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## Presentation of the Content

In the first article we present, *Implementation of augmented reality to spread tourism in San Martín Texmelucan, Puebla*, by SÁNCHEZ-JUÁREZ, Ivan Rafael, PAREDES-XOCHIHUA, Maria Petra, MORALES-ZAMORA, Vianney, PAREDES-XOCHIHUA, Fidel, with adscription at the Tecnológico Nacional de México Campus San Martín Texmelucan, next article, we present *The 2030 agenda and the goal of gender equality in tourism in Mexico*, by TORRES-VALDEZ, Julio César, PÉREZ-ZACARÍAS, Luis Antonio, GÓMEZ-DÍAZ, Javier and GARCÍA-MARTÍNEZ, Fernanda Ximena, with adscription at the Tecnológico Nacional de México - Instituto Tecnológico de Oaxaca, as following article we present, *Perception of the status of well-being of beneficiaries of the social program Jóvenes Construyendo el Futuro in Othón P. Blanco*, by MORENO-GARCÍA, Blanca Verónica, DÍAZ-RODRÍGUEZ, Eustacio and BELTRÁN-LÓPEZ, Robert, with adscription at the Tecnológico Nacional de México - Instituto Tecnológico de Chetumal, as last article we present, *Formulation of gummies with Persian lemon bagasse (Citrus latifolia Tanaka) and stingless bee honey (Scaptotrigona mexicana): acceptance and purchase intention*, by ALATRISTE-PEREZ, Ismael, CONTRERAS-OLIVA, Adriana, ZARATE-CASTILLO, Gregorio and HERRERA-CORREDOR, José Andrés, with adscription at the Universidad Tecnológica del Centro de Veracruz.



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Implementation of augmented reality to spread tourism in San Martín Texmelucan, Puebla

Implementación de realidad aumentada para difundir el turismo en San Martín Texmelucan, Puebla

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Abstract

Augmented reality (AR) is a technology that has been gaining greater presence in different sectors, among which we find education, marketing, training, tourism, among others. Augmented reality can be consumed in two ways, one is by creating an application that is installed on a smartphone or tablet and the second is through web environments (Web AR). Through the use of a web platform, a tour is developed through the tourist places named below in the township of San Martín Texmelucan Puebla, Mexico: Iglesia El Carmen, Antigua fábrica textil El Carmen, Parroquia de San Martín Obispo de Tours, Monumento a la Unificación Obrera, Complejo Cultural Texmeluquense and Antigua estación Ferroviaria. Within the AR Web, it allows you to see the locations, the map and show the route to follow to reach the tourist place. When you reach the destination, within a pre-established radius, you will be able to see information and an image or video representative of the place. For the development, the following steps were followed: determining the tourist places, collecting relevant information about each place (description, images, latitude and longitude), creating the scene and content, testing and adjusting the scene, and finally sharing the link.

Resumen

La realidad aumentada (RA) es una tecnología que ha ido adquiriendo mayor presencia en diferentes sectores, entre los cuales encontramos educación, marketing, capacitación, turismo, entre otros. La realidad aumentada puede ser consumida de dos maneras, una es creado una aplicación que se instale en un teléfono inteligente o tableta y la segunda, mediante entornos web (Web AR). Mediante la utilización de una plataforma web se desarrolla un recorrido por los lugares turísticos que a continuación se nombran del municipio de San Martín Texmelucan Puebla, México: Iglesia El Carmen, Antigua fábrica textil El Carmen, Parroquia de San Martín Obispo de Tours, Monumento a la Unificación Obrera, Complejo Cultural Texmeluquense y Antigua estación Ferroviaria. Dentro de la Web AR, permite ver las localizaciones, el mapa y mostrar la ruta a seguir para llegar al lugar turístico. Cuando se llegue al destino, dentro de un radio preestablecido, se podrá observar información y una imagen o video representativo del lugar. Para el desarrollo se siguieron los siguientes pasos: determinación de los lugares turísticos, recabar información relevante de cada lugar (descripción, imágenes, latitud y longitud), creación de la escena y contenido, prueba y ajuste de escena, y finalmente compartir el enlace.

Augmented reality, Mobile application, Tourism

Aplicación web, Realidad aumentada, Turismo

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## Introduction

Tourism is an activity that promotes sources of income to a certain area. In a blog of the CESUMA University (n.d.) tourism is established as "an activity that consists of the temporary displacement of people to places other than their usual place of residence with the aim of enjoying leisure, cultural, educational, business experiences, among others". So we want to promote tourist sites in the region of San Martín Texmelucan, Puebla, so that tourists can get to know the attractions in the area, among the attractions are: Parish of San Martín Bishop of Tours, Ex Franciscan Convent, Church of Carmen, Ex hacienda of San Cristóbal Polaxtla, among others.

To achieve this, Augmented Reality (AR) techniques will be implemented, which consists of a technological resource that offers interactive experiences to the user based on the combination of the virtual and physical dimensions, with the use of digital devices (Grapsas. 2019). Augmented reality can be consumed from a mobile phone, either by installing a previously made application or it can be consumed from a web environment, also known as Web AR. AR can be classified into the following types: AR on markers, AR with image tracking, geolocalised AR, AR on surfaces, AR on objects Face Tracking, Body Tracking and AR in open spaces (González. S.f.).

The project consists of using Web AR applied to the main tourist attractions of St. Martín, using the Onirix platform, which allows the creation of projects and scenes, in each scene will be an attraction, showing a general description and a representative image. The platform uses Google Maps to show the way to the chosen destination, as well as being able to choose between the different points of interest, and when a certain distance is reached, the phone will start to vibrate to indicate that the destination has been reached.

The development stage was divided into 3 parts: the first one is to choose the places to be implemented, obtaining a description, image, latitude and longitude; the second stage is to implement in the Onirix platform the scenes of the chosen places; the third part is to carry out the tests in the tourist places.

## *Theoretical framework*

Augmented reality is a computational technique that allows humans to interact between the real world and the digital world through a device such as a tablet or smartphone. Augmented Reality (AR) is a technology that allows virtual elements to be superimposed on our vision of reality (Iberdrola. 2023).

The main types of augmented reality classified are:

Augmented Reality based on markers: this type of augmented reality depends on an external visual element to know where to place the digital asset that will be seen through the viewer.

Markerless Augmented Reality: there is no need to place visual clues in the surrounding material environment; the software is already capable of identifying shapes and patterns in real time and places its virtual assets on these elements, having generated a three-dimensional map of the location in its memory system.

Projection-based Augmented Reality: the digital asset added by augmented reality remains immobile and tied to a specific location in a place.

### *Augmented Reality location-based*

Location and user movement detection technologies are used to represent a zoom in or out of the digital asset, which appears in the person's field of view if they are in the right place at the right time.

### *Overlay-based*

Augmented Reality: this technology superimposes visual information on a physical element, for example, by making different parts of it coloured in a different way.

### *Contour-based*

Augmented Reality: the contours of the elements captured by the camera are highlighted, making it easier for the human eye to distinguish between different aspects of its surroundings (Filtroo. 2022).

