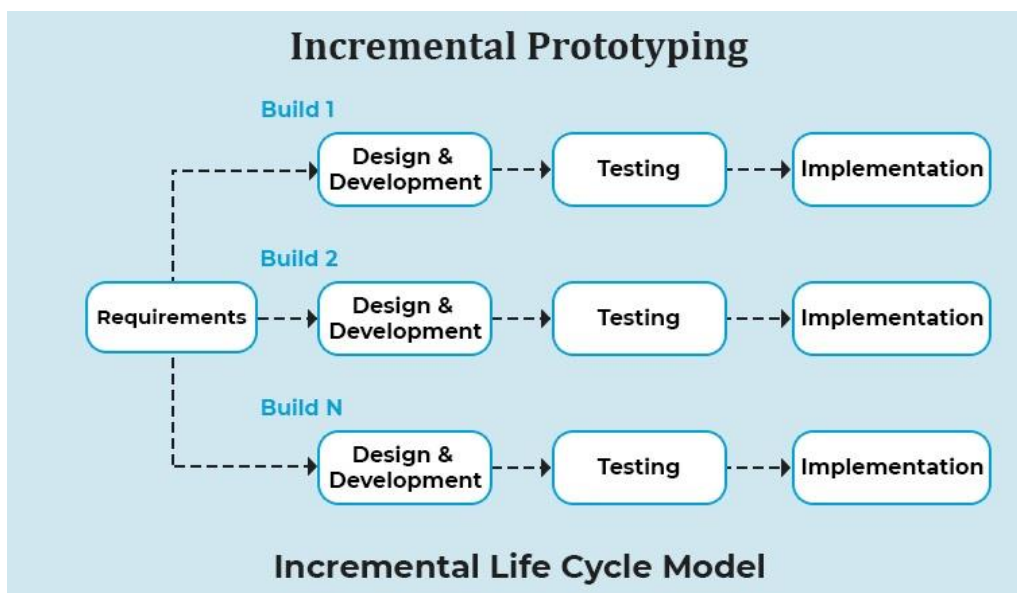
**Table 1:** System's Comparison

Features/System	JV Craft and Gift	Pro Art Craft	BubbleGifts.Com	Giftr	NCS Online Store
User Registration	Yes	No	No	Yes	Yes
Administration	Yes	No	No	Yes	Yes
Product Management	Yes	Yes	Yes	Yes	Yes
Product Browsing	Yes	No	Yes	Yes	Yes
Online Payment	Yes	No	No	Yes	Yes
Realtime Data Inventory	Yes	No	No	Yes	Yes
Ai Chat Box	No	No	No	Yes	Yes
Pickup Module	No	No	No	No	Yes
Instant Advertising	No	No	No	No	Yes

In summary, the proposed NCS system is meticulously designed to be comprehensive, addressing fundamental aspects of user interaction and operational efficiency. By utilizing Giftr's cooperative platform for independent vendors, The NCS Online Store aims to expand the variety of its product catalogue, provide a vibrant marketplace, and enhance the overall shopping experience. The incorporation of advanced features aligns with modern online store standards, aiming to create a versatile and competitive platform in the digital retail landscape.

### 3. Methodology

The process model used for the Nurdaya Craft Online Store (NCS) is the incremental prototype methodology. The significance of prototyping lies in its ability to enable early observation and evaluation of the product's nature, fostering refinement and improvement. In this context, the chosen prototype methodology aligns with the incremental prototyping approach, where the software system is developed in progressively more sophisticated phases or increments.



**Fig. 1** Incremental Prototyping Methodology

The development of the Nurdaya Craft Online Store (NCS) began with a planning phase where a feasibility study assessed project viability, and stakeholder consultations, particularly with the owner, helped define objectives, goals, and system scope. The requirement analysis phase followed, focusing on gathering and understanding the system's needs through collaborative sessions with stakeholders, carefully documenting functional and non-functional requirements to guide the design and implementation.

In the quick design phase, the requirements were swiftly translated into a system prototype, creating basic structures and interfaces to facilitate feedback. This led to the prototype development phase, where essential features and functionalities were implemented using HTML, CSS, JavaScript, and PHP, allowing stakeholders to interact with a working version of the store. During the user evaluation phase, stakeholders, including vendors and buyers, tested the prototype, providing valuable feedback on usability and functionality, which informed the refinement phase. Here, the system was iteratively improved based on user insights, ensuring responsiveness, a user-friendly interface, and overall reliability. Finally, the implementation phase focused on applying user-assessed improvements, conducting extensive testing, and preparing the system for deployment. Detailed documentation and training sessions ensured stakeholders were well-acquainted with the NCS interface and functions, resulting in a successful implementation that aligns with Nurdaya Craft's vision and fulfils the project's objectives.

### 3.1 System Requirements Analysis

In this section, user requirements, functional requirements, and non-functional requirements will be presented and discussed. The system requirement analysis addresses the specific functionalities to be implemented in the proposed system. Table 2 shows the functional requirements of the proposed system. Lastly, table 3 shows the non-functional requirements of the proposed system.

**Table 2** *Functional requirements*

Modules	Requirements
1. User Registration	Ensure that only registered users can access the available services or features in the application. Provide a safe and trusted environment.
2. Administration	Provide functionalities for system administrators to manage user accounts, monitor transactions, and ensure the overall integrity of the system.
3. Product Management	Assist sellers in adding, editing, and deleting product listings, managing inventory, and setting pricing.
4. Product Management	Designed to provide customers with a user-friendly interface to search, view, and filter products.
5. Online Payment	Facilitating secure online transactions. Integrate with various payment gateways to process payments, manage refunds, and ensure transaction security.
6. Realtime Data Inventory	Automate the process of fetching product information from a physical store and updating it on the web-based system, ensuring data consistency.
7. Ai Chat Box	Enhance the user experience by providing real-time customer support and assistance.
8. Pickup System	Essential for enabling customers to choose and schedule a convenient pickup option for their orders
9. Instant Advertising	Simplifies the process of creating advertisements with the help of AI and posting them for sellers on Facebook, X(Twitter), etc.

