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Chapter

Inclusion of Indigenous Peoples in the Digital Economy through E-Commerce: A Case Study of Oaxaca

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Abstract

This research aims to know the level of inclusion of indigenous peoples in the digital economy through the adoption of electronic commerce aimed at the sale of indigenous handicrafts present in the state of Oaxaca, as well as the level of technological skills on the part of Oaxacan artisans. The methodology applies a qualitative study through a descriptive exploratory process in order to carry out a theoretical and practical analysis in the context of the Internet. The results indicate that the electronic commerce of indigenous handicrafts of Oaxaca is incipient; however, social networks and specifically Facebook© and Instagram© have favored the artisan in the process of adoption of electronic commerce, which is reflected in the marketing of their products in these social networks. Likewise, it is evident that the indigenous artisan faces important challenges in having legal protection over the rights of their designs and handicraft works; in the same way, it requires technical assistance for the process of learning and building technological competence.

Keywords: cultural identity, e-commerce, digital divide, indigenous handicrafts, indigenous peoples

1. Introduction

The Mexican state recognizes indigenous peoples by defining themselves in Article 2 of the Political Constitution of the United Mexican States as a multicultural nation founded on their indigenous peoples [1]. The indigenous peoples of Mexico are those who assume an ethnic identity based on their culture, their institutions, and history that defines them as the autochthonous peoples of the country, descendants of the original societies of the Mexican territory. According to an estimate by the National Institute of Indigenous Peoples (INPI by its Spanish acronym), through the National Commission for the Development of Indigenous Peoples (CDI by its Spanish acronym), in 2015 the indigenous population was approximately 12 million people,

divided into 68 ethnic groups [2]. According to the National Institute of Statistics, Geography and Informatics (INEGI by its Spanish acronym), the 2020 census showed that at the national level there are 11.8 million indigenous people with 51% being women and 49% being men [3].

In the state of Oaxaca, there coexist 16 of the original peoples distributed in the eight regions that make up the state, which leads to a cultural wealth that has been transmitted from generation to generation through its rituals, symbols, uses, and customs among other factors. The original peoples (also called pre-Hispanic peoples) have traditionally had an important participation in the manufacture of handicrafts, embodying in each of them their ancestral culture. The main problems experienced by indigenous artisans are the abuse of the intermediation of their products, resellers, and the lack of fair remuneration for their creations. The COVID-19 pandemic came to exacerbate the situation of the artisan since it affected the influx of tourism and economic activities, as well as the sales of handicrafts that are traditionally made face to face, giving the artisan the opportunity to communicate to the final customer their emotions, the meaning of their symbols and colors embodied in their works. However, COVID-19 has also helped artisan to reinvent their marketing process by venturing into virtual spaces through the Internet.

Information and Communication Technologies (ICTs) combined with the democratic access to the Internet that prevails in developed countries have impacted the global economy, giving direction to the concept of the digital economy. It is experiencing rapid growth that manifests itself in various sectors, such as e-government, e-commerce, e-learning, e-health e-entertainment, e-business, and others. Likewise, digital mobile devices and the growing connection to broadband and computer networks accelerate the adoption and development of new forms of social interaction, providing new opportunities for marketing products and/or services. The Organization for Economic Co-operation and Development (OECD) conceives the digital economy as “any economic activity enabled or significantly enhanced by the use of digital and information technologies.” [4] In general terms, the digital economy can be defined as those commercial activities that are carried out through the use of digital computing technologies where products and services are marketed in the virtual space, streamlining processes and mitigating marketing costs, giving rise to digital business. In accordance with the G20, the concept of digital economy comprises the following approaches: digital goods and services, economy with digital transactions, digitally enabled economy, digitally enhanced economy, and the digitalized society.

In the face of the pandemic caused by the infectious disease of the coronavirus (COVID-19), companies have been affected by their marketing processes that impact their economic income, especially micro and small companies, causing in many cases their closure. Faced with this contingency and the measures taken by the state, such as confinement at home and “healthy distance” in order to prevent the spread of the virus, the craft sector in the state of Oaxaca has also been affected, given that most of its sales were made face to face between the artisan and the client. As part of a marketing strategy, in recent years and especially in 2020 to date, Oaxacan artisans have seen the need to venture into e-commerce for the sale of their products. However, how prepared are artisans to make e-commerce a tool that favors their sales and their inclusion in the digital economy? Are there online stores or portals for the sale of Oaxacan handicraft products? Are the artisans the owners of the domains? What kind of handicrafts is produced in Oaxaca and which are sold online? The craft has its roots in the rural crafts of ancient civilizations (Mixtecos, Zapotecos, Triquis, among other indigenous peoples) and many specific crafts have been practiced for centuries, while others are modern inventions or popularizations of handicrafts that were originally

practiced in a limited rural geographic area of the state of Oaxaca. This research aims to answer the questions raised, with the aim of knowing the level of inclusion in the digital economy of the artisans of indigenous peoples.

