Virtual and Augmented Reality as a digital strategy for the commercialization of Michoacan crafts. Case: Mara Ceramics

Realidad Virtual y Aumentada como estrategia digital para comercialización de la artesanía Michoacana. Caso: Cerámica Mara

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Abstract

This work deals with the process of creating 3D pieces of handicrafts Michoacanas to be shown through the use of Virtual Reality and Augmented as part of the solution to promote a strategy of marketing and promotion of the products of the craft workshop Cerámica Mara, SA de CV . These resources are innovative elements incorporated into an Electronic Commerce site, which allow the user to appreciate during their journey the handmade pieces exhibited in the virtual gallery, with the possibility of selecting the pieces, being able to configure the color and texture, and / or visualize them in their mobile device through the QR codes provided in the site catalog; all with the intention of serving as elements that potentiate the user's purchase intention. The design of the research was based on the qualitative model of case study, under the Scrum development methodology, being a collaborative work between the Academic Bodies of Multimedia and Electronic Commerce of the Technological University of Morelia and the Science, Technology and Management of the Organizations of the Technological Institute of Morelia. The scope obtained so far consists of a functional prototype of the Electronic Commerce Site, which incorporates a journey with 3D models of Virtual Reality and Augmented Reality via QR codes, with the possibility of purchase. It is expected that in later stages data will be obtained that allow studying how to modify the purchase intention, level of sales and market captured in commercialization of Michoacán ceramic crafts, through this proposal.

Crafts, Electronic Commerce, Digital Marketing, Virtual and Augmented Reality

Resumen

El presente trabajo aborda el proceso de creación de piezas 3D de artesanías Michoacanas a ser mostradas mediante el uso de la Realidad Virtual y Aumentada como parte la solución para impulsar una estrategia de comercialización y promoción de los productos del taller artesanal Cerámica Mara, SA de CV. Siendo estos recursos elementos innovadores incorporados a un sitio de Comercio Electrónico, que permiten al usuario apreciar durante su recorrido las piezas artesanales expuestas en la galería virtual, con posibilidad de selección de las piezas pudiendo configurar el color y textura, y/o visualizarlas en su dispositivo móvil a través de los códigos QR provistos en el catálogo del sitio; todo ello con la intención servir como elementos que potencialicen la intención de compra del usuario. El diseño de la investigación se basó en el modelo cualitativo de estudio de caso, bajo la metodología de desarrollo Scrum, siendo un trabajo colaborativo entre los Cuerpos Académicos de Multimedia y Comercio Electrónico de la Universidad Tecnológica de Morelia y el de Ciencia, Tecnología y Gestión de las Organizaciones del Instituto Tecnológico de Morelia. El alcance obtenido hasta el momento consiste en un prototipo funcional del Sitio de Comercio Electrónico, que incorpora un recorrido con modelos 3D de Realidad Virtual y Realidad Aumentada vía códigos QR, con posibilidad de compra. Se espera que en etapas posteriores se obtengan datos que permiten estudiar como modifica la intención de compra, nivel de ventas y mercado captado en comercialización de las artesanías de cerámica michoacana, mediante esta propuesta.

Artesanías, Comercio Electrónico, Marketing Digital, Realidad Virtual y Aumentada

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Introduction

The word crafts, for Unesco (sf), refers to "Craft products that are produced by artisans, either entirely by hand, or with the help of hand tools or even mechanical means, provided that the manual contribution direct artisan remains the most important component of the finished product ", meanwhile Tovar (1964) defines it as" All creative manual technique, to produce individually, goods and services. " For the National Council for Culture and the Arts (Conaculta) in Mexico, the origin of handicrafts has its history in rural areas, where artisans created a wide variety of pieces of various materials.