**Table 3** *Non-functional requirements of the proposed system*

Modules	Requirements
1. Security	The system should ensure secure user registration and authentication processes to protect user information. The password must be in eight characters with a combination of alphabet and number.
2. Performance	The system should be responsive, providing quick and efficient interactions for users during product browsing, payment processing, and other critical tasks.
3. Usability	The user interfaces for user registration, product browsing, and other features should be intuitive and user-friendly. The Ai Chat Box should provide accurate and helpful responses, enhancing the overall user experience.
4. Integrity	The password stored in the database should be encrypted

### 3.2 Use Case Diagram

Fig. 2 shows the use case diagram of the proposed system. It consists of seven modules which are login, manage product, manage order information, make online payment, manage shipping, manage real-time data inventory, and lastly manage stock inventory. Customers and sellers can safely authenticate and access their accounts through the login use case. Sellers utilize the login feature for account administration and authentication, while customers utilize it to access their personalized information.

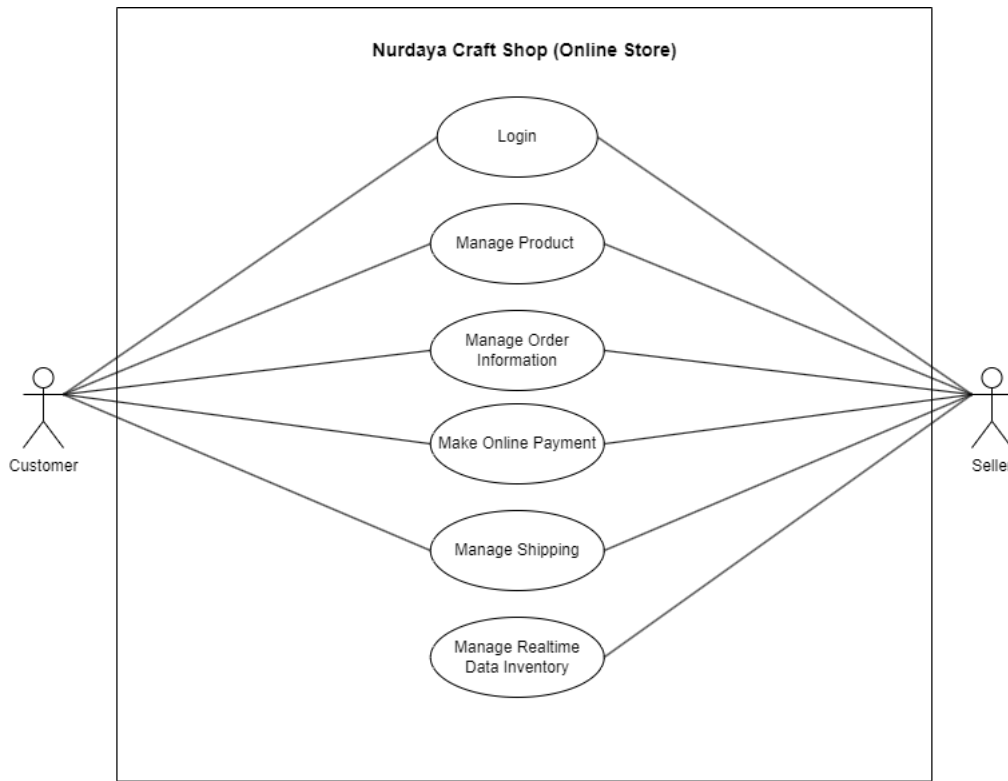


Fig. 2 Use Case Diagram

### 3.3 Sequence Diagram

Fig. 3 shows the managed real-time data inventory module sequence diagram, which is one of the main functions of this system. The sequence diagram illustrates the workflow for managing and viewing product information within the system. Initially, a user interacts with the "Manage product page" to either manage or view product details. The "Manage product page" serves as the interface where users can input or edit product information. This managed information is then forwarded to the "Product Manager Controller," which processes the data and prepares it for storage. Subsequently, the "Product Manager Controller" sends the processed information to the "Database," where it is saved. Once the information is saved in the database, it is automatically updated and made available on the "View Product page." This updated product information is then displayed on the "View Product page" for customers to view. The sequence ensures that any management actions taken by the user are accurately reflected in the product information accessible to customers.

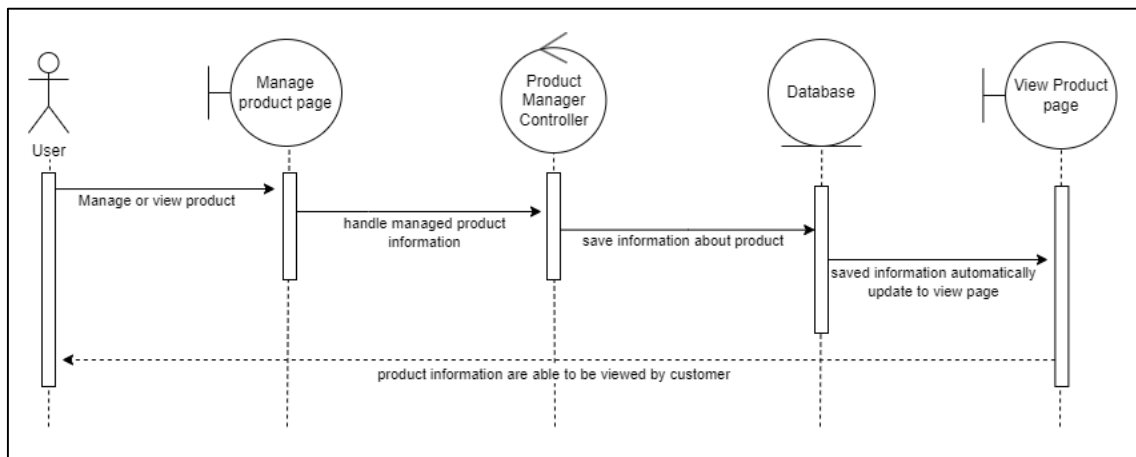


Fig 3. Sequence Diagram of Manage Realtime Data Inventory Module

### 3.4 Class Diagram

The class diagram, illustrated in Fig 4, serves as a visual representation of the UML metamodel, encompassing its concepts, relationships, and constraints. There are 16 classes conveying the structure aspects of NCS Online Store.

