

# Made By Hands: A Web Application for Handicraft Products in Alaminos City

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## ABSTRACT

This study aims to analyze the problems experienced by artisans in Alaminos City in selling their crafts and seeks to solve them through the creation of an online platform called MadeByHands. This ecommerce project seeks to improve the marketing of bamboo products (E-Kawayan), resin and shell handicrafts, and at the same time promote economic growth as well as cultural awareness. A descriptive-developmental research design as well as Agile principles was incorporated to put into practice an iterative and user centered approach to system design. Their evaluation of the platform based on ISO 25010 proved its usability and usefulness as well as its general acceptance. From the results of the evaluation, e-commerce platforms have the capacity to enhance market penetration and the traditional craft industry. Suggestions are to further develop the platform for mobile use and add modern analytics for market intelligence.

**Keywords:** e-commerce, handicrafts, Filipino artisans, HISVA, online platform

## INTRODUCTION

The Filipinos have a long and proud history of painting and sculpting which has been passed down from generations, and there are many great craftsmen who continue to make beautiful and exceptional pieces till today. During earlier times, the operational radius of these talented craftsmen was limited because of varying geographic regions, which meant that they could only cater to local markets and tourists. Now, with the advent of e-commerce, traditional handicraft artisans have a leading platform to sell their creations on a global scale. Aside from supporting many artisans, this transition has also given broader access to handmade crafts to Filipino consumers.

The concept of e-commerce, [1] encompasses the buying and selling of goods and services online. This digital marketplace has transformed numerous industries, providing businesses with wider reach and efficient distribution channels. In the Philippines, the surge in e-commerce has been particularly pronounced, fueled by factors such as increasing internet penetration [2], enhanced digital infrastructure [3], and a population known for its high internet usage, with Google reporting over 80% of customers conducting online research before making a purchase decision [4]. This trend has significantly impacted the handicraft sector, as explored by Faster Capital (2024), where e-commerce has empowered artisans to bypass physical storefronts and connect directly with consumers worldwide [5].

The traditional retail model, heavily reliant on physical stores, often limits artisans' reach and restricts growth potential. E-commerce platforms eliminate these geographical barriers, allowing artisans from Alaminos City, known for its resin crafts and woven bamboo [6], to connect with potential buyers not only within the Philippines but across the globe. This expanded reach fosters cultural exchange and appreciation for traditional Filipino artistry, while simultaneously offering economic benefits to artisans themselves. By eliminating the need for intermediaries and physical storefronts, e-commerce empowers artisans to retain a larger share of the profits, enabling them to invest in their craft and potentially expand their production [7].

For Filipino consumers, e-commerce platforms offer a rich cache of handcrafted items readily available at their convenience. Designed specifically to showcase products from Pangasinan micro, small, and medium enterprises (MSMEs), including handicraft makers, exemplify this trend [8]. These online marketplaces provide a convenient and time-saving alternative to traditional shopping, allowing consumers to explore and purchase unique handicrafts from the comfort of their homes. Additionally, e-commerce platforms empower consumers to compare prices and product offerings from various artisans, ensuring they find the perfect piece that aligns with their taste and budget [9].

The emergence of e-commerce has created rippling effects on both artisans and consumers involved in the traditional handicraft businesses in the Philippines. The growth of this digital space has further opened up new markets for the artisans while also fostering knowledge exchange and appreciation for traditional craftsmanship. The main goal of this study is to look into the impact of e-commerce on the handicraft subsector in Alaminos City, Philippines. Thus, it will provide an understanding of the hurdles and prospects being faced by the artisans and businesses willing to transition into digital platforms. This study aims to develop strategies to further promote economic growth, the continued preservation of cultural heritage, and community connectivity through electronic trading sites. The project will open an opportunity for teamwork and stakeholder engagement to unlock the capacity of e-commerce to cope with and benefit local artisans in Alaminos City for sustainable economic development.

## METHODOLOGY

The creation of the MadeByHands platform utilized a descriptive-developmental research design to work on the marketing-related problems faced by the HISVA artisans and traders of handicraft products. This included detailed analyses of the current processes and problems faced in marketing and the positioning of a solution to meet the needs of HISVA members.

During the preparation and requirements gathering phase, the proponents of the project had conducted interviews and surveys with some of the key stakeholders in the project, such as HISVA officers and members, as well as representatives from the Alaminos City Tourism Office. These activities were aimed at identifying specific marketing problems, such as limited market reach, lack of online presence, and difficulties in customer relations. The insights collected in this manner informed the design and functionality of the platform, ensuring a direct match to the requirements of the artisans.