Mexican crafts distinguish it, cultural diversity and creative wealth of the people, and their ancestors, which is appreciated throughout the world with respect and admiration. For Dietz (2014), in Mexico, the artisan sector since the time of the conquest has been developed mainly by indigenous communities, in which artisan workshops are established, integrating to conserve the techniques and traditions of its elaboration, and counteracting the problem of the competition of products from low-cost industrial processes, with similar appearance, but at a lower price and quality, these communities of artisans in general face the problem of the commercialization of their products, either due to the low capacity to reach the market, or for reasons of distance or intermediation, according to the survey conducted by the National Survey of Cultural Consumption of Mexico (ENCCUM, 2017) in Mexico there is an approximate of 11 '791, 856 people engaged in crafts, while in the state of Michoacan , a total of 11,640 artisans are registered (CESOP, 2013), thanks to the wealth of natural resources, trad cultural events, and artistic manifestations generate works of great value that are recognized nationally and internationally (Tejeda, 2002).

Theoretical Framework

The problem of marketing is one of the main challenges faced by artisan workshops, in this sense Gil, (cited by González, Rodríguez, González, & Rodriguez, 2015), mentions that the artisanal product requires a change of strategies that allow artisans to bring their products to consumers, bypassing the barriers of intermediaries, so it is necessary to define new ways to achieve it.

One of these forms is the Electronic Commerce (Dans, 2017), which consists of a commercial activity carried out through the internet that allows the distribution, sale, purchase, marketing and supply of products or services, whose usage trend is increasing. gradually throughout the world, both in user volume and commercial sites.

In general terms, according to Galeano (2019), the countries with the highest percentage of users that use electronic commerce are Indonesia (86%), China (82%) and Germany (81%). Worldwide, the average percentage of Internet users who have purchased an online product or service reached 75% in 2019. E-commerce is growing by leaps and bounds, with Latin America being one of the economies that most use this method of purchase, in which according to Castellors (2018), Mexico reached 92.2 million users by 2021.

Currently, electronic commerce has become synonymous with convenience, agility, security, ease of payment, optimization of time, low costs for users Elena (2019) when making purchases, this niche of opportunity is being used by different segments of market making the possibility of doing business in this medium attractive, thus forcing to change the way of acting and thinking of organizations, mainly, by allowing to reach a greater percentage of the population with a lower investment and obtaining better profits, situation that motivates to leave behind the traditional process of trade and adopt this way of doing business because of the many advantages it offers, being one of the most attractive the possibility of reaching a greater number of clients, both national and foreign (SE.s.f).

The evolution that electronic commerce has experienced has allowed it to go from being a simple catalog of products or services, to be a resource with great appeal for users; being digital marketing one of those crucial elements, for the promotion and diffusion of the products that are offered in it.

Marketing establishes the set of principles focused on understanding the needs of an audience in order to boost sales through an adequate communication of the product or service to create a link with people, which will add value to them becoming the arbitrator between the interests of the business and the need of the consumer (Rattinger,2018).

Among the resources that can be used in a digital maketing strategy (Intereconomia, 2018), is to offer clients the Virtual Reality (VR) and Augmented Reality (VR) service. The Virtual Reality (RV), allows to represent a "conceptual world in three dimensions" that can be perceived in two different ways. From a technical point of view, the 3D Models, is a group of mathematical formulas that describe a "world" in three dimensions and that from a visual point of view, is perceived as a schematic representation visible through a set of objects, elements and properties that, once rendered, will become a figure in 3D animation, which allows the creation of Virtual Reality environments (Rodríguez, González, Rodríguez & Robles ,2012). On the other hand, Augmented Reality (AR) is a technology that complements the perception and interaction with the real world and allows the user to be in an augmented environment with information generated by a computer. (Mendieta, Paredes,Sing, Cruz & Cáceres., 2017).

Both the RV and the RA, are effective resources in digital marketing, due to the great appeal due to the novel way of presenting products and services to their potential customers, with simplified information in which the abstract can become concrete and simulations and images facilitate understanding for all types of audiences, and in which the greatest attraction is that the user becomes the protagonist, thereby generating a positive reinforcement in remembering the brand or the product, due to the experience ; It also allows evaluating reactions to take into account the emotions and behaviors in different customer buying situations and to test the acceptance of new products.

Likewise, the flexibility of 3D models allows the creation of any scenario. 3D modeling allows to generate exact copies of the original handmade pieces, which can be appreciated in color, shape and texture by remote users as a way to attract their attention and interest in the product that is offered.