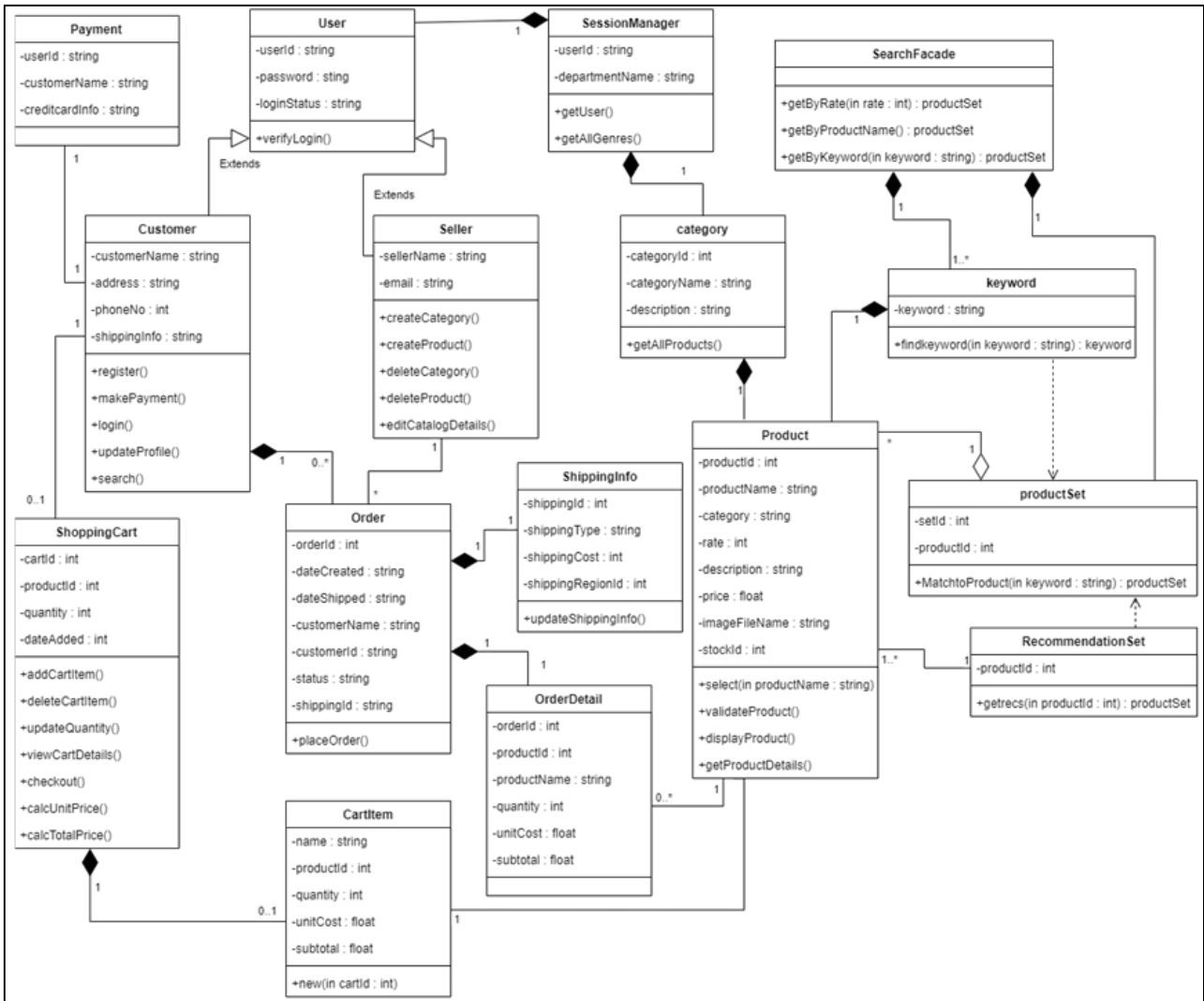


Fig. 4 Class Diagram

### 3.5 General System Architecture

The MVC system architecture of the NCS (Online Store) applied as the system is web-based and deployed on the web servers. Model, View, and Controller (MVC) is a software architecture design pattern that divides an application into these three primary parts. The relationship between these 3 components can be seen in Fig. 5.