For the realisation of this project, location-based AR or geolocated AR is used, in which technology is used to detect the location and movement of people, this is achieved by receiving information from the Global Positioning System (GPS).

The Onirix platform handles Web AR and geolocation, defining Web AR as the consumption of this type of technology - referring to augmented reality - and AR experiences from a mobile web browser. With the emergence of augmented reality for the web (also known as AR in web), essentially thanks to the huge evolution of mobile web browsers, we now have a next level of access to this technology. It is therefore much easier to create web pages with augmented reality (Onirix. 2022).

Methodology

As mentioned, the parts of the project are site selection, implementation of AR on the platform and testing.

Choice of places: we investigated which are the tourist places in the municipality of San Martin Texmelucan, among them are: Antique Railway Station, Parish of San Martín Obispo, Parish of San Rafael Arcángel, Ex-Convent of Santa María Magdalena, Temple of Nuestra Señora de la Asunción, Monument to the Workers Unification, Church of El Carmen, Antique Textile Factory "El Carmen", Ex Hacienda de San Cristóbal Polaxtla, Archaeological Zone "Los cerritos de tepatlaxco", Zócalo de San Martín, among others.

After having seen all the places, the most emblematic ones were selected, leaving the following in the first phase: El Carmen Church, Old Textile Factory "El Carmen", Parish of San Martín Obispo de Tours, Texmeluquense Cultural Complex, Old Railway Station and Monument to the Workers Unification (Hombres Fuertes).

The main sites were then visited to obtain descriptions, photographs and coordinates (latitude and longitude). Table 1 shows the name of the site and its geographical coordinates.

Place	Latitude	Length
El Carmen Church	19.29304	-98.44337
Former textile factory "El Carmen".	19.29231	-98.44291
Parish Church of San Martín Obispo de Tours	19.28288	-98.43499
Texmeluquense Cultural Complex	19.28342	-98.43714
Former Railway Station	19.28278	-98.43872
Monument to the Workers Unification	19.28674	-98.44041

Table 1 Details of the locations

Figure 1 shows the main façade of the Iglesia del Carmen, located in the colonia of the same name.



Figure 1 Façade of the El Carmen Church

Implementation of AR in the platform: after having collected the necessary information of each place, we proceeded to place the data in the Onirix platform, for this, the first thing is to create the project: Tourism San Martín Texmelucan, Puebla; the creation is shown in figure 2.:

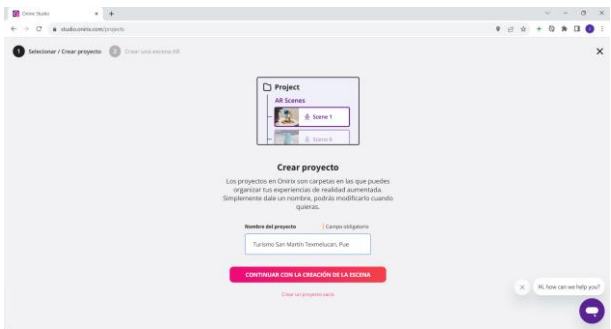


Figure 2 Creation of the project

After the creation of the project, the type of scene the project will have is requested, which can be either image tracking (markers) or surface tracking.

A marker provides the Augmented Reality (AR) application itself with a visual cue or trigger on where to position the AR content. A marker can be an image, a logo, or any kind of 2D object that can be distinguished and recognised by the camera. Some AR applications, instead of using a traditional 2D marker, can detect surfaces and use them as markers (Onirix. n.d.).

The best option in this case is surface tracking, because when the tourist arrives at the marked area, he/she only has to identify a surface such as the floor or wall of the place and it will display the information. Unlike image tracking, it is not necessary to see a static image to display the information, as the image may or may not be there or even be deteriorated by different types of conditions. Figure 3 shows the choice of Tracking type.:

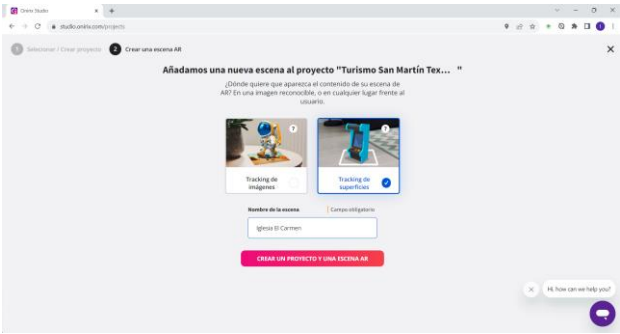


Figure 3 Tracking of surfaces

It is important to indicate to the project that it should be a "Geolocated project", with the intention of indicating the points of interest and then tracing the georoute from the user's location. The georoute can be defined as a line drawn between two geographically located points. That is, the path followed to get from point A to point B. (Ubiquo. 2023). Figure 4 shows the data of the place to be established, the required data are: Title, description, image, coordinates (latitude, longitude and elevation) and activation radius, which is a margin that is assigned to send an alert when near the area.

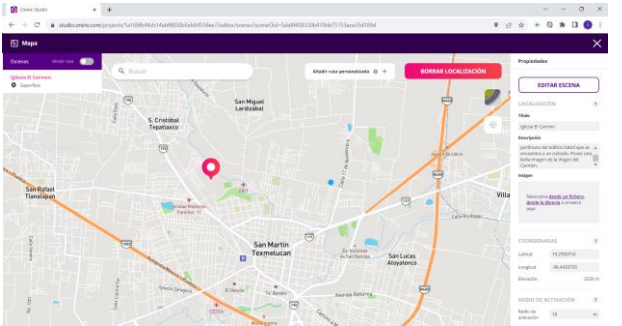


Figure 4 Location of the point of interest

When you have finished adding all the scenes to the project, you will be able to see the suggested route of the places to visit, the project will show the numbering as the scenes are added to the project. Figure 5 shows the route mode of the project.

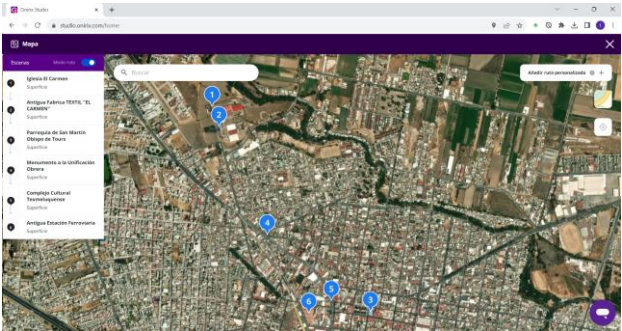


Figure 5 Route mode

Testing: Finally, the link was shared with 50 people who interacted with the project by executing it from their mobile phones; the people had to be at a random point in the city and choose a place to visit. Figure 6 shows the execution of the shared link, in which the location of the tourist and a marker with the places to visit are indicated.