From the perspective of interpretive procedure [5], the methodology of the applied research is of qualitative type through an exploratory process descriptive of the virtual scenarios of the Internet where the e-commerce practices of indigenous crafts are presumed to be developed, that are the subject of analysis and from this obtain conclusions on the essential of the subject of study (an indistinct reference will be made to the feminine or masculine gender to the indigenous artisan).

2. Handicrafts in Mexico

Finding a concept of craftsmanship is not something simple, that is, there is no standardized concept. The art produced by indigenous groups is generally not referred to as folk art but as primitive art or indigenous art. However, there is no consensus that the concepts of folk art, primitive art, crafts, and folklore refer to the same type of creation [6]. The word craftsmanship comes from the Italian voice *artigianato*, this term is used to explain the activities of the artisan worker [7].

Handicrafts can be understood as a language by which artisans communicate with each other, with nature, and with those around them. Handicrafts express not only their identity but also the creative skill of artisans, customs, or geographical location [6]. Martínez-Peñalosa (1982) cited in Del Carpio [8] considers that handicrafts are the ways in which communities preserve and transmit their physical and spiritual peculiarity. Also, it is considered that they are the way in which artisans seek to preserve their customs, identity, and originality. The craft trade is one of the oldest in humanity, and it stands out for the elaboration of products with cultural elements and materials typical of the region where it is lived, which leads to create the identity of the community. The production of handicrafts is done manually and with the intervention of various pre-Hispanic tools [7].

Artisanal production in Mexico is carried out in a context of inequality and difference, since its ethnic origin, manufacture, materials, design, marketing, distribution channels, consumption, and valuation are diverse. On the other hand, the population has multiple differences in access to resources, goods, and services. Many of the differences in handicrafts are related to the cultural diversity of Mexico, which is a multicultural country. The Mexican cultural reality can be described as plural, multifaceted, classist, stratified, complex, contradictory, and rich, but it can only be understood by considering the social reality [8].

The diversity of pre-Hispanic cultures in Mexico favored the production of handicrafts in different regions. The Spanish conquest and the subsequent miscegenation led to the introduction of new techniques that diversified artisanal production [7]. That is why, today we do not find only a single type of craft in Mexico, but vary according to the state, even according to each locality. Crafts production is a ritual where the tradition, color, aesthetics, geometric configuration, and art persist [9], regardless of the type of crafts (textile fibers, black clay, and alebrijes, among others). On the other hand, the National Institute of Statistics, Geography and Informatics for the quantification of activities related to handicrafts, that is, the Satellite Account of Culture of Mexico (CSCM its acronym in Spanish) uses as a reference the System of National Accounts 2008 of the United Nations, where the production of handicrafts is classified into eight large areas: pottery and ceramics; vegetable and textile fibers; wood, maque

and lacquer, musical instruments, and toys; Cardboard and paper, popular plastic, waxwork, and pyrotechnics; metalwork, jewelry and goldsmithing; lapidary, stonework, and glass; saddlery and leather goods; and typical foods and sweets. According to the CSCM, the culture sector generated 724,453 million current Mexican pesos in 2019, of which, handicrafts contributed 138,291 million pesos representing 19.1% of the cultural sector. In the same year, handicrafts employed 489,890 paid jobs; this represented 35.1% of the positions employed by the culture sector as a whole [10].

3. Handicrafts from the state of Oaxaca

The situation of artisanal activity both at the national level and for the Oaxacan entity is varied. INEGI provides certain data on handicrafts as an economic activity (**Figure 1**). For the state of Oaxaca, in 2018, the economic activities associated with the production of handicrafts with a certain number of Economic Units (EU) were the following [11]:

1. Manufacture of textile inputs and textile finishing (5 485 EU)
2. Manufacture of textile products, except clothing (8 370 EU)
3. Manufacture of carpets, white and similar (1 376 EU)
4. Manufacture of carpets and rugs (1 253 EU)
5. Manufacture of clothing (3 921 EU)
6. Manufacture of knitted clothing (496 EU)
7. Tanning and finishing of leather, and manufacture of leather products (350 EU)
8. Manufacture of draft in fabric cutting (2 EU)
9. Manufacture of rubber footwear (2 EU)
10. Manufacture of huaraches and footwear of other materials (204 EU)
11. Manufacture of handbags, suitcases, and the like (104 EU)
12. Manufacture of other leather, leather and substitute products (14 EU)
13. Manufacture of pottery, porcelain, and earthenware (849 EU)

As can be seen in **Figure 1**, in the state of Oaxaca, the manufacture of textile products is relevant as the main economic activity within the artisanal branch.