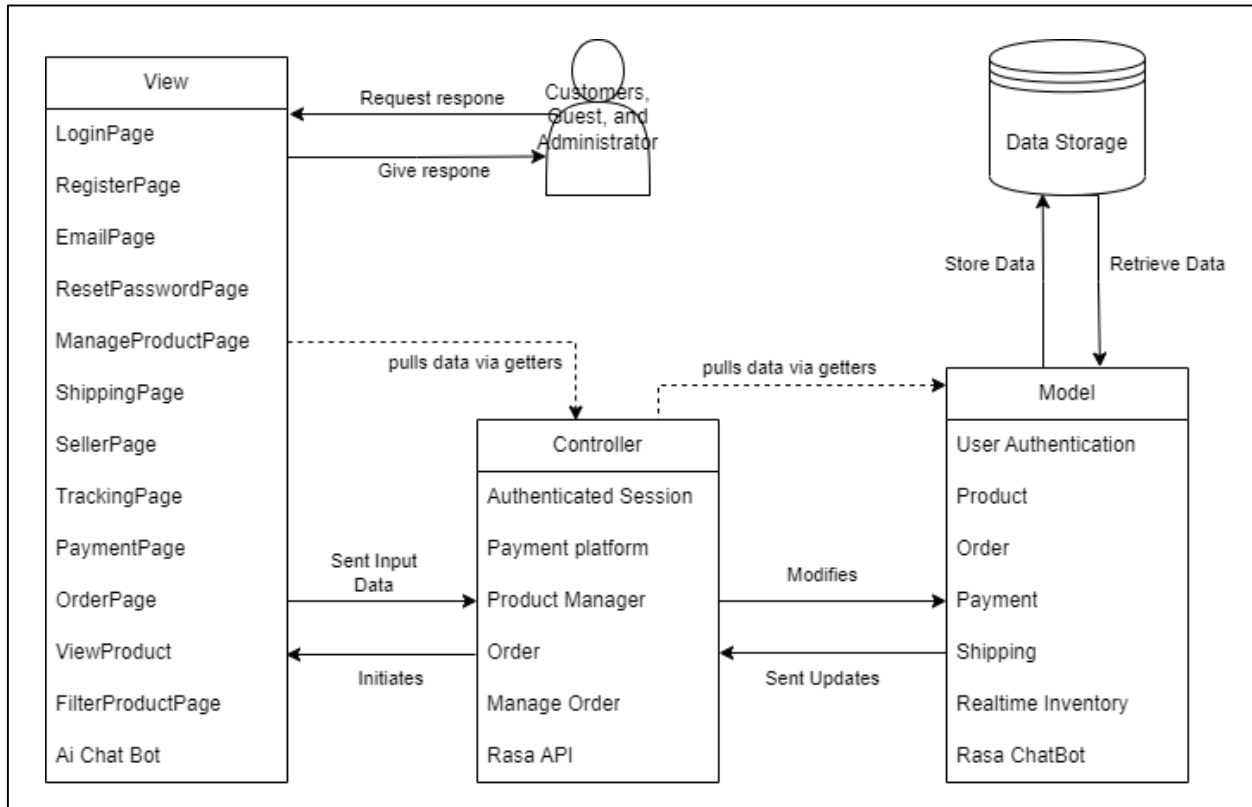


Fig. 5 MVC Architecture Diagram

### 3.6 Interface Design

In this section, the wireframe for the Manage Product interface created using Figma, illustrates the design of the prototype. The wireframes serve as a visual representation, detailing the layout and user interaction elements that make up the "Manage Product" interface. Fig. 6 shows the wireframe of the Manage Product.

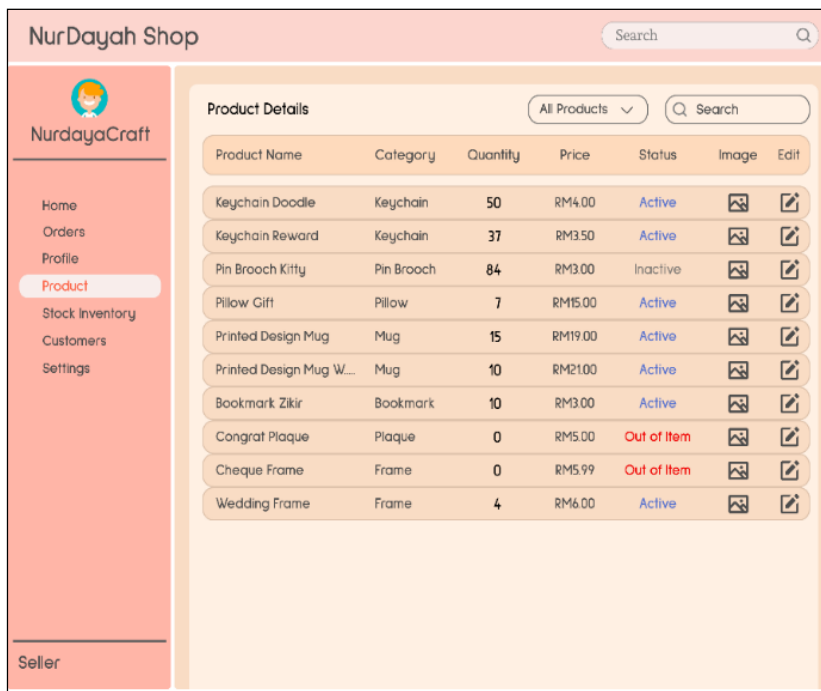


Fig. 6 Manage Product Interface

## 4. Result and Discussion

In this section, testing was conducted to assess the functionality of each module, encompassing the requirement traceability matrix testing and both alpha and beta testing phases. The results of these tests yield valuable insights into the system's performance and usability, guiding further refinement and improvement efforts.

### 4.1.1 User Register Module

This module manages the user sign-up process, ensuring that only registered users can access platform services. It includes robust validation to prevent duplicate accounts and invalid data. By maintaining a secure and accurate database of user information, it fosters a safe and reliable environment for both buyers and sellers on the platform. Refer to Fig 7 for the source code and the user interface of the user register module.

```

if( empty($_POST['cust_password']) || empty($_POST['cust_re_password']) ) {
    $valid = 0;
    $error_message .= LANG_VALUE_138."<br>";
}

if( !empty($_POST['cust_password']) && !empty($_POST['cust_re_password']) ) {
    if($_POST['cust_password'] != $_POST['cust_re_password']) {
        $valid = 0;
        $error_message .= LANG_VALUE_139."<br>";
    }
}

if($valid == 1) {
    $token = md5(time());
    $cust_datetime = date('Y-m-d h:i:s');
    $cust_timestamp = time();

    // saving into the database
    $statement = $pdo->prepare("INSERT INTO tbl_customer (
        cust_name,
        cust_cname,
        cust_email,
        cust_phone,
    ");

```

(a)

(b)

Fig. 7 User Register Module (a) Account Registration Source Code (b) Register New User Interface

### 4.1.2 Administration Module

This module empowers system administrators with the tools to manage user accounts, oversee transactions, and ensure compliance with platform policies. Administrators can perform tasks such as approving or suspending accounts, monitoring user activities, and generating reports. This oversight is crucial for maintaining system integrity and operational efficiency.

```

<?php
$statement = $pdo->prepare("SELECT * FROM tbl_top_category");
$statement->execute();
$total_top_category = $statement->rowCount();

$statement = $pdo->prepare("SELECT * FROM tbl_mid_category");
$statement->execute();
$total_mid_category = $statement->rowCount();

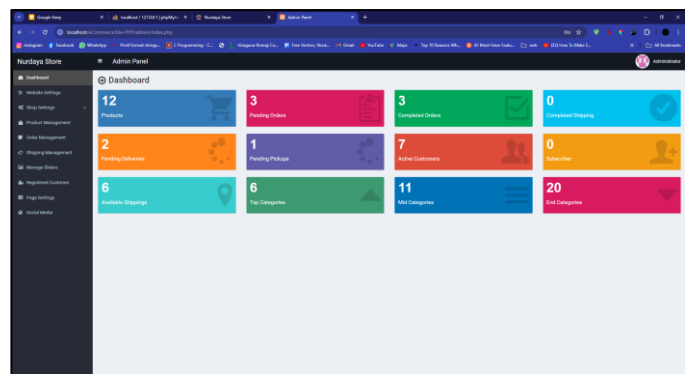
$statement = $pdo->prepare("SELECT * FROM tbl_end_category");
$statement->execute();
$total_end_category = $statement->rowCount();

$statement = $pdo->prepare("SELECT * FROM tbl_product");
$statement->execute();
$total_product = $statement->rowCount();

$statement = $pdo->prepare("SELECT * FROM tbl_customer WHERE cust_status='1'");
$statement->execute();
$total_customers = $statement->rowCount();

```

(a)



(b)

Fig. 8 Administration Module (a) Administration Source Code (b) Administration User Interface

### 4.1.3 Product Management Module

Designed for sellers, this module facilitates the efficient management of product listings. Sellers can add, update, and remove products, manage inventory levels, and set pricing. This streamlined process helps sellers keep their offerings up-to-date and ensures that customers have access to accurate product information, enhancing the overall shopping experience.