Gil (2002) mentions that if you want Mexican crafts to sell and be present in international markets, you need to operate under innovation in marketing and that it is better for users to experience the sensation of being immersed, interacting with objects of said environment. (González et al., 2015). The commitment to this technology is on the rise, and in 2016, Deloitte predicted that in that year it would be the first year in which virtual reality (VR) would generate revenues of 1,000 million dollars, of which approximately 700 million would come from equipment sales and the rest of content sales, calculating sales of approximately 2.5 million RV devices.

It is a fact that companies are betting on the use of this technology, arguing that Virtual Reality and Augmented aims to be the next trends that capture and maintain the attention of consumers.
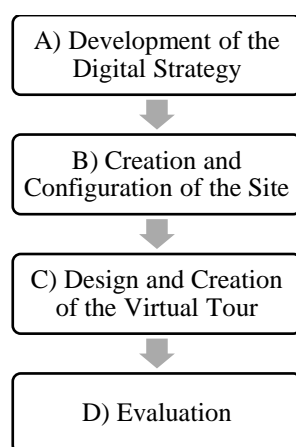
Methodology

The objective was to obtain information about the penetration in the market, the purchase intention and the level of sales that Mara SA handicrafts company can achieve. De CV through the use of an Electronic Commerce site that incorporates elements of Virtual and Augmented Reality accessible via QR codes, as innovative aspects of its digital marketing strategy.

The context of the study is located in the company Artesanal Mara, which is an artisan workshop located in the town of Morelia, Mich. With over 20 years, dedicated to craft pieces with unique designs by the fact of being made and finished by hand. This company is located in the tertiary sector, with the manufacture of tableware, pottery, sculptures, slabs, porcelain and ornamental pieces. In its beginnings it counted on the work of 3 artisans and currently has a staff of 18 artisans and 2 administrators. Its products have been positioned mainly in the United States market and part of Europe, as well as in prestigious department stores in Mexico.

Its current marketing strategy includes the promotion and offer of products through advertisements on web pages, sale through telephone and direct sales in its establishment. Your system of financial transactions is via bank deposit and in cash. Its sales fluctuate between 2000 to 3000 pieces per year.

After the organizational diagnosis made to the company, it was detected the need to design a digital strategy that complements the marketing efforts of traditional ceramic crafts, considering the potential of having an Electronic Commerce site complemented with the use of an application of Virtual and Augmented Reality accessible via QR codes.

The management methodology used for the development of the project was based on Scrum, which allowed to properly coordinate the human resource, and facilitated the communication process of the team composed of 3 full-time professors from the Multimedia Academic and Electronic Commerce the Technological University of Morelia (CAMCE-UTM) and 1 research professor of the Academic Body Science, Technology and Management of the Organizations of the Technological Institute of Morelia (CACTGO-ITM) and 3 students of the IT career, as well as 2 members of the workshop artisan Ceramic Mara, regarding the allocation of roles and activities to be carried out in the set of iterations proposed in the planning, thus achieving the satisfactory partial progress of the phases (see figure 1) considered for their creation:

A) Development of the Digital Strategy

B) Creation and Configuration of the Site

C) Design and Creation of the Virtual Tour

D) Evaluation

Figure 1 Development phases
Source: Own

A) Phase of development of the digital marketing strategy: Consistent in developing the activities related to the diagnosis or analysis of the situation of the company, where the trends and socio-economic situation of the ceramics sector were determined, the gathering of information related to the product to be marketed and the market segment to which is directed, as well as the analysis of the offer of the competition and substitute;

Defining the objectives and strategies to be achieved, establishing long, medium and short term goals. Likewise, the actions are considered to be developed to reach the target market and within these were included the positioning strategies of the brand on the internet and social networks. Finalizing with the future evaluation to analyze the results obtained, through measurement tools, such as Google Analytics, in order to feedback the plan and determine if it is continued with this or adjustments will be made, to comply with the proposed objectives.