According to the Ministry of Tourism (SECTUR for its acronym in Spanish), the “Magic Route of Handicrafts” of the state of Oaxaca (**Figure 2**) includes the towns of: Santa María Atzompa, San Bartolo Coyotepec, San Martín Tilcajete, Santo Tomás Jalieza, San Antonio Castillo Velasco, Ocotlán de Morelos, San Antonio Arrazola, Cuilápam de Guerrero, and Zaachila [12]. In each of these localities, the handicrafts are exhibited in the central square, in the markets, in museums, or in small-scale workshops that have been

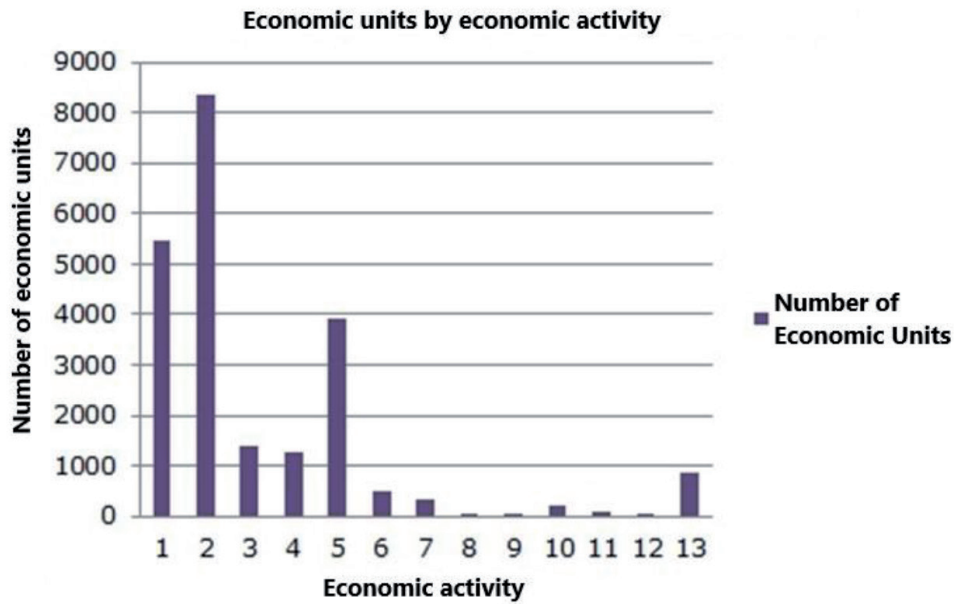


Figure 1.
 Economic activity. Source: Elaboration with data from INEGI [11].

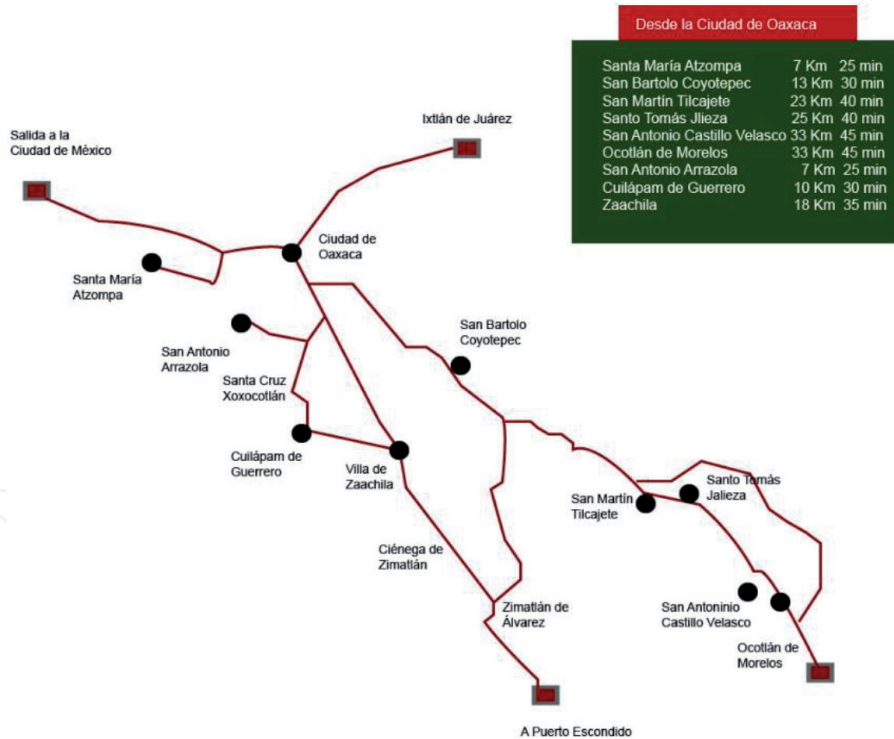


Figure 2.
 Handicrafts route. Recovered from the Ministry of Tourism [12].

installed in the houses of the artisans. When craftsmen sell their products through a collective sales stand, the artisans have a system of labels, where the name of the artisan and the price are indicated, which allows other people to make the sale and the owner artisan to recover her investment for the sale of the product without having to stop producing.

In **Table 1**. The types of handicrafts produced in the localities that are considered in the “Magic Craft Route” are described.