**Fig. 11** Make Online Payment Module (a) Make Online Payment Source Code (b) Make Online Payment User Interface

### 4.1.6 Realtime Data Inventory Module

This module automates the synchronization of product information between physical stores and the online platform. It ensures that inventory data is consistently updated in real time, reducing discrepancies and enhancing accuracy. This integration is vital for maintaining reliable stock information and improving overall inventory management.



**Fig. 12** Realtime Data Inventory Module (a) Realtime Data Inventory Source Code (b) Realtime Data Inventory User Interface

### 4.1.7 AI Chat Box Module

Enhancing user experience, this module provides real-time customer support through AI technology using the Rasa open sources. It assists customers with inquiries, troubleshooting, and product recommendations. By offering instant, 24/7 support, the AI Chat Box increases customer engagement and satisfaction and reduces the workload on human support staff.



**Fig. 13** AI Chat Box Module (a) AI Chat Box Source Code (b) AI Chat Box User Interface

### 4.1.8 Pickup System Module

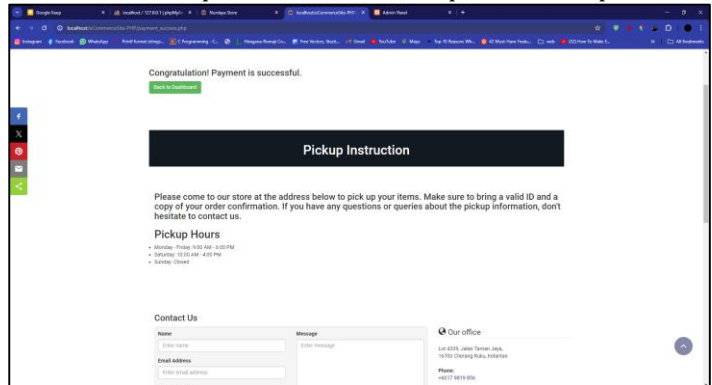
This module allows customers to select and schedule convenient pickup options for their orders. It integrates with the inventory system to ensure that products are available at the chosen pickup location and time. This feature adds flexibility to the delivery process and caters to customers who prefer to collect their purchases in person.

```

<?php if ($shipping_status == 'Pending Pickup'): >
  <div class="page">
    <div class="container">
      <div class="row">
        <div class="col-md-12">
          <?php require_once('pickup.php'); >
        </div>
      </div>
    </div>
  </div>
<?php endif; >

```

(a)



(b)

Fig. 14 Pickup System Module (a) Pickup System Source Code (b) Pickup System User Interface

### 4.1.9 Instant Advertising Module

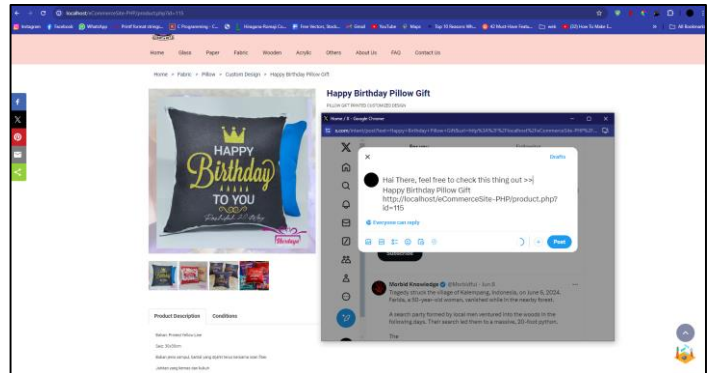
This module allows customers to select and schedule convenient pickup options for their orders. It integrates with the inventory system to ensure that products are available at the chosen pickup location and time. This feature adds flexibility to the delivery process and caters to customers who prefer to collect their purchases in person.

```

//Share
<div class="share">
  Share this Product on:
  <div class="sharethis-inline-share-buttons st-left st-has-labels st-inline-share-buttons st-animatd" id="st-1">
    
    <span class="st-label">Share />
  </div>
  <div class="st-btn" data-network="twitter" style="display: inline-block;">
    
    <span class="st-label">Tweet />
  </div>
  <div class="st-btn" data-network="pinterest" style="display: inline-block;">
    
    <span class="st-label">Pin />
  </div>
  <div class="st-btn" data-network="email" style="display: inline-block;">
    
    <span class="st-label">Email />
  </div>
  <div class="st-btn st-last" data-network="sharethis" style="display: inline-block;">
    
    <span class="st-label">Share />
  </div>
</div>

```

(a)



(b)

Fig. 15 Instant Advertising Module (a) Instant Advertising Source Code (b) Instant Advertising User Interface

### 4.2 Functional Testing

Table 5 outlines six test cases for all system modules, aiming to verify the functionality of key modules. The Login Module ensures secure user access, while the Manage Product Module focuses on product management, including addition, update, and deletion. The Manage Order Information Module handles order processing, status updates, and cancellations or returns. The Make Online Payment Module facilitates secure transactions, and the Manage Shipping Module oversees logistics. Lastly, the Manage Realtime Data Inventory Module maintains accurate inventory data. These tests ensure the system effectively manages user access, product information, order processing, payments, shipping, and inventory.