B) Phase of creation and configuration of the e-commerce site: Consistent with the definition of the aspects for the creation of the e-commerce site, such as choosing the name of the site for your reservation, specification of the required hosting service, selection of provider, advantages / disadvantages / price, tools for its configuration, Site design, aspects of usability and navigation, content to be considered in the following sections: Corporate information, Customer service, Electronic product catalog, Shopping cart, Order delivery, Promotions and offers, Payment mechanisms, Virtual tour and Reality Augmented accessible via QR code for mobile devices.

C) Design and creation phase Virtual Tour and Augmented Reality: Consistent in the approach with artisans to define the development of the prototype, with a survey of photographic images and interviews, identifying the most representative and demanded products in order to obtain the pertinent information that subsequently after ordering, systematizing and analyzing serves as a list of requirements to fulfill for the development of the 3D models, of the artisan pieces. These 3D models are integrated into the graphic engine to generate the Virtual and Augmented Reality application.

D) Evaluation phase: After its integration, the intention is to submit the prototype to evaluation, by the client and a representative sample of potential users in order to verify its functionality and behavior. To finally implement the application of Virtual Reality and Augmented for its diffusion, through the digital media selected that allow the interaction required for your navigation.

Results

Partial results obtained so far include phases A, B, C. With regard to the diagnosis of a company, its commercialization strategy is carried out in traditional media through direct customer-company treatment in the manufacturing workshop with payment mechanisms via bank deposits, cash sale made directly with the client in the marketing company, with delivery of the product at home, being its main customers the US and European markets, with little penetration in the national market, so the digital marketing strategy or on the internet, this is in the process of creation.

For the development of the digital marketing strategy, the analysis aspects of the target audience and of the competition, the demographic and psychographic aspects, the internal SWOT analysis were considered, in order to identify which are the company's strengths, capabilities and available resources and environmental factors that we can take advantage of, such as market niches, identifying the weak points and environmental factors that can be harmful. Selecting as tools for the design of the digital marketing strategy those with the greatest impact for the positioning of the brand of the Ceramics Mara, as well as the start-up of the website of Electronic Commerce, which after its implementation, will be carried out follow-up to analyze the results obtained, measuring the figures obtained in these tools, visits to the web, the origin of the traffic, visit time on the web, among others, considering especially the measurement variables provided by Google Analytics.

Regarding the results obtained from the creation and configuration phase of the Electronic Commerce Site and based on the established plan, the activities have been carried out to date:

a)   Reservation of the domain, being this as ceramicamara.com,

b)   Accommodation of the Electronic Commerce site in a temporary hosting for the tests.

c)   Configuration of the WordPress tool and the WooCommerce plugin with the functionalities of management and organization of products by category of the store, shopping cart, payment and shipping systems, who we are, as well as the visit to the virtual tour where you can see the handmade pieces modeled in 3D, (see figure 2 and 3).

Figure 2 Homepage of the e-commerce site
Source: Own
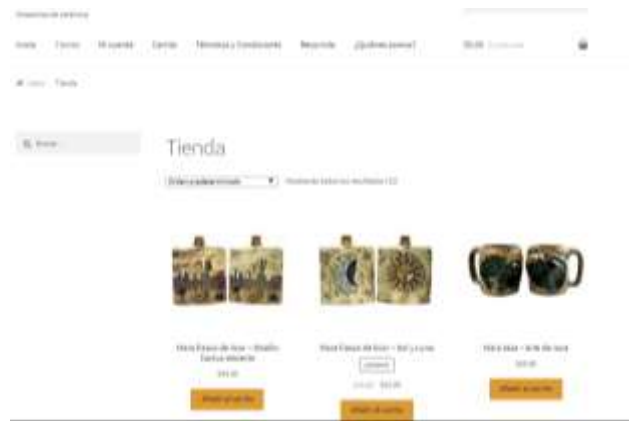
Figure 3 View of the store of the e-commerce site ceramicamara.com
Source: Own

In relation to the design and creation phase of the virtual tour, it has been possible to develop, according to plan, the activities of:

a)   Survey of photographic images and interviews with artisans, identifying the most representative and demanded products,

b)   Development of the 3D models of the artisan pieces using Maya 3D software, taking care of the aspect of the texturing of the pieces by means of the figure edition, generating an approximate of 50 handmade pieces.

c)   Integration of the models in the Unreal Engine 4 graphics engine to build the virtual reality application.

d) Shape the interactive application located in a contemporary museum (see figure 4), in which it shows the external environment of the stage, its building, as well as the models of decoration objects and ceramic products of the company's crafts, such as plates, plates, cups and boxes (see figure 5).