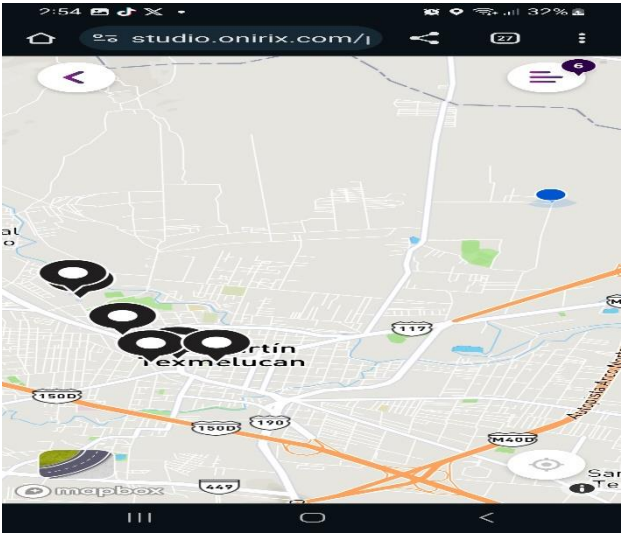


Figure 6 link executed on the mobile phone



The upper right panel shows the available locations and then the options View on map and Route. The first option shows the location of the attraction, while the second shows the route to follow from the place where the tourist is located to the destination. Figure 7 shows the route option that goes from the origin to the chosen destination.

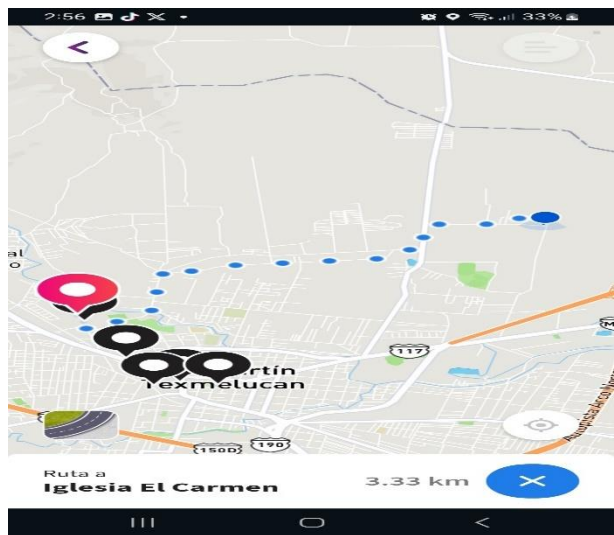


Figure 7 Route from origin to destination

Finally, upon arrival at the destination, the project sends a vibration as a warning signal that it can see the augmented reality mode, it must detect a surface to display the content, shown in Figure 8 the content of one of the tourist sites of San Martín Texmelucan.



Figure 8 Augmented reality description of the chosen location

Results

At the end of the project stages, a series of 5 questions were asked to each user to see the feasibility and efficiency of the project, giving favourable results. The graphs of the questions asked are shown below.

Question 1: How easy is the project to use? 96% of people answered that it was easy and 4% indicated that it was complicated to understand. Figure 9 shows the resulting graph.

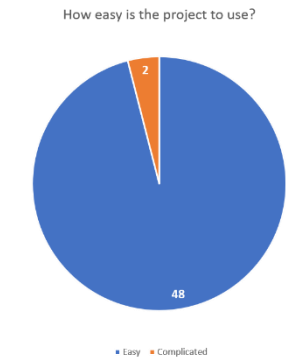


Figure 9 Graph of question 1

Question 2: Did the project help you to get to know tourist sites in Sint Maarten? 84% said yes and the remaining 16% said no.

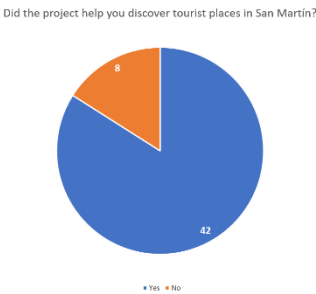


Figure 10 Graph of question 2

Question 3: Would you recommend using this project to visit tourist sites in Sint Maarten? 100% said yes and the remaining 0% said no.



Figure 11 Graph of question 3

Question 4: Did you find the augmented reality content appealing? 84% said yes and the remaining 16% said no.

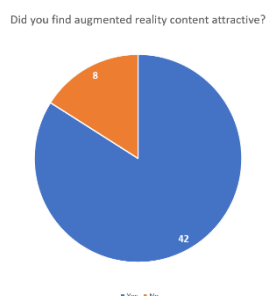


Figure 12 Question 4 graph

Question 5: Did your mobile device display all the augmented reality content? 84% said yes and the remaining 16% said no.

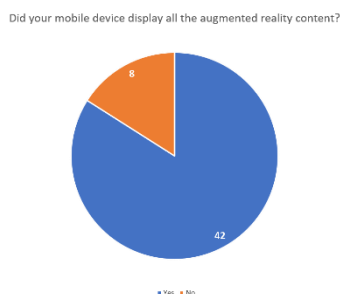


Figure 13 Graph of question 5

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## Conclusions

With the implementation of this project it is expected that both tourists and residents will have a better guide to different destinations in the municipality, allowing them to get clear and precise indications, saving time and travel costs, as well as having a historical review and images of the place they want to see. As future work, three-dimensional objects can be designed to show them areas that they would not be able to see with the naked eye or that are deteriorated. In the region there are more places to visit, so it

could be implemented in collaboration with the secretary of tourism of the municipality.

## References

Filtroo. (17 de octubre de 2022). Los 5 tipos de realidad aumentada. <https://filtroo.co/es/los-5-tipos-de-realidad-aumentada-mas-eficaz/>

González-González, C. (s.f.). Diferentes tipos de realidad aumentada. <https://www.onirix.com/es/aprende-sobre-ra-tipos-de-realidad-aumentada/>

Iberdrola. (2023). ¿Qué es la Realidad Aumentada? <https://www.iberdrola.com/innovacion/que-es-realidad-aumentada>

Onirix. (31 de mayo de 2022). Qué es web AR y como funciona. <https://www.onirix.com/es/web-ar-realidad-aumentada-online/>

Onirix. (s.f.). Seguimiento de Marcador y Superficie. <https://www.onirix.com/es/aprende-sobre-ra/realidad-aumentada-basada-en-marcadores-con-targets/>

Tatiana Grapsas (15 de diciembre de 2019). Conoce la realidad aumentada y las posibilidades de interacción que la hacen sobresalir en el mundo digital. <https://rockcontent.com/es/blog/realidad-aumentada/>

Ubiquo. (5 de junio de 2023). Creación de rutas: la ventaja de los sistemas de localización GPS. <https://www.ubiquo.net/logistica/rutas-en-localizadores-gps/>

Universidad CESUMA. (s.f.). ¿Qué es el turismo?. <https://www.cesuma.mx/blog/que-es-el-turismo.html>

The 2030 agenda and the goal of gender equality in tourism in Mexico

La agenda 2030 y el objetivo de igualdad de género en el turismo en México

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Abstract

This study examines the dynamics of gender equality, identified as one of the most significant Sustainable development Goals (SDGs) in the United Nations' 2030 Agenda, within the tourism sector in Mexico. This analysis focuses on the description of tourism activity and the performance of gender equality indicators during the five-year period from 2003 to 2018. For this analysis, data were sourced from the Economic Census of INEGI (National Institute of Statistics and Geography). Based on the classification of the 133 tourist destinations from the National System of Statistical Information of the Tourism Sector in Mexico (DATATUR) of the SECTUR (Mexican Ministry of Tourism), the 70 most representative tourist destinations for the country were selected for this research. The findings of the study indicate more elevated values of the gender equality index in interior cities and cultural destinations, contrasting with lower scores in one of the states most focused on tourism industry in Mexico. However, it is noteworthy that the growth dynamics of the gender equality index are more pronounced in the Yucatan peninsula and Baja California. In contrast, states hosting cultural destinations and traditional beaches exhibit a more moderate development pace in terms of gender equality. Furthermore, it is observed that the values of the gender equality index are higher in specific tourist destinations or municipalities, compared to the state averages in which they are located.