**Table 5:** Requirement Traceability Matrix Testing

Test Cases ID	Requirement ID	Description	Status
TC_100	REQ_100	<b>Login</b>	
TC_100_01	REQ_101	The user must be able to log in to the system.	PASS
TC_100_02	REQ_102	Users should input their user ID and password into the system.	PASS
TC_100_03	REQ_103	The system must efficiently confirm the validity of entered usernames and passwords.	PASS
TC_100_04	REQ_104	In case of an invalid user ID or password, the system must display a clear error message.	PASS
TC_100_05	REQ_105	If the username and password are incorrect, the system will not permit login.	PASS
TC_200	REQ_200	<b>Manage Product</b>	
TC_200_01	REQ_201	Sellers must be able to add, edit, and delete product listings.	PASS
TC_200_02	REQ_202	The system must validate, and store updated product information.	PASS
TC_200_03	REQ_203	Customers should be able to view and filter product listings by searching for closely related words.	PASS
TC_200_04	REQ_204	Sellers should be able to advertise their items on social media.	PASS
TC_200_05	REQ_205	Invalid product information should result in an error message, preventing incorrect data from being stored.	PASS
TC_200_06	REQ_206	The seller must be logged in to view, add, update, and delete products and promotions.	PASS
TC_300	REQ_300	<b>Manage Order Information</b>	
TC_300_01	REQ_301	The order page will be displayed by the system depending on the user (admin or customer).	PASS
TC_300_02	REQ_302	The user may be able to place orders via the system.	PASS
TC_300_03	REQ_303	The system must enable customers to add items to carts and finish the checkout process.	PASS
TC_300_04	REQ_304	In the event of any additions or deletions, the system shall display an updated cart.	PASS
TC_300_05	REQ_305	Customers should be able to choose the "Pickup at Store" option.	PASS
TC_300_06	REQ_306	Sellers should be notified when a customer chooses the "Pickup at Store" option, and they need to prepare the items for pickup.	PASS
TC_300_07	REQ_307	The system must enable the owner to monitor and manage confirmed, in-process, delivered, and pending orders.	PASS
TC_300_08	REQ_308	Before allowing the customer to advance to checkout, the system must verify that all required fields have been filled out.	PASS
TC_300_09	REQ_309	The system must enable the seller to view and change the order status.	PASS
TC_400	REQ_400	<b>Make Online Payment</b>	
TC_400_01	REQ_401	The system shows items in the basket, including products that were chosen and the total cost.	PASS
TC_400_02	REQ_402	The system must let the user choose their preferred mode of payment.	PASS
TC_400_03	REQ_403	If payment information is verified, the system will give the user a confirmation message.	PASS
TC_400_04	REQ_404	The user may be able to remove the product in the system.	PASS
TC_400_05	REQ_405	A transaction receipt will be sent by the system to the user's registered email address.	PASS
TC_400_06	REQ_406	Before allowing the user to submit, the system must confirm that all of the required fields on the payment form are filled out.	PASS
TC_500	REQ_500	<b>Manage Shipping</b>	
TC_500_01	REQ_501	Sellers must be able to generate shipping labels for orders.	PASS
TC_500_02	REQ_502	The system must update the shipping status and provide tracking information to customers.	PASS
TC_500_03	REQ_503	Courier service integration should be set up for seamless communication.	FAIL
TC_500_04	REQ_504	Sellers should be notified of any errors during the shipping process.	PASS

**Table 5: cont**

TC_500_05	REQ_505	Customers should have the option to choose pickup at the store.	PASS
TC_500_06	REQ_506	Customers opting for pickup should be notified when their items are ready for pickup	PASS
TC_600	REQ_600	<b>Manage Realtime Data Inventory</b>	
TC_600_01	REQ_601	Sellers must be able to update real-time inventory data.	PASS
TC_600_02	REQ_602	The system must validate and ensure the consistency of updated product information.	PASS
TC_600_03	REQ_603	Updated product information must be reflected on the web-based system in real time.	PASS
TC_600_04	REQ_604	Sellers should be able to cancel an update before finalizing the changes.	PASS

### 4.2.1 Summary Test Case Result

As all the test cases have been conducted during the testing phase, the full result has been obtained and will be shown in Table 6.

**Table 6: Overall test case result**

Test Case	Module	Total Test Case	Total Success	Total Failed
TC_100	Login	5	5	-
TC_200	Manage Product	6	6	-
TC_300	Manage Order Information	9	9	-
TC_400	Make Online Payment	6	6	-
TC_500	Manage Shipping	6	5	1
TC_600	Manage Realtime Data Inventory	4	4	-
	<b>Total</b>	36	35	1
	<b>Total Percentage (%)</b>	100	<b>97.22</b>	2.78

One test case in TC\_500, which corresponds to one of the requirements in module Manage Shipping was the only one to fail when the total test results for the system's six modules were examined. *“The courier service integration should be set up for seamless communication.”* The reason for the failure was likely due to the lack of access to a realistic test environment or educational resources for API integration with courier services. Overall, the system achieved a success rate of approximately **97.22%**, with only one test case failure accounting for **2.78%**.

### 4.3 User Acceptance Testing

User Acceptance Testing (UAT) is a critical phase in the software development life cycle where stakeholders or end-users evaluate the system to determine whether it meets their requirements and expectations. It serves as the final verification before the system is released for production use. During UAT, stakeholders interact with the system to validate its functionality, usability, and overall suitability for their needs, while customers or users provide feedback on their experience to ensure the system meets real-world requirements. This comprehensive approach helps identify any discrepancies between the system's performance and user expectations, allowing for necessary adjustments before the final release.

#### 4.3.1 Alpha Testing

Alpha testing is an essential phase of User Acceptance Testing (UAT) conducted in a controlled environment by the development team and selected stakeholders. The primary goal is to validate the system's functionality and ensure it meets the specified requirements before it is released to a broader audience. Table 7 presents a summary of the alpha testing conducted by stakeholders.

**Table 7:** Summary of alpha testing

No	Acceptance Criteria Module Covered	Test Result	Pass Percentage (%)
1	Registration Process	PASS	100
2	Product Management and Navigation	PASS	100
3	Transaction Process	PASS	100
4	Product Information and Inventory Management	PASS	100
5	Chat Box Assistance	PASS	100
6	Order Pickup Management	PASS	100
7	System Performance	PASS	100
8	Overall Usability and Functionality	PASS	100
<b>Total Pass Percentage</b>			<b>100</b>

Therefore, based on the summary in Table 7, the alpha testing achieved a 100% pass rate, as confirmed by the stakeholder, Nurul Hidayah Binti Harun, the owner of the NCS Online Store. The user acceptance testing form is attached in Appendix A.

### 4.3.2 Beta Testing

Beta testing follows alpha testing and involves a select group of external users testing the system in a real-world environment. The main goal is to gather feedback on usability, performance, and overall user experience. This phase helps identify issues not discovered during alpha testing, ensuring the system is ready for broader release. Refer to Appendix B for the bar chart illustrating these findings. The detailed breakdown of positive aspects and areas for improvement, as expressed by participants, is summarized in Table 8 below.