Locality	Type of crafts	Products	Place of sale
Santa María Atzompa	Glazed green clay ceramics In the process double firing is applied to apply the powder “greta” to obtain the green color.	Utilitarian and ornate articles (pots, lamps, pots, pots, pots, and clay animals, etc.)	Craft market “La Asunción.” Merado of crafts “Del Señor del Coro” and local population.
San Bartolo Coyotepec	Black clay ceramic Cooking technique “reduction of atmospheres”	Utilitarian and ornate articles (pitchers, vases, figures of women and virgins, candlesticks, and skulls, among others.)	Artisan workshops in the town. State Museum of Popular Art in Oaxaca (MEAPO).
San Martín Tilcajete	Alebríjes Carved figures in copal wood.	All kinds of “fantastic beings,” product of the creativity and imagination of the craftsman*.	Workshops are installed in the homes of the artisans of the community.
Santo Tomás Jalieza	Textile Technique “waist loom” also known as otate loom. Pre-Hispanic symbols of multiple meanings prevail	Cotton yarn fabrics, such as huipiles, blouses, table paths, shawls, bags, backpacks, wallets, and bracelets, among others.	Handicraft market “El Higo.” Tourist Parador Local posts
San Antonio Castillo Velasco	Textiles Elaborated with silk and cotton thread.	Mainly huipiles, dresses, and blouses. As well as the traditional garment known as “the San Antonio dress.”	Family workshops located in the homes of the craftswomen. Community market premises.
	Carrizo Basketry	Basketry products, such as altillos, cages, baskets or napkin holders, among others.	
Ocotlán de Morelos	Forged	Forged metal, such as swords, knives, letter openers, daggers, and sabers.	Family craft workshops
	Reed basketry	Baskets, fruit bowls, jewelry boxes, and lamps.	Market square
	Textiles	Dresses, huipiles, and blouses made of blankets and embroidered with silk threads.	Community premises
San Antonio Arrazola	Cradle of the Alebríjes Figures carved in soft wood of copalillo, tzompante or cedar.	Creativity of the artisan, visualize the piece depending on the shape of the wood and the animal you want to make, such as dogs, cats, iguanas, jaguars, and dragons, among others.	Don Manuel Jiménez House Museum Workshops installed in the homes of artisans in the community.
Cuilápan de Guerrero	Tufts with bird feathers. Alebríjes	Tufts with bird feathers. Alebríjes	Plaza or artisan market, where other handicrafts from surrounding communities are also sold.

Zaachila	Textiles Costume jewelry Basketry Clay ceramics Mezcal The examples bel	A diversity of handicrafts is presented as a result of various techniques.	Gastronomic market Family craft workshops
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Table 1.

Types of handicrafts on the “Magic Craft Route” Data from the Ministry of Tourism [12].

Other municipalities that are not within the handicrafts route, but also have a significant artisan production, are Magdalena Ocotlán, San Martín Tilcajete, and Santa Ana del Valle. These localities are located in the central valley region of the state of Oaxaca. In Magdalena Ocotlán, stone objects used in culinary art are made from metates and molcajetes, to mention a few [13]. In San Martín Tilcajete, wooden figures are made, better known as “Alebrijes.” [14] Finally, in Santa Ana del Valle, the textile activity is 100% handmade, made with wool thread on the loom and dyed with natural dyes. Rugs, jorongos, backpacks, blankets, and shawls are made, and all these elements are designed with landscapes, flora and fauna, or pre-Hispanic motifs of the region [15].

4. Perspective of e-commerce in Mexico

Electronic commerce (e-commerce) can be defined as a commercial form that, using the services and links provided in electronic documents on the Internet, allows people to consult, select, and purchase the offer from a distributor through a computer or a system with an Internet connection in real-time, and at any time and place [16]. The OECD [17] has regarded it as the purchase or sale of goods or services, whether between enterprises, households, individuals, governments, and other public or private organizations, carried out on computer-mediated networks. It can also be noted that e-commerce mainly uses the Internet to offer and sell online the products or services of a company. So, if executed correctly, it can provide a number of financial advantages to companies, as well as being faster to get products and services to market or increase the customer base. In addition, it eliminates time and space barriers [18].

In Mexico, as in the world, the years 2020 and 2021 were important for the digital evolution in all sectors (e-education, e-government, e-health, and e-economy, among others.) e-commerce was one of the most benefited since important advances were presented in its adoption. The Government of Mexico has implemented strategies that have favored change and contributed to the reduction of the digital divide, such as the conversion of analog to digital signals, and it has freed the 700-megahertz band, helping to improve broadband services, as well as the amendments to the Federal Telecommunications and Broadcasting Act, which is aimed at regulating the use and exploitation of radio spectrum, telecommunications networks, and satellite communication. A significant advance for the population and marginalized communities in telecommunications was established in Section V of Article 118 of this Law, which states that as of January 1st, 2015, operators that provide telephony service, whether mobile, fixed, or both, cannot make national long-distance charges to their users for calls they make to any destination in the country [19].

After the constitutional reforms on telecommunications, the Mexican government became the majority shareholder of “Altán Redes,” [20] the company responsible for bringing Internet and mobile telephony to all the country’s towns, especially to the most isolated communities through the project known as “Red Compartida,” which will offer services at more accessible prices, as well as free Internet in public squares, schools, hospitals, and places of collective interest. These actions have led to the growth of the Internet, telephony, and specifically the mobile network, creating high expectations in its development due to increased connectivity and the promise of greater banking penetration to the population through traditional banking and the new banks, 100% digital (called Neobanks), that have bet on reaching remote areas and populations excluded by traditional systems.