Resumen

Este estudio examina la dinámica de la igualdad de género en el sector turístico en México la cual es identificada como uno de los Objetivos de Desarrollo Sostenible (ODS) más importante de la Agenda 2030 de las Naciones Unidas. Este análisis se enfoca en la descripción de la actividad turística y el desempeño de los indicadores de igualdad de género durante los quinquenios 2003 a 2018. Para este análisis, los datos se obtuvieron del Censo Económico del INEGI (Instituto Nacional de Estadística y Geografía). Con base en la clasificación de los 133 centros turísticos del Sistema Nacional de Información Estadística del Sector Turismo en México (DATATUR) de la SECTUR (Secretaría de Turismo de México), para esta investigación se seleccionaron los 70 destinos turísticos más representativos del país. Los hallazgos del estudio indican valores más elevados del índice de igualdad de género en ciudades del interior y destinos culturales, contrastando con puntajes más bajos en uno de los estados más enfocados a la industria turística de México. Sin embargo, llama la atención que la dinámica de crecimiento del índice de igualdad de género es más pronunciada en la península de Yucatán y Baja California. Por el contrario, los estados que albergan destinos culturales y playas tradicionales exhiben un ritmo de desarrollo más moderado en términos de igualdad de género. Además, se observa que los valores del índice de igualdad de género son más altos en destinos turísticos o municipios específicos, en comparación con los promedios estatales en los que se ubican.

Gender equality, 2030 agenda, Tourism, Mexico

Igualdad de género, Agenda 2030, Turismo, México

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## Introduction

Tourism is an economic, cultural, global and significant phenomenon that has a substantial impact on the economic, social and environmental dimensions (Zhang & Zhang, 2020). For this reason, it is argued that tourism can contribute to the fulfilment of the 17 SDGs (Sustainable Development Goals) of the United Nations 2030 Agenda, including SDG 5 aimed at achieving gender equality (Boluk et al., 2017). The tourism industry accounts for approximately 10% of global GDP and employs one in ten workers worldwide (UNWTO, 2021). Alongside the considerable number of jobs generated by this activity, gender job segregation continues to be a problem. Women's employment is concentrated in low-wage and lower-skilled jobs such as cleaning and reception services, while managerial and decision-making roles are mostly occupied by men. Given this situation, greater efforts are needed to promote women's participation in the tourism industry more equitably through better working conditions, training and leadership opportunities (UNWTO, 2021).

Tourism as a key driving force in the country's economy not only reflects global trends, but also plays a key role in shaping gender perceptions and the equal distribution of opportunities. Addressing gender equality in this sector is not only essential for social justice, but is also a strategic activity for economic growth and the overall improvement of the quality of life of the population, i.e. it is of fundamental importance for sustainable development.

The platform of the Information System of the Sustainable Development Goals of the 2030 Agenda in which Mexico participates presents regularly updated information at the level of federal entities. However, there is no information at the sectoral level. The same happens in the annual United Nations Sustainable Development Goals Report, which presents information on each goal at the level of each of the adhering countries.

In this context, this article analyses the performance of gender equality in Mexico's tourism sector, exploring trends over the periods 2003-2008, 2008-2013 and 2013-2018. The contribution of this study lies not only in the five-year monitoring of progress in gender equality and the importance of the presence of the activity in closing the gaps in working conditions between genders. It is also important because of the information generated at the level of municipalities or tourism that is contrasted with the municipal, state and national economy as a whole.

The hypothesis put forward argues that the tourism sector contributes to advancing the sustainable goal of achieving gender equality of the United Nations 2030 Agenda in Mexico.

The article is structured in seven sections. The first section describes the Mexican tourism system and points out the importance of tourism activity in the period under analysis. The second section briefly describes the purpose of the 2030 Agenda and Mexico's participation in this initiative. The third section continues with a description of the 2030 Agenda and the sustainable development goal for the achievement of gender equality. The fourth section addresses the issue of gender equality in tourism. The fifth section presents the unit of analysis and procedure for achieving the stated goal. The sixth section presents the main results of the research and finally the seventh section gives the most important conclusions of the work.

## Tourism in Mexico

Tourism in Mexico has experienced significant growth in recent decades due to factors such as infrastructure development, tourism promotion and economic and political stability. In 2003 alone, at the beginning of the study period, Mexico received just over 10.35 million international visitors, with an economic revenue of 6.68 billion dollars. In the same year, tourism in general contributed 9.48% of the national GDP (INEGI, 2021). The main tourism receiving regions were the beach destinations of the Riviera Maya, Los Cabos and Puerto Vallarta. With the opening of Cancun International Airport and the promotion of new cultural products, the number of visitors began to grow significantly from 2004 onwards (SECTUR, 2005).

In 2008, Mexico received around 13.3 million international visitors and an economic revenue of almost 10,817 million dollars. In this year, the tourism sector in general contributed 9.35% of the national GDP (INEGI, 2021). Among the most visited tourist centres are the integrally planned centres: Cancun, Huatulco, Los Cabos and Ixtapa Zihuatanejo. Next, the destinations most frequented by tourists are the traditional beach destinations: Acapulco, Cozumel, Manzanillo and Puerto Vallarta. This is followed by the large city resorts including Mexico City, Monterrey and Guadalajara. To a lesser extent, the influx of travellers was channelled to inland city destinations (SECTUR, 2009).

In 2013, Mexico received almost 23.7 million international visitors and generated an economic spillover of more than 13.8 billion dollars. The tourism sector in general contributed 8.86% of the national GDP (INEGI, 2021). The main countries of origin of international tourists in that year were the United States, Canada, Brazil, Argentina and the United Kingdom. In terms of the importance of the influx of travellers, in addition to beach resorts and cities, products such as nature tourism, gastronomy, spas and cruises gained importance. Also, consolidated destinations grew, while other emerging destinations such as Los Cabos, Huatulco or Tulum increased their geographical extension (SECTUR, 2014).

Finally, in 2018, Mexico hosted nearly 41.4 million international visitors, who generated an economic revenue of 22,510 million dollars. In this year, tourism contributed 8.54% of the national GDP (INEGI, 2021). In the last two decades, tourism in Mexico has been strengthened as a priority economic activity driven by the federal government and private investment in infrastructure improvements, security and promotion. It is expected that with new air connectivity projects, cruise ships and the development of new products, Mexican tourism will continue to grow in numbers and economic output.

