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ORIGINAL

Design of a virtual platform for the promotion and trade of utilitarian ceramics from indigenous communities

Diseño de una plataforma virtual para la promoción y comercio de cerámica utilitaria de comunidades indígenas

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ABSTRACT

Digital commerce offers opportunities for the promotion of handicraft products, especially those with a strong cultural component such as utilitarian ceramics made by indigenous communities. This study aimed to design a virtual platform for the promotion and commercialization of ceramics inspired by the iconography of the Shawi indigenous communities, preserving their cultural traditions and improving their economic opportunities. The methodology employed included the application of Kanban as an agile approach for the design of the platform. Technological tools such as PHP, MySQL, HTML and CSS were used to ensure the functionality and scalability of the system. The platform included functionalities such as an interactive catalog, a shopping cart and an educational section on the history of the pieces. In addition, we worked in collaboration with the artisans to integrate cultural elements into the design. The results showed that the platform not only facilitates access to digital markets, but also strengthens the cultural valorization of Shawi ceramics. In conclusion, this model represents an effective solution for linking technology, commerce and culture, with practical implications for economic development and cultural preservation of indigenous communities.

Keywords: E-Commerce; Kanban; Cultural Heritage; Sustainable Development; Indigenous Communities; Digitalization.

RESUMEN

El comercio digital ofrece oportunidades para la promoción de productos artesanales, especialmente aquellos con fuerte componente cultural como las cerámicas utilitarias elaboradas por comunidades indígenas. Este estudio tuvo como objetivo diseñar una plataforma virtual para la promoción y comercialización de cerámicas inspiradas en la iconografía de las comunidades indígenas Shawi, preservando sus tradiciones culturales y mejorando sus oportunidades económicas. La metodología empleada incluyó la aplicación de Kanban como enfoque ágil para el diseño de la plataforma. Se utilizaron herramientas tecnológicas como PHP, MySQL, HTML y CSS para garantizar la funcionalidad y escalabilidad del sistema. La plataforma incluyó funcionalidades como un catálogo interactivo, un carrito de compras y una sección educativa sobre la historia de las piezas. Además, se trabajó en colaboración con los artesanos para integrar elementos culturales en el diseño. Los resultados evidenciaron que la plataforma no solo facilita el acceso a mercados digitales, sino que también

fortalece la valorización cultural de las cerámicas Shawi. En conclusión, este modelo representa una solución efectiva para vincular tecnología, comercio y cultura, con implicaciones prácticas para el desarrollo económico y la preservación cultural de comunidades indígenas.

Palabras clave: Comercio Electrónico; Kanban; Patrimonio Cultural; Desarrollo Sostenible; Comunidades Originarias; Digitalización.

INTRODUCTION

The development of virtual platforms is regarded as a strategy to promote the inclusion of products and services in digital markets.[1,2] In the case of handicrafts (such as ceramics, jewelry, carvings, among others) created by Indigenous communities, these items represent not only practical consumer goods but also pieces imbued with cultural values and ancestral traditions.[3,4,5] Therefore, as stated by[6], the use of digital technologies for their promotion and commercialization offers an opportunity to preserve and disseminate this heritage, integrating it into a globalized market without compromising its authenticity. Similarly, according to[7], digital platforms facilitate access to new markets and enable the storytelling behind the products, strengthening the connection between consumers and artisan producers.

However, as noted by[8], Indigenous communities face multiple barriers that hinder the effective commercialization of their products. The lack of specific channels connecting artisans with buyers interested in sustainable products is one of the main limitations.[9] Furthermore, Indigenous ceramics often have a marginal presence in traditional and digital markets due to the absence of promotional strategies that highlight their cultural richness and functionality. This results in market inequities, where industrialized products, often of lower quality, tend to overshadow the creations of Indigenous artisans.[10,11,12]

Among the causes of this issue is the limited access to technology in Indigenous communities, which restricts their ability to integrate into digital platforms and compete on equal footing. [13] Insufficient training in digital and commercial skills is another relevant factor, as artisans lack the knowledge needed to manage technological tools. Additionally, the technological infrastructure in these communities is often inadequate, hindering connectivity and, consequently, their ability to actively participate in e-commerce. These limitations are compounded by the lack of public policies that comprehensively support artisans in transitioning to more modern commerce models.[7]