Figure 4 Interaction scenario of the Virtual Reality application
Source: Own

Figure 5 Modeling pieces of crafts modeled in 3D
Source: Own

The products can be seen in detail by the client, because it will see its shape, texture, color, size, dimensions, technique and materials used in its preparation (see Figure 6), all these features will be displayed in order to draw attention and of awakening the interest of the client for the purchase of the product.

Figure 6 Handmade piece modeled in 3D with details of texturing
Source: Own

Likewise, the QR codes were generated as part of the product catalog in the Electronic Commerce Site, this integration of the 3D models was done in the Vuforia software, with integration in Unity (see figure 7)

Figure 7 Augmented Reality model seen from the mobile device
Source: Own

As mentioned, the execution of the prototype evaluation phase by a representative sample of potential users is still pending in order to verify its functionality, behavior and attractiveness. That after the evaluation may be released for dissemination, through the digital media selected thus providing added value to the client in which you can experience the feeling of being immersed in an environment typical of the production of crafts, efforts aimed at achieving greater customer satisfaction.

Conclusions

It is a fact that currently companies can not stop dealing with how to make use of digital media in their marketing and marketing strategies, due to the natural migration that is arising from the markets.

The development of this proposal, seeks to highlight the possibility and scope of the incorporation of Virtual and Augmented Reality in conjunction with the functionality offered by Electronic Commerce as a differentiating element that allows to awaken the interest and purchase intention of users, attending to a vulnerable economic sector like that of artisans.

So far it has been successfully experimented with the development process of creating a functional prototype that has been liked by the makers of the ceramic workshop Mara Ceramica

We consider that the use of Virtual and Augmented Reality technology is a potential tool for the commercialization of crafts, due to the following advantages:

1. Showing the products with virtual reality through the internet, facilitates the process of marketing communication between artisans and customers, that is, it facilitates the way to reach directly the final consumer of handicrafts, achieving on the one hand to keep the greatest profit of the sale by not needing intermediaries and on the other hand you have direct contact with the client in order to identify their needs, tastes and preferences, and with this information to produce products that better meet their expectations and be able to offer crafts according to the needs of consumers,

2. Through this technology it is possible to reach a greater number of niche markets, made up of people and distant places that otherwise would be difficult to reach them, through this virtual reality tool, it is easy to the artisan can establish direct and permanent communication with the client, which through suggestions and comments that he considers pertinent, makes what he really needs, so he can have better products contributing to the value chain, giving each customer the unique and original product that is what identifies a craft.

3. Appreciate the craftsmanship in a 360 degree view, that is, from several perspectives, being able with this information to acquire the product from the comfort of your home, without physically moving to the place and interacting freely without feeling pressured to make the purchase, which It will allow you to visit the store comfortably and in detail virtually, whenever you consider necessary.

4. The visits that customers make to the virtual store, will allow to have a large amount of information that will facilitate carrying out the analysis of consumer behavior.

Likewise the information that is provided once the purchase is specified, will also be great utility for this analysis, the information of real and potential customers will allow to determine the expectations, needs, tastes and preferences of the clients that make up the market segment.

Another indirect advantage of this proposal is that it will make it possible to avoid and, where appropriate, reduce some complex social phenomena that currently occur in artisanal communities, such as the migration of artisans to municipal capitals, capitals of the states or as in some other cases abroad mainly to the United States of America, this is due to the scarce and insufficient sales of their crafts and the voracity of some of the intermediaries who buy them crafts at low prices, which causes that they do not generate enough income to stay in their place of origin, coupled with this, the conservation of their traditions is detrimental and the loss of techniques, often ancestral, handed down from generation to generation, for the development of handicrafts are lost.

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