The Mexican Ministry of Tourism classifies tourist resorts as follows:

Type of Resort	Type of Sub-Center	Tourist Center	State	Municipality
Beach Centers	Other Beach Centers	Akumal	Quintana Roo	Tulum
		Isla Mujeres	Quintana Roo	Isla Mujeres
		Nuevo Vallarta	Nayarit	Bahía de Banderas
		Riviera Maya	Quintana Roo	Puerto Morelos
		Otros Riviera Nayarit	Nayarit	San Blas
				Tecuala
				Compostela
				Santiago Ixcuintla
		Playa del Carmen	Quintana Roo	Solidaridad
		Playacar	Quintana Roo	Solidaridad
		Playas de Rosarito	Baja California	Playas de Rosarito
		Puerto Escondido	Oaxaca	San Pedro Mixtepec
Beach Centers	Traditional	San Felipe	Baja California	Mexicali
		Tonalá Puerto Arista	Chiapas	Tonalá
		Acapulco	Guerrero	Acapulco de Juárez
		Cozumel	Quintana Roo	Cozumel
		La Paz	Baja California Sur	La Paz
		Manzanillo	Colima	Manzanillo
		Mazatlán	Sinaloa	Mazatlán
		Puerto Vallarta	Jalisco	Puerto Vallarta
		Veracruz-Boca del Río	Veracruz de Ignacio de la Llave	Boca del Río

**Table 1** Beach Resorts  
*Source: own elaboration with data from Compendio Estadístico del Turismo en México 2022. DATATUR 2022*

Type of Resort	Type of Sub-Center	Tourist Center	State	Municipality
Cities	Inland	Morelia	Michoacán de Ocampo	Morelia
		Oaxaca	Oaxaca de Juárez	Oaxaca
		Pachuca	Hidalgo	Pachuca
		Palenque	Chiapas	Palenque
		Puebla	Puebla	Puebla
		Querétaro	Querétaro	Querétaro
		Salamanca	Guanajuato	Salamanca
		San Cristóbal de las Casas	Chiapas	San Cristóbal de las Casas
		San Juan de los Lagos	Jalisco	San Juan de los Lagos
		San Juan del Río	Querétaro	San Juan del Río
		San Luis Potosí	San Luis Potosí	San Luis Potosí
		San Miguel de Allende	Guanajuato	San Miguel de Allende
		Taxco	Guerrero	Taxco de Alarcón
		Tequisquiapan	Querétaro	Tequisquiapan
		Tlaxcala	Tlaxcala	Tlaxcala
		Toluca	México	Toluca
		Tuxtla Gutiérrez	Chiapas	Tuxtla Gutiérrez
		Valle de Bravo	México	Valle de Bravo
		Villahermosa	Tabasco	Centro
		Xalapa	Veracruz de Ignacio de la Llave	Xalapa
		Zacatecas	Zacatecas	Zacatecas

**Table 2** Inland Cities  
*Source: own elaboration with data from Compendio Estadístico del Turismo en México 2022. DATATUR 2022*

Type of Resort	Type Subcenter	Tourist Center	State	Municipality
Cities	Border	Ciudad Juárez	Chihuahua	Juárez
		Mexicali	Baja California	Mexicali
		Piedras Negras	Coahuila de Zaragoza	Piedras Negras
		Tecate	Baja California	Tecate
		Tijuana	Baja California	Tijuana

**Table 3** Border Cities  
*Source: Prepared by the authors with data from Compendio Estadístico del Turismo en México 2022. DATATUR 2022*

**The 2030 Agenda**

The antecedent of the 2030 Agenda is the "United Nations Millennium Declaration" and its Millennium Development Goals (MDGs), which were published in 2000. This declaration included eight goals and forty-eight indicators that addressed issues such as extreme poverty and infant mortality and established 2015 as the target date (UN, 2000). The 2030 Agenda is presented as a new strategy to give continuity to this declaration and to face more complex challenges and achieve sustainable development and equality (UN, 2015).

Promoted by the United Nations (UN) in 2015, "The 2030 Agenda" is a global project that addresses the most pressing challenges facing humanity, this planetary initiative seeks to steer development towards the path of sustainability. Said Agenda was approved on September 25, 2015 by the United Nations General Assembly. According to this document, its purpose is to provide a comprehensive framework for global action to achieve sustainable development and thereby improve the quality of life of present and future generations by 2030 (UN, 2015).

To this end, the 2030 Agenda establishes a set of 17 Sustainable Development Goals, these goals are interconnected, comprehensive and indivisible and address various aspects of human, social, economic and environmental development, such as poverty eradication, the fight against hunger, access to quality education, gender equality, climate action, peace and justice, among others. Each of the SDGs is made up of specific goals and targets that together provide a comprehensive framework for their fulfillment (UN, 2015).

For its part, the Mexican government has participated in the creation, consultation, negotiation and promotion processes of the 2030 Agenda (UN, 2019). In addition, Mexico has supported the incorporation of fundamental principles such as equality, social and economic inclusion, and has also promoted universality, sustainability and human rights as the pillars of the Agenda.

In terms of poverty eradication, the Mexican government promoted a multidimensional approach in the analysis of poverty that not only considers people's income but also their effective access to rights such as food, education, health, social security and basic housing services (UN, 2019).

In the implementation of the 2030 Agenda, Mexico has been an active player, being one of the first countries to present progress on the SDGs at the High Level Political Forum on Sustainable Development.

The Mexican government has established various bodies to monitor and support the achievement of the SDGs from the legislative sphere, such as the Specialized Technical Committee on Sustainable Development and the Working Group on the 2030 Agenda in the Senate of the Republic. At the same time, the Mexican Agency for International Development Cooperation (AMEXCID) with the collaboration of the United Nations Development Program (UNDP) developed an SDGs Implementation Plan (UN, 2019). Likewise, Mexico's commitment and willingness to participate in achieving the SDGs of the 2030 Agenda and promoting the achievement of gender equality can be observed (UN, 2019).

Gender equity in the 2030 Agenda is a relevant issue and has been highlighted by the tourism industry. The Global Report on Women in Tourism shows in its statistics that tourism leads in promoting gender equality globally compared to all sectors of national economies (UNWTO, 2021). Likewise, the 2022 SDG Report mentions that SDG 5 has been identified as a priority focus area. It also highlights that although women's access to leadership positions in the political and economic spheres has increased, opportunities for women remain scarce (UN, 2022a, p. 36).

### **Sustainable development goal: gender equality and women's empowerment**

Achieving gender equality and women's empowerment represents a fundamental pillar of the 2030 Agenda. Sustainable Development Goal five is established as a strategy to guide efforts towards the pursuit and achievement of gender equality worldwide. Its purpose extends beyond addressing gender inequalities and seeks to empower women in all aspects of society including their participation in decision-making and their access to economic and educational opportunities, thus eradicating harmful practices rooted in gender inequality (UN, 2022b, p. 6).