The consequences of this issue are both economic and cultural. From an economic perspective, the lack of access to national and international markets perpetuates poverty in Indigenous communities, limiting their development opportunities.[14] On the other hand, from a cultural standpoint, the devaluation of artisanal products threatens the continuity of traditional practices and techniques.[15] New generations face diminishing opportunities to engage in these activities, endangering the cultural diversity and ancestral knowledge represented by Indigenous ceramics, which could lead to the loss of cultural identities.[16,17]

In the academic field, the intersection of technology, culture, and commerce has received limited attention. While there are studies on e-commerce and the impact of digital technologies in the artisanal sector, few specifically address the design of virtual platforms aimed at promoting and commercializing Indigenous products. This gap highlights the need for proposals that combine a technological approach with an understanding of the cultural and economic dynamics of Indigenous communities, enabling comprehensive solutions that foster their sustainable development.

In this context, the present study aims to design a virtual platform for the promotion and commercialization of utilitarian ceramics created by the Shawi Indigenous communities of the Alto Amazonas province in Peru. Through this research, the goal is to enhance market opportunities for these products while strengthening the cultural identity of Indigenous peoples and promoting their economic development. This interdisciplinary approach seeks to integrate technological, cultural, and commercial aspects to create an inclusive and sustainable commerce model that addresses the needs and realities of these communities.

METHOD

Case Study

The virtual platform aims to promote and commercialize utilitarian ceramics crafted at the Utilitarian Ceramics Laboratory of the National Autonomous University of Alto Amazonas. These pieces are inspired by the iconography of the Shawi Indigenous communities (figure 1), located in the Balsapuerto district, Alto Amazonas province.

For its development, the research team conducted prior field studies with the support of sociology professionals who assisted in identifying and documenting traditional iconography. Subsequently, these designs underwent a quality improvement process, which included the application of glazing techniques to ensure

their functionality. The entire process was carried out while respecting and preserving the ancestral knowledge represented in the iconography, ensuring the integration of tradition and modernity in the products.

Figure 1. Ceramic creation based on Shawi iconography

Design Methodology

The platform design was carried out over a period of three months, using the agile Kanban methodology[18,19] to ensure a continuous workflow and prioritize the needs of the primary users, who were the buyers. The process began with identifying essential features, such as intuitive navigation, the product catalog, and the integration of a payment system. Tasks were organized on a Kanban board, categorized into "Pending," "In Progress," and "Completed." The team focused on implementing an attractive and functional interface that showcased the utilitarian ceramics, allowing buyers to explore the products and easily understand their cultural value.

Throughout the process, constant iterations were made to refine the user experience and ensure the platform's quality. The e-commerce professionals worked closely with the artisans, integrating their input to faithfully reflect the traditional stories and techniques in each product. Additionally, specific features for administrators were added, such as inventory management tools and sales analytics, ensuring the system was easy to manage for the team responsible for its operation.

At the end of the three months, a functional platform was ready for buyers. The final design included a catalog system with customizable filters, a shopping cart, and an educational section highlighting the history behind the ceramics, along with the generation of QR codes for promotional purposes at local fairs. The implementation of the Kanban method allowed for quick identification and resolution of obstacles during development, ensuring that each stage progressed without interruptions and delivering a product that met the expectations of both administrators and buyers.

Development Tools

The platform development was carried out using PHP as the primary server-side programming language. PHP allowed for managing business logic, processing user requests, and dynamically generating web pages based on user interactions. Its flexibility and compatibility with multiple environments made it possible to implement features such as user registration, viewing the ceramic catalog, and integrating the payment system. Additionally, its ability to handle forms and user sessions facilitated the creation of a personalized experience for buyers, ensuring smooth functionality.