In 2021, according to information collected by BlackSip [21], the world population was 7.8 billion people of which 60.9% are connected to the Internet. In Latin America, four countries exceed the world average for connection: Argentina (83%), Brazil (74%), Mexico (74%), and Colombia (69%). And according to the BlackSip report, on average people spend nearly 7 hours online and 92.1% access Internet services from their cell phones, so approximate global sales of \$4.189 billion are expected. Pierre Cuevas, regional director of sales north Latam for BlackSip, says: “The projections for the coming years are positive. It is expected that by 2025, e-commerce users will reach 77.9 million globally. This is thanks to the increase in connectivity and the spending capacity of generations that grew up in the digital context and therefore fear fraud less and rely on this type of services” [21].

According to the Mexican Association of Online Sales (AMVO) 2021, it stands out as preferred categories for purchase through digital channels in Mexico: food delivery in 66%, fashion items, such as clothing and footwear in 57%, beauty and personal care in 52%, electronics with 46%, appliances 43%, consoles and video games 41%, pharmacy 41%, supermarket 40%, office supplies 37%, and tools 35%. Among the trends for the acquisition of services are subscriptions to television, movies and music 83%, mobile telephony 78%, mobile banking 78%, utilities (water, electricity, and telephone) 75%, cultural content 72%, urban transport 70%, travel 67%, shows and events 57%, education 52%, courier service 52%. Also, according to the analysis of Americas Market Intelligence (AMI) the forms of payment for purchases in e-commerce in 2020 were credit cards 43%, debit cards 26%, some method based on cash payment 16%, digital wallets 10%, other forms of payment 3%, and bank transfers 2%. The main devices used to make online purchases were mobile with 57%, while 43% were made from a desktop computer. The main shopping applications (Apps) that were used on mobile phones and digital platforms were “Mercado Libre,” “Amazon,” “Shein,” “Liverpool,” “Aliexpress,” and “Segunda mano.”

Digital platforms have participation in a wide range of industries, so they can be defined as digital infrastructures that enable the interaction of two or more groups. That is, they serve as intermediaries that bring together different users, such as customers, service providers, advertisers, and suppliers, among others. Within these digital platforms enter e-commerce websites [22]. E-commerce platforms typically present information to shoppers, such as what they can buy, what they have purchased, and their status as customers. It is important to mention that the ease of payment, the benefits of online shopping, the quality of the information provided, and mainly trust are elements that significantly affect the purchase decision of consumers [18]. However, it does not mean that design does not matter, since, if the site has a quality interface, this will contribute to generate a positive impact on consumer attitudes and behaviors.

5. Status of e-commerce of indigenous handicrafts

Information and Communication Technologies (ICTs) allowed new tools for the commercialization of products and services [23]. It is worth mentioning that e-commerce represents advantages, but also disadvantages, especially for small businesses, or small businesses. In the state of Oaxaca, the production and sale of handicrafts are considered a family business, since, in most communities, complete families are dedicated to this activity. It is important to mention that in the information society and in the context of the digital economy, electronic commerce can change the way businesses are conducted [24], and of course, in the field of handicrafts, this can also have an effect. Although due to the sector, at present, it is still considered that they have not been reinvented, and artisans have not entered this new sphere, which is the electronic commerce of crafts. However, despite the advantages offered by electronic commerce and its inclusion in different sectors, currently, in the state of Oaxaca, this option of electronic business is still far from artisans, because while some do not yet have the knowledge of the concept itself, others do not have the technology. The vast majority of native craftsmen are not digitally literate and are unaware of its advantages, such as sales at all times, cross-border sales, and larger market, among other services. In addition, they do not have enough technological and economic resources to reinvent their current business as a digital business, in which the base would be an e-commerce platform.

It is therefore important and necessary for craftsmen to have digital skills and knowledge about the advantages that electronic commerce would offer them since today we live in a highly technical society, which allows having a market with the ability to offer a wide variety of products and services to the consumer at low cost and in a short time, so in this society, technology becomes a means to adequately respond to market demands [24]. Having a new sales channel, such as e-commerce, will contribute to improving their income and possibly their economic life, as well as having a greater presence in both domestic and international markets.

According to the study and analysis that was carried out in the search for e-commerce platforms for handicrafts, the sites shown in **Table 2** were obtained. Where the main handicraft products that are marketed are utilitarian and ornamental ceramics, pieces of goldsmithing, and alebrijes, as well as various textile articles, such as dresses, huipiles, blouses, curtains, bedspreads, and rugs, among other pieces. The main technology-based social networks were identified as the platforms of Facebook© and Instagram© that act as mediators in the exhibition of handicrafts. However, their owners are not the original artisans, so it follows that the intermediation and resale of artisanal products prevails. In other cases, it was found that non-artisan people take advantage of this technology to sell the products of artisans. This happens for the same reason because these people who do have the technological skills take advantage of technology to sell this type of product, when artisans would be expected to do so to increase their profits.