**Table 8:** Positive Value Analysis

Question	Positive Value	Total Value Score	Percentage (%)
1	46	50	92
2	21	50	42
3	34	50	68
4	28	50	56
5	41	50	82
6	27	50	54
7	41	50	82
8	48	50	96
9	26	50	52
<b>Total</b>			<b>69.33</b>

During beta testing, 10 users, representing typical end-users of the NCS Online Store, provided valuable insights for verifying 9 questions. They appreciated aspects like the selection of handcrafted items, business-aligned design, and the chatbot functionality. However, they suggested enhancements for the user interface and navigation guidance. Results were positive: nine out of ten participants found the website easy to learn, eight out of ten felt confident using it, and eight out of ten noted a minimal learning curve. As for the positive value analysis provided, the overall percentage can be determined by the total of all positive values over the total of all value scores which answer **69.33%**. This suggests that the system generally performed well in terms of user satisfaction and usability, indicating a strong foundation for its potential success. In addition to the usability scale questionnaire, users provided qualitative feedback in the comment section during beta testing. This offered deeper insights into their experiences, highlighting pain points, suggestions for improvement, and system strengths.

**Table 9:** User's Comments Section

No.	Comments for the Website	Interpreted Result
1	Users appreciated the variety and quality of handcrafted items available.	Strengths
2	Users felt that the design of the website was appropriate and aligned well with the business type.	Strengths
3	The AI chatbot was specifically mentioned as a beneficial feature.	Strengths
4	Users suggested that the user interface could be improved.	Areas for Improvement
5	Users pointed out issues related to guidance within the website.	Areas for Improvement

Table 9 shows the comments provided by users in the last section of the questionnaire highlighting both strengths and areas for improvement within the NCS Online Store System. Users expressed appreciation for several aspects of the system, including the selection of handcrafted items, the design alignment with the business type, and the implementation of certain functions like the AI chatbot. However, users also provided suggestions for enhancing

the system, particularly in improving the user interface and addressing any issues related to guidance within the website.

## 5. Conclusion

The objectives of this system are outlined, starting with the successful accomplishment of designing the system based on an object-oriented approach, developing the web-based platform for the NCS Online Store, and conducting alpha and beta testing on the system. The first objective was achieved by identifying entities, defining classes and their attributes and methods, establishing relationships between classes, and documenting the system structure using diagrams and tables. This approach ensures modularity, reusability, and maintainability of the codebase, aligning with object-oriented design principles. The second objective was achieved through modern web development technologies like PHP for server-side scripting, MySQL for data storage, XAMPP as the local development environment, and the integration of Rasa Open-Source AI Trainer. This created a robust and scalable web application for user interactions, product management, order processing, and payment transactions, expanding Nurdaya Craft's market reach. The third objective was achieved by applying functional testing, alpha testing with stakeholders, and beta testing with 10 users using the usability scales. These tests validated the system's functionality, stakeholder satisfaction, and usability, ensuring the system's readiness for deployment.

The implementation of the NCS Online Store System offers several significant advantages that enhance both operational efficiency and customer satisfaction, including improved order management, a comprehensive transaction database, efficient financial management, market reach expansion, and efficient inventory management. Despite these benefits, there are limitations such as the lack of advanced analytics and reporting tools, mobile platform integration, and challenges in handling a large volume of concurrent users and transactions. To address these limitations, future improvements could include integrating advanced analytics and reporting tools, expanding the system to include mobile platform integration, and implementing load balancing to ensure smooth operation during periods of high user traffic. In summary, the NCS Online Store System has successfully enhanced Nurdaya Craft's operational efficiency and customer satisfaction, addressing many of the company's initial challenges. While there are some limitations, the project has laid a strong foundation for future improvements, ensuring the system's continued growth and success. By focusing on future enhancements, such as advanced analytics, mobile integration, and load balancing, the NCS Online Store System was well-equipped to support Nurdaya Craft's expanding business needs. Overall, the system offers a solid foundation for more efficient and secure management, paving the way for future growth and success.

## Acknowledgment

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia for its support.

## Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

## Author Contribution

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

## References

- [1] Nault, B., & Rahman, M. (2018). Proximity to a Traditional Physical Store: The Effects of Mitigating Online Disutility Costs. *Economics of Networks eJournal*.  
[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3361217](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3361217).
- [2] Rajagopalan, B., & Deshmukh, A. (2005). ISSUES AND ADVANCES IN B2C RESEARCH. *Journal of Electronic Commerce Research*, 6, 75.
- [3] Kleinlercher, K., Emrich, O., Herhausen, D., Verhoef, P., & Rudolph, T. (2018). Websites as Information Hubs: How Informational Channel Integration and Shopping Benefit Density Interact in Steering Customers to the Physical Store. *Journal of the Association for Consumer Research*, 3, 330 - 342.  
<https://www.journals.uchicago.edu/doi/10.1086/698415>.
- [4] Rathore, B. (2019, November). Exploring the impact of digital transformation on marketing management ... Exploring the Impact of Digital Transformation on Marketing Management Strategies.  
[https://www.researchgate.net/publication/372448833\\_Exploring\\_the\\_Impact\\_of\\_Digital\\_Transformation\\_on\\_Marketing\\_Management\\_Strategies](https://www.researchgate.net/publication/372448833_Exploring_the_Impact_of_Digital_Transformation_on_Marketing_Management_Strategies).
- [5] British Standards Institution (2021). What is a Management System?. Retrieved on November 19, 2022, from <https://www.bsigroup.com/en-AU/About-BSI/FAQs/What-is-a-Management-System/>.