For data storage and management, MySQL was used as the relational database system. This tool allowed for organizing and storing information such as product details, transactions made by buyers, and registered user data. SQL queries were optimized to ensure quick and efficient access to information, especially for loading the product catalog and generating reports for administrators. MySQL's scalability ensured that the platform could handle large data volumes, enabling future expansion.[20,21]

The visual design of the platform was achieved through the combined use of HTML and CSS. HTML was used

to structure the web pages, defining main elements such as headers, menus, product lists, and forms. CSS, in turn, was used to style these elements, applying colors, typography, and responsive designs that ensure an optimal user experience on both mobile and desktop devices.[22] This combination helped create an attractive and functional interface that reflects the cultural richness of the Indigenous ceramics, enhancing the browsing experience and capturing the attention of buyers.

RESULTS

Figure 2 shows the homepage of the virtual platform, designed for the promotion and commercialization of utilitarian ceramics from the Shawi Indigenous communities. At the top, there is a main navigation menu that includes options such as “About Us”, “Gallery”, “Blogs”, “Contact Us” and “Virtual Store”, providing clear access to the different sections of the site. An attractive visual banner stands out with the title “Elegance in Every Detail,” accompanied by promotional text highlighting the handcrafted nature of the pieces and their connection to cultural traditions. Additionally, an interactive “Shop Now” button invites users to explore the product catalog.