It was also found that the government of the state of Oaxaca collaborated with Amazon to offer Oaxacan handicrafts for sale and support the state's producers during the pandemic. Textiles, alebrijes, clay figures, and various ingredients of Oaxacan gastronomy are available through the "Amazon" handmade platform [25]. However, with this initiative, artisans remain in the same situation of exploitation of their handmade work since part of their profits is destined for "Amazon." Another important fact to consider is the lack of legal protection of the rights over

Name	Platform	Link
La Casa de las artesanías de Oaxaca	Facebook©	https://es-la.facebook.com/lacasadelasartesaniasdeoaxaca
Artesanías Oaxaqueñas	Facebook©	https://www.facebook.com/sandovalbarriosadelina/
Artesanías oaxaqueñas mayoreo y menudeo	Mercado Libre	https://listado.mercadolibre.com.mx/artesanias-oaxaquenas-mayoreo-y-menudeo
Oaxaca de mis Amores, Productos Artesanales	Facebook©	https://www.facebook.com/ProArtOax/
La Oaxaqueña Ropa Artesanal	Instagram©	https://www.instagram.com/la_oaxaquena_ropa_artesanal/
Oaxaca en Casa	Instagram©	https://www.instagram.com/artesanias_oaxaca_en_casa/
Chiquihuite artesanías	Instagram© Facebook©	https://www.instagram.com/chiquihuite_artesanias_oax/ https://www.facebook.com/chiquihuite.artesanias.de.carrizo/
Casa de las Artesanías	Instagram©	https://www.instagram.com/casa_arte_oax/
Morena Mía	Instagram©	https://www.instagram.com/morenamia_artesaniasoax/
Artesanías Monte Albán	Instagram© Facebook©	https://www.instagram.com/artesaniasmontealbanoficial/ https://www.facebook.com/Artesan%C3%ADas-Monte-Alb%C3%A1n-104418065036049/
Artesanías Oaxaca	Instagram©	https://www.instagram.com/artesanias_oaxaca_/
Artesanías de Oaxaca	Instagram©	https://www.instagram.com/artesanasdeoaxaca/

Table 2.
Types of platforms used for e-commerce of indigenous handicrafts.

their handicrafts since in none of the sites investigated is their legal protection of the design and art embodied in each of the handicrafts in a globalized market where piracy coexists.

As can be seen, in the incipient incursion of the sale of indigenous handicrafts of the state of Oaxaca in the digital modality, social networks have been mainly used through the Facebook© and Instagram© platforms, but no e-commerce stores of official handicrafts of each locality mentioned in this study were found. However, reference was obtained from three sites that allude to the sale of handicrafts. The first, belonging to the H. Ayuntamiento de San Pablo Villa de Mitla [26], is a traditional Web site that mainly shows the textile crafts of the artisans of Mitla. The site's interface reflects the ethnic culture of the locality and maintains an approach between the client and the artisan where brief stories of their artisans are written, such is the case of María del Rosario Hernández Monterrubio:

“I am originally from San Pablo Villa de Mitla, since I was a child, I was very close to our culture because my grandfather was custodian of the Archaeological Zone and I enjoyed accompanying him. I grew up and learned about trade when my parents opened a “Mezcalería” that I took care of and since then I have really liked being a merchant. In my free time I embroidered garments to help with the economy of my family. As a craftswoman, I started 11 years ago with my husband, once we got

married, and since then craftsmanship has been our source of income. For me being a craftswoman is the best of the trades because besides enjoying it, it allows me to be close to my three children and see closely their growth.” [26]

Since different artisans converge in the “Artesanías de Mitla Oaxaca” portal, the buying and selling process is carried out as follows: each artisan has a bank account number, which is associated with each of their handicraft products. The quantity of garments to be purchased is from 1 to 5 per artisan. It is also necessary to fill out a form with the following information: name of the garment, number of garments, and define sizes and colors. The customer must deposit the payment equivalent to the number of garments he/she wishes to purchase. As a way to verify the payment of the garments, the customer must provide his/her address and a photo of the receipt. Finally, the purchase process is completed after a maximum period of seven working days, the estimated time for the delivery of the product to the customer’s home via courier. Therefore, if the client wishes to purchase more products from different artisans, he/she will have to go through the buying and selling process with each of the artisans involved.

The second case is “ARIPO” [27] is an online platform of the Oaxacan Institute of Handicrafts (IOA) created for the online sale of handicraft products from the eight regions of the state. Its purpose is to promote artisan families and preserve the cultural legacy of the state. Also, another essential part is that it seeks artisan development in the digital era. The platform offers for sale various handicraft products: huipiles, blouses, wool rugs,alebrijes, shawls, clay pieces, glasses holders, pencil cases, cosmetic cases, baskets, and tinplate pieces, among others, where the production of various artisans from different communities converge. Therefore, it has a variety of products in its handicraft offer. The added value in each product is given from the moment in which each piece is conceived, for being unique and incomparable. Likewise, the product has a description so that the consumer has the opportunity to get to know the artisan, as well as the process of creation of the work, and not just make a purchase. This site has features, such as product control, order management, payment control, and delivery control; all these systems contribute to the commercialization of the products of Oaxacan artisans [27].