In the approach of the research the question arises about the meaning of the term gender which is not the same concept as the word sex, in this regard Küfeoğlu (2022) points out that "The word sex refers to the biological distinction between men and women, while the word gender means the social status attributed to men and women" (p. 277), in other words the word gender refers to the social differences caused by the roles socially assigned to men and women. Gender roles are conditioned by age, social class, race, ethnicity, religion, and by the geographic, economic and political environment (International Labour Office, 2001).

As mentioned above, the 2030 Agenda and its 17 SDGs are comprehensive in nature, in other words, the SDGs seek to encompass multiple dimensions to achieve a complete and holistic impact. In this way, a goal can be a catalyst for the achievement of other SDGs and thus the 2030 Agenda mentions that "gender equality is not only an end in itself, but at the same time a means to achieve broader and more equitable sustainable development" (UN, 2015, p. 3).

The theoretical framework under which SDG 5 was initially founded centers women as a vulnerable group and aimed to develop strategies that empowered women in the social, economic and political spheres. However, in practice, such approach was based on the establishment of structures that enable gender mainstreaming (Alston, 2014, p. 289).

When speaking of "gender mainstreaming" the International Labor Organization (2017) mentions that "it is the process of assessing the implications for men and for women of any planned action, whether legislation, policies or programs, in all areas and at all levels" (p.1).

With respect to the specific targets that structure SDG 5, these are made up of six targets and three sub-targets, which cover issues ranging from the eradication of gender-based violence to the strengthening of policies and laws that promote gender equality. However, for the particular case of this research, goal 5.5 "Ensure women's full and effective participation and equal opportunities for leadership at all decision-making levels in political, economic and public life" (UN, 2015, p. 21) is highlighted, which highlights the need to eliminate barriers that prevent the full and effective participation of women at all levels and areas of society and in particular their full insertion in the world of work.

The UNDP presented the Gender Development Index as a means to measure the gap between men and women in terms of human development indicators such as health, knowledge and standard of living. Even so, De la Cruz (2015) highlights that "approaches and indicators have defined gender inequalities in terms of women's issues only, without addressing broader power relations or a broader understanding of the concept of gender itself" (p. 4).

### **Gender equality in the tourism industry**

Gender equity is a fundamental principle for sustainable development and in the study of tourism it is no exception (Cohen & Cohen, 2019). For example, Wilkinson and Pratiwi (1995) have long recognized the influence of gender relations on employment, income, family structure, and function in rural tourism destinations. Similarly, Ferguson (2011) and Font, Garay, and Jones (2016) assert that, in theory, tourism can contribute to gender equality and women's empowerment.

For his part, Cole (2018) asserts that through the tourism industry the status of women is undergoing a slow but positive change and that women can and should use tourism to improve their position. Rinaldi and Salerno (2020a) also state that tourism offers an opportunity to achieve gender equality and that the tourism sector should be transformed into an essential contributor to help women find new jobs.

In promoting gender equality, extensive attention has been paid to the role of tourism in increasing women's income and employment. For example, Nyaruwata and Nyaruwata (2013) demonstrated that tourism is a significant source of employment for women. For their part, Duffy, Kline, Mowatt, and Chancellor (2015) indicated that women to some extent have gained economic and social independence through employment in the tourism industry.

So also, Boonabaana (2014) found that in Uganda women prefer to seek employment opportunities in tourism since once women start working and earning money through such activity the dominant patriarchal culture slowly begins to be challenged. Moreover, in the emerging homestay industry women's income and the proportion of female heads of households are increasing (Acharya & Halpenny, 2013; Farmaki, 2019). On the other hand, Nassani et al., (2019) corroborated the tourism-induced empowerment of women in European countries. It should also be mentioned that in reducing economic poverty tourism also offers a possible way for women to escape poverty in terms of knowledge and rights (Xu et al., 2018).

To date existing research findings show that there is a unidirectional relationship running from tourism to gender equity. Tourism fills the gender gap by increasing women's income, promoting female employment, providing women with more leadership positions, and improving women's education. However, although tourism promotes gender equality in several cases at the micro level, the impact of tourism on gender equity remains unclear at the regional level. Moreover, some scholars have warned that the challenges inherent in the process of gender equalization in global public policy are repeated and to some extent, exacerbated in tourism (Ferguson & Alarcón, 2015).

Although the situation of women has improved thanks to the development of tourism, various studies have found that there are still many obstacles to achieving gender equality in this sector. For example, Duffy et al. (2015) concluded that as women gain economic and social independence, new gender roles and changes in status lead to conflicts between women's real needs and family relationships, which in turn limits their participation in tourism.

For her part, Kattara (2005) argues that gender discrimination, lack of working relationships, mentoring support, and access to contacts prevent women from reaching top management positions. Nomnga (2017) also revealed that women entrepreneurs still face many challenges such as low levels of education and gender discrimination.

Furthermore, Carvalho et al., (2019) found that even women in executive positions in the tourism industry are often subject to subtle discrimination such as the perception that women should be more family oriented and less capable than men. This has been confirmed by Masadeh et al. (2018) so it can be argued that the main cause of gender inequality is manifested in the disparity in income and employment conditions of men and women and stems from social and cultural factors. Therefore, tourism should strive for social, political and cultural impact that reduces the gender gap (Scheyvens & Hughes, 2019; Tucker & Boonabaana, 2012). Due to these limitations gender inequality in tourism remains widespread. Thus Figueroa-Domecq et al., (2015) mention that in some of the most important tourism companies, the proportion of women on the board of directors is still deficient, which limits the participation of women in decision making. Rinaldi & Salerno (2020b), suggest that women will face all kinds of gender discrimination in the labor market, especially in developing countries.

Another perspective argues that gender inequality in tourism lies not in gender per se, but in the people themselves; that is, differences in people's skills lead to gender inequality and in some cases exacerbate it, so attention must be paid to the management of women themselves (Litwin et al., 2019; Santero-Sanchez et al., 2015; Trupp & Sunanta, 2017).

For his part Scheyvens (2010) found that ecotourism has the potential to harm and marginalize local women. Therefore, the effect of tourism on gender equality could be said to have significant regional characteristics.

Despite numerous existing studies, in the current context of feminism and gender awareness, the study of gender in tourism remains marginal in tourism research as a whole (Figueroa-Domecq et al., 2015). For their part Cohen and Cohen (2019) consider that gender seems to be exclusive to the sociological study of tourism. In terms of specific research methods, social surveys predominate. However, the execution of this method is highly dependent on samples, location, time and even the researchers themselves. In addition, it is difficult to obtain longitudinal data through fieldwork. As such, when conducting research based on a particular case and with limited time, conclusions may inevitably generate certain doubts.

### **Methodological Framework**

The objective of the research was to analyze the contribution of tourism activity to the fulfillment of Sustainable Development Goal Five in the seventy most representative tourism destinations in Mexico. The hypothesis that the tourism sector has contributed to the advancement of the sustainable objective of achieving gender equality. To meet this objective, the following steps were taken.