The design phase strived to build an Intuitive and user-friendly interface of the platform. With the aid of Figma, the proponents developed prototypes that focused on showcasing key features like product browsing, seller registration, and payment options. These prototypes were shown to various stakeholders, and their feedback led to the necessary modifications in the design to meet user expectations and requirements.

During the period of development, varying tools and technologies were employed to develop the platform. The choice of PHP to develop the back-end was based on its flexibility and compatibility with web servers, whereas Bootstrap was used to ensure that the site was responsive and mobile-accessible. MySQL database was employed for data management, allowing proper storage and retrieval of product information and transaction details. Regular collaboration among team members facilitated the integration of features such as payment gateways secured and management system for sellers.

The phase of testing was significant in the quality and reliability of the platform. The proponents adhered to the ISO 25010 software quality standards by evaluating usability, functionality, and performance of the system. Rigorous testing, including stakeholder feedback sessions, identified and resolved prospective issues before the platform launched. That ensures the platform meets the artisans' and customers' expectations.

The platform was live at this point ready for stakeholders to validate. Training was provided to familiarize HISVA members with the nuances of the system. User and deployment feedback sessions were held to evaluate user satisfaction and determine areas for improvement. The iterative feedback cycle enabled refinement of the platform to ensure it fit users' needs.

The methodology adopted In this study ensured that the MadeByHands platform was developed in a structured and user-centered way. Agile methodology provides a very solid mechanism for managing complex projects, ensuring flexibility, and increasing customer satisfaction. While it does possess certain challenges, the rewards outweigh the challenges, and hence, it is increasingly gaining popularity with modern software development teams. Continuous learning, adaptation, and strong leadership are critical for successful Agile adoption [10]. Figure 1 shows the Agile Model.



Figure 1. Agile Model

Data collection involved the complementary use of observation, questionnaires, interview, and internet research. Observations provided live insights on problems being faced by HISVA members in marketing their products online; questionnaire revealed quantitative data on user satisfaction and areas to correct. The interviews with stakeholders such as HISVA officers and vendors made it possible to obtain qualitative accounts of their experiences and expectations. Site research added these findings by identifying best practices for e-commerce platforms, particularly those targeting artisans. Respondents included (1) Tourist receptionist 2/ Front Desk Supervisor, (10) vendors, (16) End Users. (2) IT Staff and (1) Business Manager of HISVA.

Table 1: Respondents of the Study

Respondents	Number of Respondents
Tourism Receptionist II / Front Desk Supervisor	1
Vendors	10
End user	16
IT Staff	2
Business Manager	1
Total Respondents	30

The study systematically measured variables to ensure a comprehensive evaluation of the MadeByHands platform. The independent variables included the platform’s features and functionalities, such as product browsing, seller registration, payment options, and user interface design. The dependent variable was user satisfaction, which reflected how well the platform addressed the needs of HISVA artisans and customers. Demographic characteristics, such as age, digital literacy, and role of artisans and customer, were treated as control variables to account for variations in user perceptions. User engagement, including the frequency of logins and interactions with the platform, served as a moderating variable, while feedback on usability, such as ease of navigation and feature accessibility, was identified as a mediating variable between the platform’s

functionalities and user satisfaction. To ensure that the system’s development and evaluation were well-documented, tools such as flowcharts, Entity-Relationship Diagrams (ERDs), and Data Flow Diagrams (DFDs) were utilized. These tools provided a visual representation of workflows, database connections, and user interactions within the platform, helping developers refine the system and ensure its efficiency. To evaluate the platform’s acceptability and satisfaction levels, a weighted mean was used to determine the average responses from stakeholders. A Likert scale was employed to quantify user satisfaction and the platform’s usability, with the following categories as Strongly Agree (4.21-5.00), Agree (3.41-4.20), Neutral (1.61-3.40), Disagree (1.81-2.60), and Strongly Disagree (1.00-1.80) shown in Table 2.