The third case is the platform of the “Casa de las Artesanías de Oaxaca” which is an organization composed of 54 families of artisans, the online platform has for sale crafts, such as rugs, t-shirts, mezcal, handbags, and kitchen utensils, to name a few. Also included is a menu that shows the buyer the ordered and classified crafts. Through this menu you can navigate between the different options of handmade products. In this e-commerce portal has applied the metaphor of “supermarket trolley”, so that intuitively the customer add the product you want to buy. The payment system has also been implemented through Paypal and/or by credit card. In the design of the interface of this e-commerce site, a variety of handicraft product lines are presented, such as pottery, tinsmithing, goldsmithing, palm, embossing, clothing and footwear, saddlery, wood carving, wool rugs, and includes food and beverages. There is a lack of balance between the quality of their images to highlight the qualities of the product, as well as products that are advertised without images, a situation that weakens the buying process. The products are presented through images that lack visual quality, which is a factor that discourages the purchase of the product.

5.1 Challenges of e-commerce of indigenous handicrafts

The development of a business model for ethnic handicrafts through the use of Information and Communication Technologies (ICTs) requires full knowledge of the

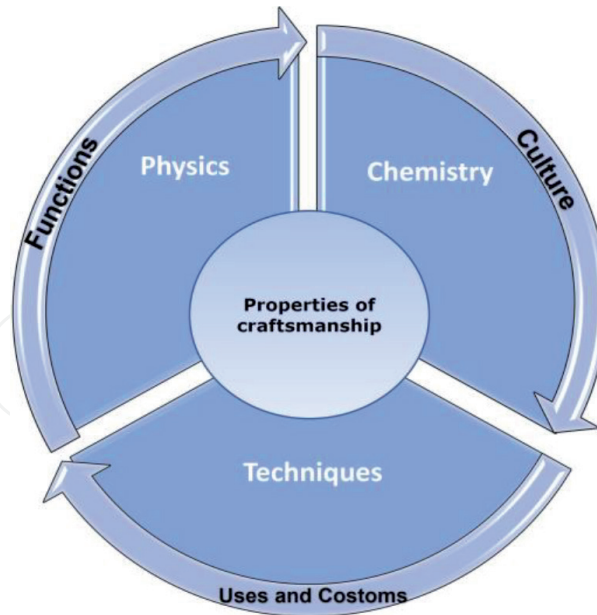


Figure 3.
The core of the ethnic handicraft product.

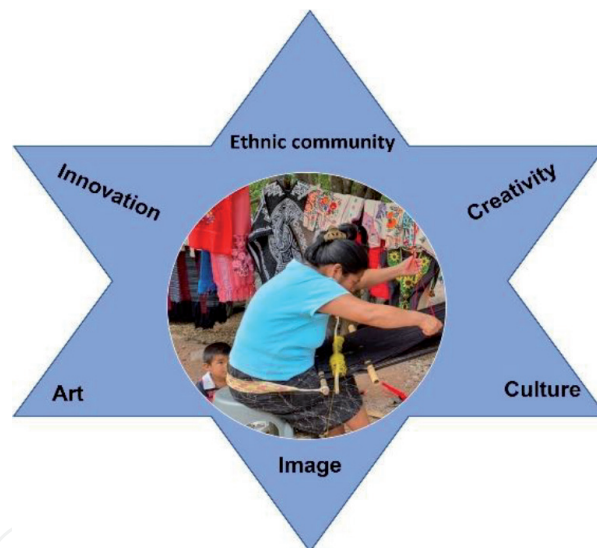


Figure 4.
Socio-cultural attributes.

tangible (shape, size, and color, among others) and intangible attributes (image, service, identity, etc.) that are present in an ethnic handicraft and that are appreciated by the consumer. Some of the factors that must be considered to make the decision to venture into digital e-commerce platforms are shown in **Figure 3**. Undoubtedly, the core of the handicraft product is composed of the physical, chemical, and technical properties, however, the functional characteristics, use, and customs inherent to the product and granted by the set of people or target audience (also known as Target) who will be the future consumer of the handicraft product, have relevance.

Oaxacan handicrafts are made up of elements that mix mysticism with functionality, that is, the artisans of an ethnic community (**Figure 4**) in each of their handicrafts capture elements that reveal the art of the rituals of their pre-Hispanic ancestors with the functional factors of the product. Today, the new generations make

a symbiosis between creativity, innovation, and mysticism where their culture is not lost with the new image of handcrafted products. Knowing who the target audience is, what type of product or service is offered or how you want to compete in the market are key issues when defining a business model in e-commerce. As it is an e-commerce business, the opportunities grow for the supply and demand of handicraft products, so the strategy to identify the characteristics, preferences, and needs of the consumer also requires accessible technological tools to obtain the most relevant information for the design of the graphic interface and the architecture in the content management of the e-commerce portal.