- [6] Mazinianian, D., & Tsantalis, N. (2016) An empirical study on the use of CSS preprocessors. In 2016 IEEE 23rd International Conference on Software Analysis, Evolution, and Reengineering (SANER), Vol. 1, pp168-178.
- [7] Oracle (2022). Java.com: Java + You. . Retrieved on November 19, 2022, from <https://www.java.com/>.
- [8] L. Welling and L. Thomson, PHP and MySQL Web Development. Addison- Wesley, 2017.
- [9] JV Craft & Gifts - barang perkahwinan & home decor. (n.d.). <https://www.jvcraftandgifts.com/>
- [10] Admin. (n.d.). PROAKTIF MEDIA SDN BHD – Laser Engraving premium gift supplier Selangor Malaysia. <https://proartcraft.com.my/>
- [11] BubbleGifts.com. (n.d.). Customised unique Corporate Promotional Gifts supplier Malaysia. <https://www.bubblegifts.com/>
- [12] *Giftr | Malaysia's leading online gift shop.* (n.d.). Giftr - Malaysia's Leading Online Gift Shop. <https://giftr.my/>

**APPENDIX A**

**User Acceptance Testing (Alpha Testing)**

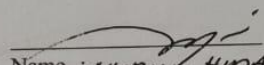
**User Acceptance Testing (UAT): Nurdaya Craft Shop (Online Store)**

System Admin User: Mrs Nurul Hidayah Harun  
 Business Name: Nurdaya Craft And Gift Store  
 Position: Owner

No	Acceptance Criteria	Test Result		Comment
		Pass	Fail	
1	Is the registration process intuitive and easy to follow, ensuring seamless access to all features?	/		
2	Can users effectively manage products and navigate the product catalog with ease?	/		
3	Is the transaction process smooth, secure, and user-friendly?	/		
4	Does the system accurately update product information and maintain inventory in real-time?	/		
5	Does the Chat Box provide timely and helpful assistance to users?	/		
6	Can users easily manage order pickups without complications?	/		
7	How would you rate the system's speed, responsiveness, and absence of glitches?	/		
8	On a scale of 1 to 10, how satisfied are you with the overall usability and functionality of the NCS Online Store System?	/		

I, NURUL HIDAYAH HARUN hereby declare that the information provided is true and correct.

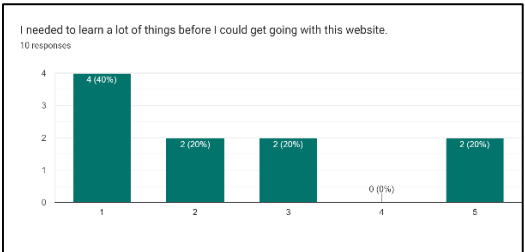
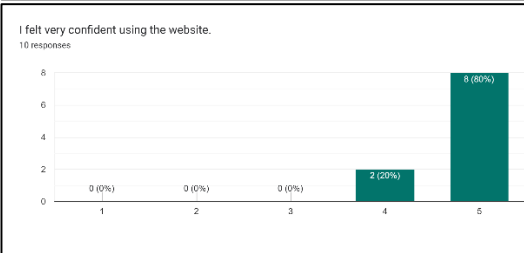
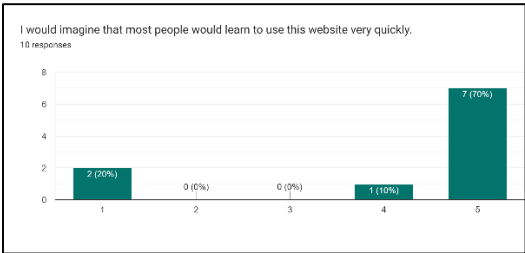
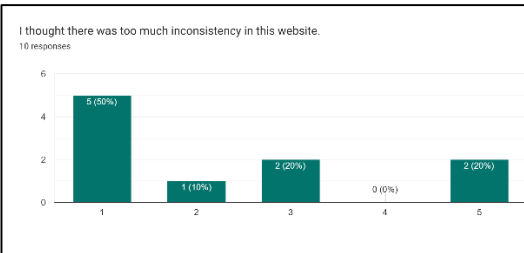
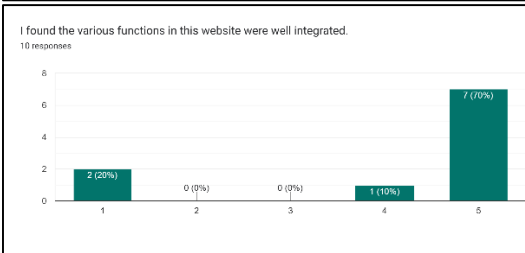
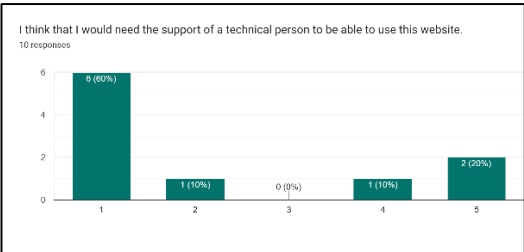
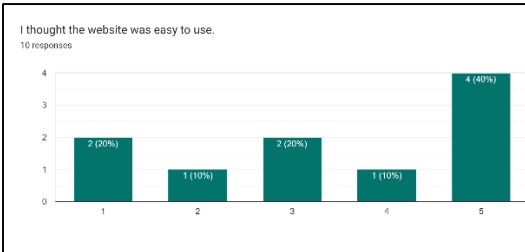
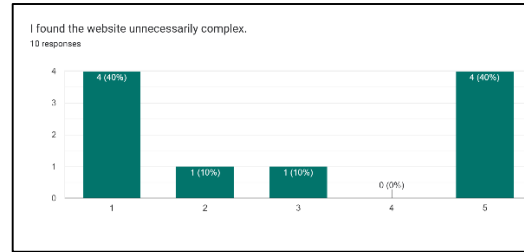
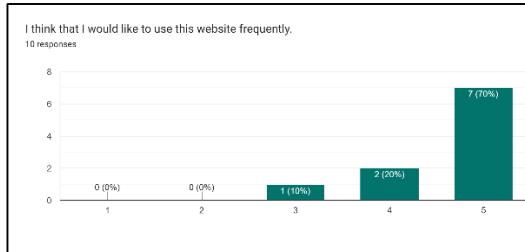
Agreed by,

  
 Name : NURUL HIDAYAH HARUN  
 Date : 28.5.2024

**ND CRAFT BOUTIQUE**  
 (KT0368443-A)  
 Lot 4339 Jalan Taman Jaya Cherang Ruku  
 16700 Pasir Puteh, Kelantan.  
 016-965 4892

APPENDIX B

User Acceptance Testing (Beta Testing)



Comments For The Website  
5 responses

- Great website for shopping handcraft
- Interesting, web design very coincides with type of business.
- Well implement the function and interesting chat bot
- Need to enhance the ui
- missguide