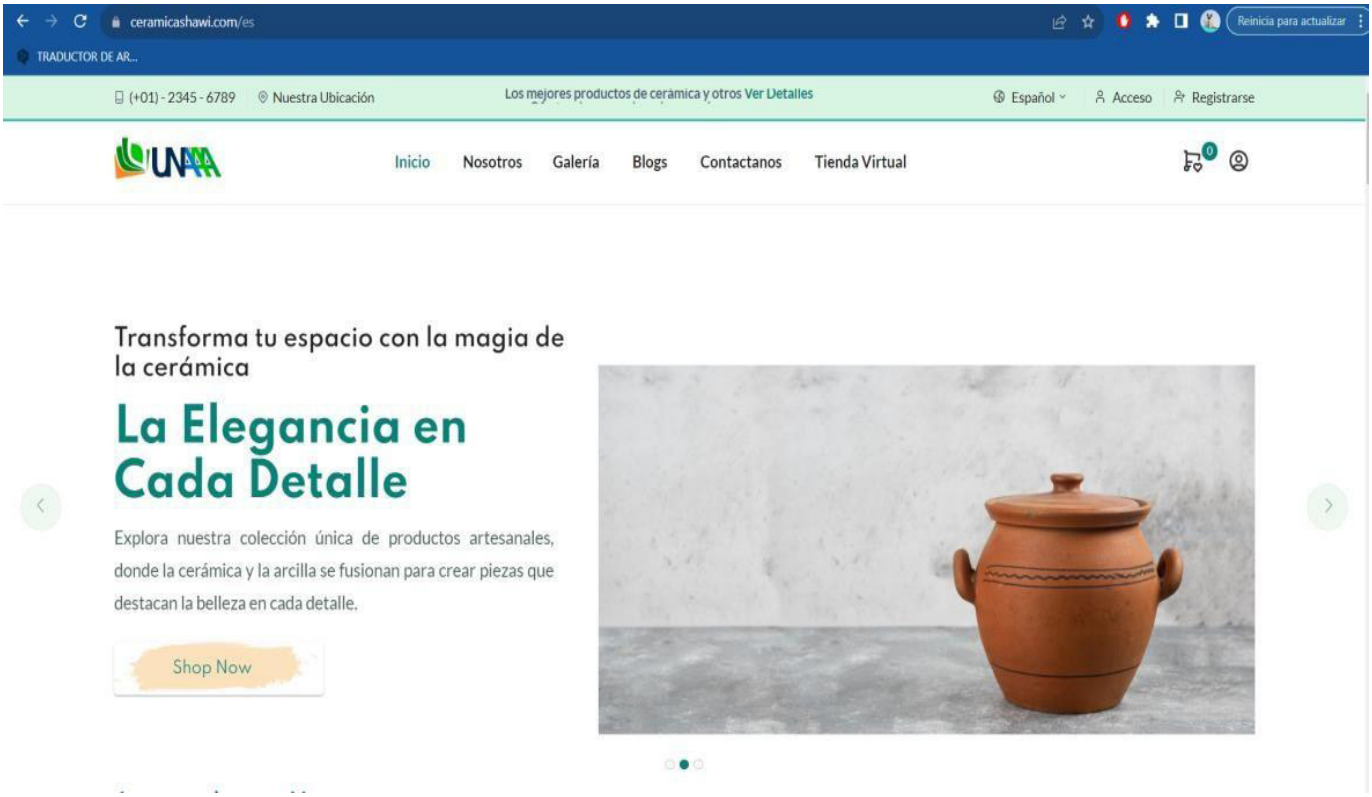

Figure 2. Homepage of the virtual platform for the promotion of Shawi ceramics

The design reflects a blend of modern aesthetics and cultural elements, evident in the use of soft colors and a prominent image of a handcrafted ceramic piece. In the upper right corner, interactive tools for users are available, such as access to the shopping cart and options to register or log in. This intuitive design aims to optimize the buyer’s experience, facilitating navigation while highlighting the authenticity of the products in a professional and functional environment.

On the other hand, Figure 3 shows the “Contact Us” section of the virtual platform, designed to facilitate interaction with users interested in the products and services offered. The navigation menu remains visible at the top, allowing continuous access to different sections of the site. The central header stands out with a welcoming message, “Welcome and Find Our Location in the World,” inviting visitors to get in touch with the team behind the platform. The complementary text emphasizes the importance of users’ opinions, questions, and suggestions, ensuring that the platform is focused on providing the best possible shopping and customer service experience.

Below the main message, a prominent button is included with the label “Learn more at... About Us,” which redirects to an additional section providing detailed information about the team and the project’s mission. The design utilizes a soft-toned background that conveys professionalism and warmth, while the organized structure makes it easier for users to understand and navigate.

Regarding figure 4, it shows the “Virtual Store” section of the platform, designed for the commercialization

of utilitarian ceramics. At the top, the main navigation menu remains accessible, ensuring a smooth user experience. The section features two main tabs: “Products” and “Recently Added,” which allow users to explore the catalog in an organized manner. Each product is displayed in individual cards, featuring a prominent image, price in Peruvian soles (PEN), a star rating based on user reviews, and interactive options such as adding to the cart or marking as a favorite.