#### *Selection of destinations*

The selection of the tourism destinations chosen to carry out the research was based on the categorization and statistical information prepared by SECTUR. This categorization covers two large groups or types of centers: beach centers and cities, which in turn are divided into sub-centers. Beach centers are subdivided into integrally planned centers, traditional beach centers and other beach centers. Integrally planned centers (CIP) began with the development of Cancun in 1974 supported by the National Fund for Tourism Development (FONATUR). Traditional beach centers without prior planning began with Acapulco in 1830 and the other beach centers have a later development. The cities are subdivided into inland cities, border cities and large cities.

#### *Unit of analysis*

In order to carry out a correct evaluation, the municipalities to which each of the 70 tourist centers belong and the availability and relevance of the data provided by INEGI at the municipal level were selected as the unit of analysis. It is necessary to mention that there are some tourist centers such as in the Riviera Maya that share the municipal territory.

#### *Determination of indicators*

Gender equality encompasses social, economic and political levels and due to the information available, an economic approach was chosen. For this, information from the INEGI Economic Census was used, which is available for the years 2003, 2008, 2013 and 2018. A series of indicators was selected according to the literature review in order to offer the most complete evaluation possible of gender equality in tourism destinations. A database with the available indicators was prepared and the selection of these indicators for the indexes was carried out through a factorial analysis. The selected indicators are described below.

A151A Women's share of total paid personnel. This indicator provides information on women who worked for a period of time in exchange for regular and fixed remuneration. It is the result of dividing the number of women in the paid staff by the total staff multiplied by 100 (INEGI, 2019, p. 38).

A153A Women's share of total employed administrative, accounting and managerial staff. This indicator counts women who worked during a reference period in exchange for remuneration for performing general clerical, accounting, executive, planning, organizing, directing and controlling work for the economic unit. It results from dividing the number of female administrative, accounting and managerial staff by the total number of administrative, accounting and managerial staff, multiplied by 100 (INEGI, 2019, p. 38).

A156A Women's share of total owners, family and other unpaid workers. This indicator counts women who worked under the management and control of the economic unit covering at least one third of the working day of the same, without receiving a fixed wage or salary on a regular basis with respect to the total number of owners, family members and other unpaid workers. It results from dividing the number of women belonging to owners, family members and other unpaid workers by the total number of owners, family members and other unpaid workers, multiplied by 100 (INEGI, 2019, p. 39).

A764A Participation of women in total employed personnel. Includes women who worked during the reference period, whether or not they were contractually dependent on the economic unit under its management and control. It results from adding the total number of women who depended on the business name plus those who did not depend on the business name, among the total employed personnel of the company multiplied by 100 (INEGI, 2019, p. 47).

Gender Equality Index

The IBM SPSS Statistics software was used to prepare the Gender Equality Index. This index is the result of factor analysis, defined by (Pardo & Ruiz, 2002) as an instrument that allows the reduction of data to identify variables that agglutinate homogeneous groups from a diverse set of variables.

This index aims to be a comprehensive benchmark measure of tourism destinations with respect to SDG 5. The process of constructing the index began with the collection of data obtained from the selected indicators. Each of the indicators represents key dimensions of women's participation in the workplace and as a whole provides an adequate view of gender equality in tourism destinations, centers or municipalities at the state and national level.

The construction of the gender equality index at the national, state and municipal levels with information at the level of the tourism sector and the sectoral total allows comparisons to determine the importance of tourism activity in reducing the gender gap.

Results

Sectoral Level of Economic Activity	Gender Equality Index 2003	Gender Equality Index 2008	Gender Equality Index 2013	Gender Equality Index 2018	Gender Equality Index Average 2018
Tourism Sector in Selected Municipalities	52.206	53.229	54.922	54.155	53.628
Total Municipal Sector in Selected Municipalities	38.461	40.580	42.684	42.773	41.124
Total National Tourism Sector	53.029	54.142	56.122	55.349	54.661
Total National Sector Total	39.523	41.236	42.970	43.201	41.733

Table 4 Gender Equality Index by Sector of Economic Activity at the Municipal, State and National Levels  
Source: elaborated with information from INEGI Economic Censuses, 2003, 2008, 2013 and 2018

Table 4 shows the values of the gender equality index in the five-year periods from 2003 to 2018 in the tourism sector of the selected tourism municipalities, in the total economic sectors of the selected tourism municipalities, in the tourism sector at the national level and in the total economic sectors at the national level.

The total average value of the gender index in the national tourism sector shows higher values in relation to the rest of the categories in the years considered. The national tourism sector incorporates, in addition to the 70 selected centers, the municipalities with activity in the sector 72 of temporary accommodation services and food and beverage preparation services.

After the category of the national tourism sector, the values of the gender equality index are higher for the personnel employed in the tourism sector of the selected tourism municipalities in the country in the periods analyzed. These values are very similar to the value of this index in the tourism sector at the national level and differ somewhat since other municipalities registered in sector 72 that were not considered in the selection of the 70 SECTUR tourism centers are added.

Nivel Sectorial de Actividad Económica	Tasa Anual del Índice de Igualdad de Género 2003-2008	Tasa Anual del Índice de Igualdad de Género 2008-2013	Tasa Anual del Índice de Igualdad de Género 2013-2018	Promedio de las Tasas Anuales del Índice de Igualdad de Género 2003-2018
Sector Turístico en Municipios Seleccionados	0.389	0.628	-0.281	0.245
Total Sectorial en Municipios Seleccionados	1.078	1.016	0.042	0.712
Total Sector Turístico Nacional	0.416	0.721	-0.277	0.287
Total Sectorial Nacional	0.852	0.827	0.107	0.596

**Table 5** Gender Equality Index Ratios at the National Level and in the Total Tourism Sector of the Selected Resorts  
*Source: elaborated with information from INEGI Economic Censuses, 2003, 2008, 2013 and 2018.*

Regarding the dynamics in the reduction of the gender gap in the country, the data show that in the selected tourism municipalities including the totality of economic sectors, the average annual rates in the quinquennia of studies is more than double the national sectorial total.

The national tourism sector, which includes, in addition to the 70 selected municipalities, those that register information in sector 72 of the national economy, shows an average rate half the rate of the total economic sectors at the national level for the period of analysis. Finally, tourism activity at the municipal level shows the lowest average rate of this index. However, overall, it can be seen that tourism activity supports the achievement of gender equity.