Defining the demographic profile of the target audience facilitates the task of the portal designer, within this framework, elements, such as age, gender, and location are relevant. In the case of this last element, it is a key element to focus on the design of the interface in a local, regional, or worldwide context. Once the consumer profile and the socio-cultural attributes of the product are known (**Figure 4**), it is necessary to differentiate between B2B (Business to Business), B2C (Business to Customers), and C2C (Consumer to Consumer) business models. The first refers to the B2B model where a company sells products to another company; in the case of the ethnic community of artisans, the company is made up of a social group generally composed of women who develop handicraft activities originating in an ethnolinguistic community and who find it difficult to position their product at a business Target. One of the main limitations is the productive capacity of the social group to supply the demand of a company that buys wholesale.

The B2C model refers to electronic commerce carried out by a company directly with the end consumer. For this model to be applicable, the social group of artisans would first have to be constituted as a micro-industry, that is, become an economic unit (EU) that through artisanal activity and work organization is dedicated to the transformation of its raw material into artisanal products. This provision is made in accordance with the Federal Law for the Promotion of Microindustry and Artisanal Activity (LFFMAA), which would imply administrative and accounting management. In most cases, the lack of accessibility to ICTs, the low level of education of the craftswomen, and their lack of knowledge about the LFFMAA are causes that prevent the incorporation of microindustrial entities of the handicraft activity into the state's economy, in addition to the fact that the craftswomen do not receive technical assistance to facilitate the constitution and operation of the economic units. This represents a great disadvantage for artisans because due to all the processes that must be carried out to set up a company and the economic investment it represents, they decide to continue selling in the traditional way and not to venture into e-commerce.

In C2C (Consumer to Consumer) e-commerce, which stands for consumer to consumer, it is a modality where sellers are closer to the end customer. This modality favors the artisan since it is not necessary to have a physical store beforehand. The client is the one who takes control of the commercial transaction, that is, the commercial operation is carried out directly between the artisan and the client, they agree on the transfer of the handicraft product, in exchange for a previously agreed price, without the intermediation and resale of the handicraft products. However, in this study, customer complaints were detected due to the lack of security and follow-up in the delivery of the products, once the corresponding payment has been made.

In order to provide reliability and security to the buyer during commercial transactions, sometimes third parties intervene, as in the case of the "Amazon" portal previously mentioned; another example is the "Mercado Libre," which is a portal where people can promote their own products (first or second hand) and coordinate

themselves with their customers the form, time, and place of the transaction. In return, these types of web portals are entitled to receive a certain commission for each sale that takes place on their platform as payment for their services. Also, with the intention of not making major investments in economic resources, artisans and non-artisans decide to opt for social networks as a sales channel. Although it represents disadvantages in terms of payment and delivery logistics, it is clear that its purpose is not that of an e-commerce platform. However, using these channels also has advantages, such as greater trust between the artisans and the consumer, and greater visibility on social networks, either of the artisan or of the products he or she sells.

6. Concluding remarks

The Mexican state presents relative advances in the context of the digital economy; however, the net balance in socioeconomic terms is dissimilar for indigenous artisans, given that the strategies of growth and development in the technological structure of the country have not been sufficient to provide democratic access to the internet to the entire population, with isolated and marginalized communities being the most affected. However, given the contingency caused by the COVID-19 pandemic without a formally established online store, Oaxacan artisans have begun to offer their products on social networks, mainly Facebook® and Instagram®. To a large extent, the action is due to the development of mobile technology that is increasingly within people's reach. Indigenous artisans make use of cell phones to venture into e-commerce, giving rise to mobile commerce (m-commerce). This study highlights the presence of the indigenous artisan in electronic commerce in an incipient way, mainly due to digital illiteracy that is largely caused by the vertiginous technological advance and the precarious economic situation that the artisan lives in. Lacking technological competencies and skills, artisans are dependent on third parties to exhibit and market their products, which causes the prevalence of intermediation for the sale of their handicrafts. At the same time, there are few platforms dedicated to the e-commerce of indigenous handicrafts that comply with the entire process of buying and selling that gives value to a digital economy; for example, the payment of commercial transactions with credit or debit cards are almost nonexistent. For this reason, the customer has to pay for the product or service by electronic transfer or in cash at the time of delivery. It should be clarified that in this research it was found that most of the time the delivery of the product is made after the corresponding payment has been made.

On the other hand, taking into account the figures of the growth and adoption of e-commerce in Mexico, it is possible to infer that the electronic commerce of indigenous handicrafts has a virgin and promising market. However, just as new opportunities are created, new challenges also appear for the craftsman. It is not enough to exhibit handicraft products in a wider market, such as digital commerce, where barriers of borders and time are eliminated, it is also necessary to carry out actions to give legal protection to the designs of handicrafts and respect for the copyright of ethnic artisans, given that in none of the websites of this research there are property rights that protect the design and embodied art in each of the handicrafts against piracy. It is also important to combat digital illiteracy in most ethnic artisans, so technical assistance is required for the process of learning and building technological capacities. Finally, this research has given direction to carry out other studies that allow the researcher to venture more deeply into the rights of the indigenous artisan

in the face of the growing digital economy that brings with it new methods, forms, and challenges in the use of digital technologies and information.

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