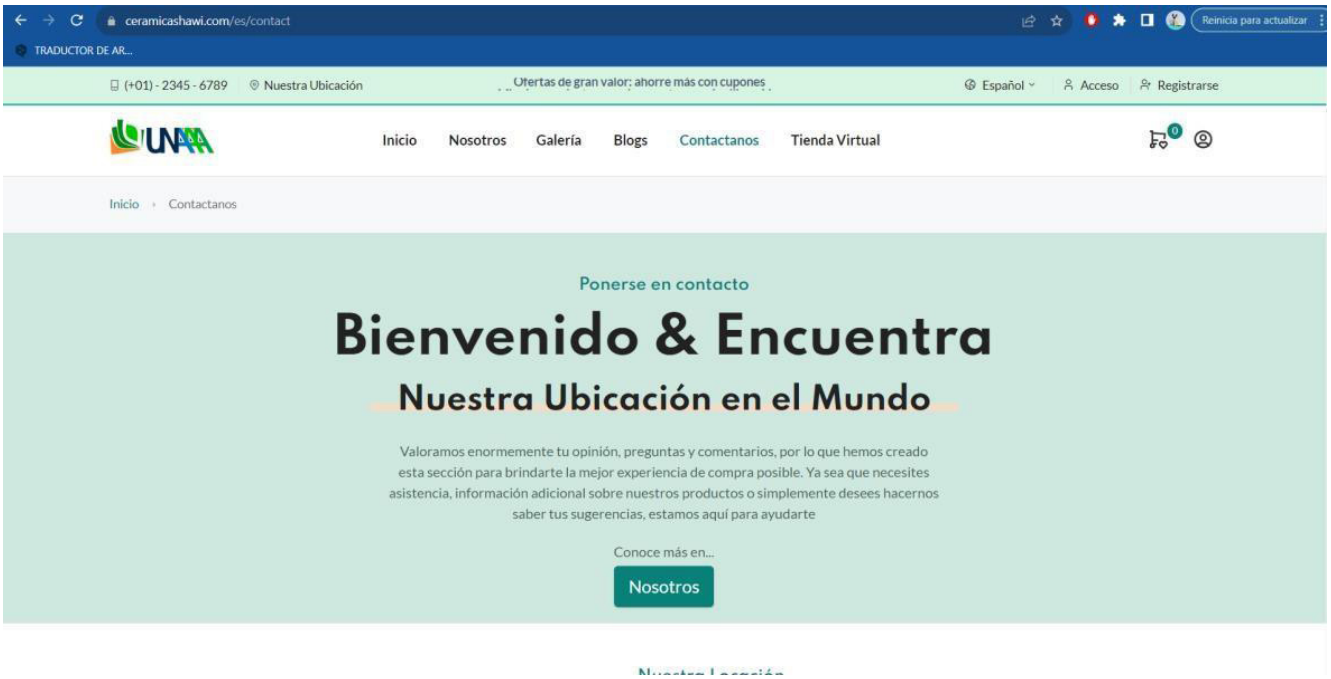

Figure 3. Contact section of the virtual platform

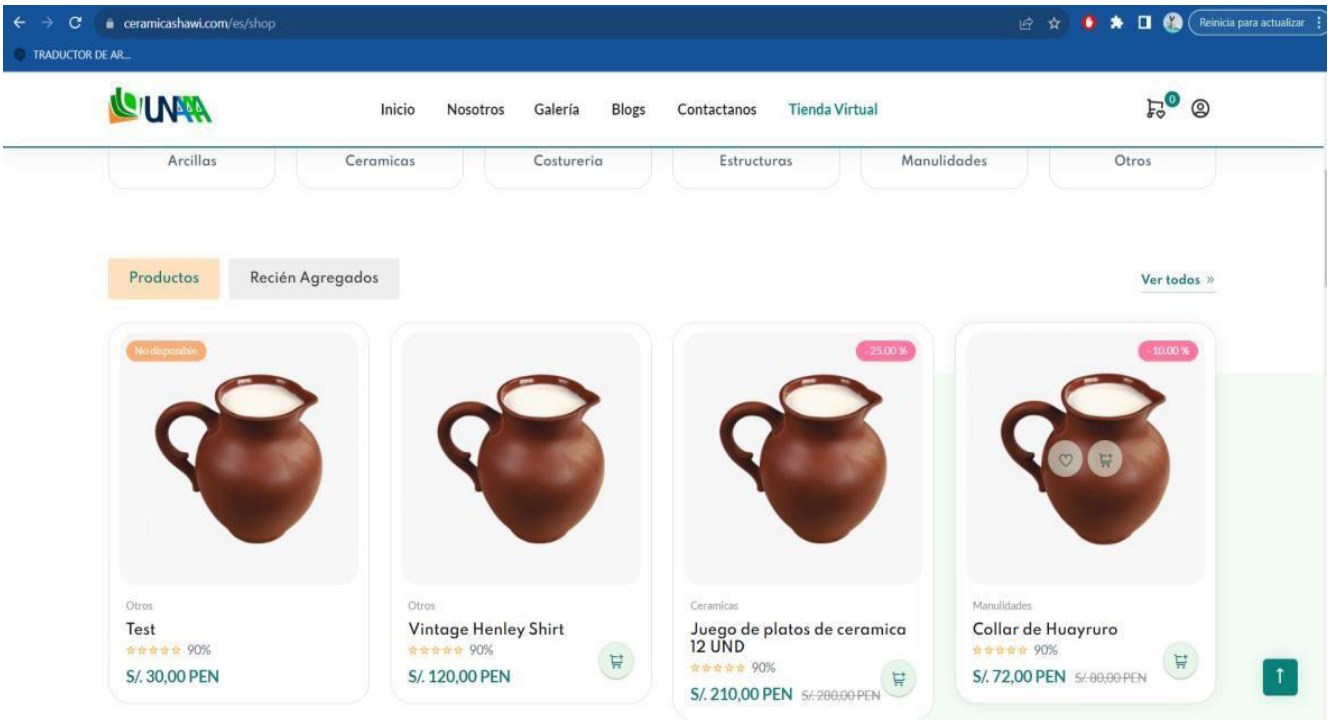

Figure 4. Virtual store of the platform for the commercialization of handcrafted ceramics