Table 2. Likert Scale

Scale	Statistical Limits	Rating
5	4.21 - 5.00	Strongly Agree
4	3.41 - 4.20	Agree
3	1.61 – 3.40	Neutral
2	1.81 – 2.60	Disagree
1	1.00 – 1.80	Strongly Disagree

## RESULT AND DISCUSSION

The three-tier architecture is a time-tested software design pattern that divides an application into three distinct layers: the presentation tier, the application tier, and the data tier. This structure enhances the application's modularity, scalability, and maintainability. In the context of MadeByHands, an online marketplace for handcrafted goods, this architecture is pivotal to the system's efficiency and user experience.



Figure 2. Proposed System Architecture

In MadeByHands, the presentation tier is the web application interface that users interact with through the internet. This tier is responsible for presenting data to users and capturing their inputs. For instance, customers and sellers use this interface to search for products, manage orders, and make payments. The web pages serve as the front line, gathering user information and forwarding it to the application tier for processing. This separation ensures that changes to the user interface can be made without disrupting the underlying business logic or data storage mechanisms.

The application tier, also known as the logic tier, handles the core functionalities of the MadeByHands platform. This tier processes user inputs and executes business logic. Key services within this tier include the Product Service, which manages product searches and displays relevant items based on user-entered keywords and processes customizations for purchased items. The Cart Service temporarily stores items added by users, retaining all necessary product information until checkout. The Payment Service calculates the total cost of items during checkout and stores transaction data for monthly sales analysis. The Delivery Service manages shipping details provided by users, storing them for factory administrators to handle the delivery process. Additionally, the Showcase Service highlights the 'Artist of the Month,' giving users insights into featured artisans on the platform. By distributing these services across the application tier, MadeByHands ensures that

each function operates independently, supporting concurrent development by different teams and promoting efficient and scalable development processes.

The data tier is where all information is stored and managed. For MadeByHands, this includes user data, product information, order details, payment records, and shipping information. Each layer in the architecture operates independently, facilitating upgrades and maintenance without impacting other tiers. This independence is crucial for scalability, allowing MadeByHands to grow and adapt to increasing user demands while maintaining a seamless and reliable user experience.

## CONCLUSION

The three-tier setup of MadeByHands is designed for efficiency in running an online marketplace. By dividing the system into presentation, application, and data layers, it keeps things organized, scalable, and easy to maintain. The presentation layer ensures smooth user experience, handling inputs and passing them to the application layer. The application layer powers key functions like product searches, cart management, payments, deliveries, and artist showcase. This separation allows for simultaneous development and upgrades without disrupting the system. The data layer securely stores user and transaction details, forming a solid backbone for operations. This structure not only supports MadeByHands today but also sets it up for future growth and evolving user needs, keeping the experience smooth and reliable.

## REFERENCE

1. Anderson, R. E., & Srinivasan, S. S. (2003). E-satisfaction and e-loyalty: A contingency framework. *Psychology & Marketing*, 20(2), 123-138. <https://onlinelibrary.wiley.com/doi/10.1002/mar.10063>
2. Asian Development Bank (ADB). "Policy and Regulatory Approaches to Strengthen Digital Platforms in Data Economies." <https://www.adb.org/publications/policy-regulatory-approaches-strengthen-digital-platform-data-economies>
3. Bloomenthal, A. (2024, March 9). E-commerce Define: Types, History, and Examples. Retrieved from Investopedia: <https://www.investopedia.com/terms/e/ecommerce.asp>
4. Department of Tourism Philippines. (n.d.). Explore more things to love. Retrieved from Philippines Travel: <https://philippines.travel>
5. Explore Pangasinan District 4. "Explore PD4." <https://explorepd4.com/?s=Explore+Pangasinan+District+4>.
6. FasterCapital. (2024, March 8). Forward Commitment: Transforming the Retail Industry. Retrieved from FasterCapital: <https://fastercapital.com/content/Forward-Commitment--Transforming-the-Retail-Industry.html>
7. Google Consumer Barometer (<https://www.thinkwithgoogle.com/intl/en-emea/consumer-insights/consumer-trends/consumer-barometer-bigger-better-barometer/>) Hendy, 2023
8. IGI Global. "The Nature of Research Methodologies." <https://www.igi-global.com/chapter/the-nature-of-research-methodologies/147762>.
9. International Trade Centre (ITC) Annual Report 2021([https://intracen.org/sites/default/files/inline-files/Annual%20Report%202021\\_ENG.pdf](https://intracen.org/sites/default/files/inline-files/Annual%20Report%202021_ENG.pdf))
10. Statista. "E-commerce - Statistics & Facts." <https://www.statista.com/markets/413/e-commerce/>.