The design is intuitive and facilitates the visualization of important details, such as highlighted discounts in a colored seal that emphasizes promotions like “25% off.” This encourages purchase decisions from users. The visual presentation of the products is consistent and professional, ensuring that the artisanal identity of the pieces is aligned with a modern digital commerce experience.

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DISCUSSION

The results obtained from the design of the virtual platform for the promotion and commercialization of Indigenous utilitarian ceramics reveal advances in the integration of technology for cultural preservation and access to global markets. This aligns with previous studies that highlight the potential of e-commerce as a tool for valuing artisanal products, especially in contexts where cultural sustainability is key.[1] The adopted approach ensures that Indigenous products are not only marketed but also culturally contextualized, fostering a connection between buyers and artisans.

In comparison, other works in the field of virtual platforms have reported similar barriers identified in this study, such as the lack of technological infrastructure in Indigenous communities and limited training in digital tools.[2] However, the use of agile methodologies, such as Kanban, provides a practical solution to overcome these challenges by prioritizing rapid iterations and continuous feedback during development. The proposed approach not only addresses the technical needs of buyers but also incorporates the cultural contributions of artisans, ensuring an inclusive and representative design.

The analysis also highlights that the implementation of technologies like PHP, MySQL, HTML, and CSS provided a foundation for the platform's functionality and scalability. According to Blanco Barrera et al.[6], the success of digital platforms in artisan commerce depends on their ability to handle large data volumes and provide an intuitive user experience. This aligns with the findings of this study, where the organized product catalog structure and administrative tools facilitated both the platform's operation and the buyer's experience.

From a sociocultural perspective, the results suggest that promoting Indigenous ceramics through a digital platform not only enhances the artisans' economic opportunities but also strengthens the preservation of their ancestral knowledge. This aligns with the observations of Vargas Solá[5], who argues that economic empowerment through digital tools can be an effective means to revitalize cultural traditions. By highlighting the stories behind the products, the platform contributed to preserving the legacy of the Shawi communities, mitigating the negative effects of globalization on their cultural identity.

On the other hand, this study addresses a scientific gap pointed out by Allende-Hernández et al.[7], who identified a lack of interdisciplinary research combining technology and culture in artisan commerce. The results obtained here demonstrate that it is possible to integrate technological, commercial, and cultural aspects into a solution that meets the specific needs of Indigenous communities. This opens new possibilities for future research focused on optimizing and personalizing digital platforms for different cultural contexts.

Finally, the results show that a platform designed with a collaborative approach can overcome the challenges of artisanal e-commerce identified by Ramírez Vargas[11]. The collaboration between professional experts and artisans allowed for the effective integration of technical and cultural elements, resulting in a functional and sustainable product. This highlights the value of joint work as a strategy to address structural inequalities and position artisanal products in competitive global markets.

CONCLUSIONS

The design of the virtual platform for the promotion and commercialization of Indigenous utilitarian ceramics demonstrates that it is possible to integrate technology and culture to address the economic and social barriers faced by Indigenous communities in accessing digital markets. The use of technological tools such as PHP, MySQL, HTML, and CSS, alongside an agile methodology like Kanban, enabled the creation of an efficient, scalable, and culturally representative solution.

The results provide a replicable model for designing similar platforms in other cultural contexts, adapting to the particularities of each community. Practical implications include strengthening the economic sustainability of artisans through direct access to broader markets, promoting fair practices in the commercialization of artisanal products, and revitalizing ancestral knowledge. Additionally, this model can serve as a foundation for public policies aimed at encouraging the use of digital technologies in cultural and creative sectors, generating positive impacts both locally and globally.

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CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

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