Entidad	Índice de Igualdad de Género 2003	Índice de Igualdad de Género 2008	Índice de Igualdad de Género 2013	Índice de Igualdad de Género 2018	Promedio del Índice de Igualdad de Género 2003-2018
Durango	62.967	62.509	63.450	61.556	62.621
Nayarit	60.994	59.966	64.354	65.167	62.620
Oaxaca	59.967	61.047	61.677	59.469	60.540
Chiapas	61.225	59.707	60.817	59.058	60.202
San Luis Potosí	61.518	58.421	61.902	58.055	59.974
Colima	59.619	58.081	60.974	59.264	59.485
Veracruz	58.404	58.408	58.205	57.731	58.187
Aguascalientes	54.237	56.399	59.250	58.285	57.043
Michoacán	55.709	56.643	55.908	55.789	56.012
Querétaro	54.569	56.755	57.278	54.731	55.833
Puebla	55.473	55.182	56.733	54.116	55.376
Guerrero	54.342	54.586	54.623	56.720	55.068
Tlaxcala	56.718	54.528	55.244	53.542	55.008
Guanajuato	52.901	53.932	56.459	56.245	54.884
Hidalgo	53.104	55.210	55.854	54.167	54.584
Campeche	55.470	53.691	54.878	53.345	54.346
México	51.844	52.704	54.577	54.495	53.405
Sinaloa	50.383	52.908	54.560	53.996	52.962
Baja California Sur	49.225	52.624	54.819	53.036	52.426
Zacatecas	49.952	51.821	52.429	50.301	51.126
Tabasco	49.417	48.615	50.503	52.548	50.271
Jalisco	47.663	48.020	50.273	50.139	49.024
Ciudad de México	48.374	48.598	49.740	48.798	48.877
Chihuahua	46.986	46.101	48.366	47.655	47.277
Coahuila	42.527	45.241	50.053	47.212	46.258
Yucatán	43.310	46.087	47.295	47.233	45.981
Nuevo León	43.696	45.966	47.983	45.996	45.910
Baja California	43.368	44.754	47.370	47.019	45.628
Quintana Roo	38.233	43.484	43.858	43.655	42.307
Total	52.206	53.229	54.922	54.155	53.628
Coefficiente de Variación	12.195	9.974	9.563	9.394	10.098

**Table 6** Gender Equality Index in the Tourism Sector in Selected Tourism Municipalities by Federal Entity 2003-2018  
*Source: elaborated with information from INEGI's Economic Censuses*

Table 6 shows the values of the gender index of personnel employed in the municipal economy sector by state, arranged in descending order for the periods studied, which do not show a defined pattern of a geographic nature or related to regional development levels. However, the highest values are found in cultural tourism centers and inland cities, as well as the most recent beach destinations and one of the first traditional beach destinations. It is noteworthy that in the last places appears the entity with the greatest tourist vocation, Quintana Roo, and one of the states with the greatest industrial development in the country.



Entidad	Tasa Anual del Índice de Igualdad de Género 2003-2008	Tasa Anual del Índice de Igualdad de Género 2008-2013	Tasa Anual del Índice de Igualdad de Género 2013-2018	Promedio de las Tasas Anuales del Índice de Igualdad de Género 2003-2018
Quintana Roo	2.593	0.170	-0.083	0.893
Coahuila	1.245	2.042	-1.162	0.708
Yucatán	1.250	0.519	-0.026	0.581
Baja California	0.606	1.156	-0.135	0.542
Baja California Sur	1.380	0.812	-0.634	0.519
Sinaloa	1.057	0.597	-0.201	0.484
Aguascalientes	0.785	0.991	-0.328	0.483
Nayarit	-0.327	1.352	0.300	0.442
Tabasco	-0.327	0.765	0.797	0.412
Guanajuato	0.381	0.919	-0.084	0.405
Jalisco	0.162	0.922	-0.035	0.349
Nuevo León	1.018	0.863	-0.842	0.346
México	0.329	0.688	-0.009	0.336
Guerrero	0.115	-0.137	0.941	0.306
Hidalgo	0.781	0.232	-0.612	0.134
Chihuahua	-0.333	0.978	-0.287	0.120
Ciudad de México	0.093	0.465	-0.382	0.059
Zacatecas	0.738	0.233	-0.825	0.049
Querétaro	0.816	0.187	-0.908	0.032
Michoacán	0.333	-0.261	-0.042	0.010
Colima	-0.497	0.981	-0.563	-0.026
Oaxaca	0.441	0.186	-0.724	-0.033
Veracruz	0.000	-0.080	-0.166	-0.082
Durango	-0.146	0.299	-0.604	-0.150
Puebla	-0.105	0.556	-0.940	-0.163
Chiapas	-0.459	0.362	-0.561	-0.219
Campeche	-0.650	0.439	-0.565	-0.259
San Luís Potosí	-1.028	1.164	-1.275	-0.380
Tlaxcala	-0.784	0.261	-0.624	-0.382
Total	0.485	0.615	-0.260	0.280

**Table 7** Gender Equality Index Rates in the Tourism Sector in Selected Tourism Municipalities by State 2003-2018  
*Source: elaborated with information from INEGI Economic Censuses, Economic Census. Automated Census Information System (SAIC).*

The level of inequality of the index among the states regarding the tourism sector of the selected municipalities in the years considered shows that there is a progressive decrease over time in the states with a tourist vocation. The coefficient of variation results from the quotient of the standard deviation between the mean of the values.

Entidad		Indice de Igualdad de Género 2003	Indice de Igualdad de Género 2008	Indice de Igualdad de Género 2013	Indice de Igualdad de Género 2018	Promedio del Índice de Igualdad de Género 2003-2018
Aguascalientes	Total Sector Turístico <sup>1</sup>	54.237	56.399	59.250	58.285	57.043
	Total Sectorial Estatal	40.517	40.257	42.033	41.794	41.150
Baja California	Total Sector Turístico	43.368	44.754	47.370	47.019	45.628
	Total sectorial estatal	40.661	42.613	42.209	41.728	41.803
Baja California Sur	Total sector turístico	49.225	52.624	54.819	53.036	52.426
	Total sectorial estatal	33.900	36.274	39.543	39.250	37.242
Campeche	Total sector turístico	55.470	53.691	54.878	53.345	54.346
	Total sectorial estatal	33.222	35.904	37.116	40.238	36.620
Coahuila	Total sector turístico	42.527	45.241	50.053	47.212	46.258
	Total sectorial estatal	36.194	36.591	38.864	39.188	37.709
Colima	Total sector turístico	59.619	58.081	60.974	59.264	59.485
	Total sectorial estatal	40.749	41.868	44.221	45.357	43.049
Chiapas	Total sector turístico	61.225	59.707	60.817	59.058	60.202
	Total sectorial estatal	37.439	40.757	43.562	43.345	41.276
Chihuahua	Total sector turístico	46.986	46.101	48.366	47.655	47.277
	Total sectorial estatal	41.283	40.145	40.624	42.456	41.127
Ciudad de México	Total sector turístico	48.374	48.598	49.740	48.798	48.877
	Total sectorial estatal	39.252	40.839	42.705	42.354	41.287
Durango	Total sector turístico	62.967	62.509	63.450	61.556	62.621
	Total sectorial estatal	37.046	39.065	42.080	41.914	40.026
Guanajuato	Total sector turístico	52.901	53.932	56.459	56.245	54.884
	Total sectorial estatal	40.604	41.830	43.056	42.923	42.103
Guerrero	Total sector turístico	54.342	54.586	54.623	56.720	55.068
	Total sectorial estatal	42.741	44.751	46.519	47.797	45.452
Hidalgo	Total sector turístico	53.104	55.210	55.854	54.167	54.584
	Total sectorial estatal	42.542	42.762	44.454	44.918	43.669
Jalisco	Total sector turístico	47.663	48.020	50.273	50.139	49.024
	Total sectorial estatal	39.790	41.525	43.681	43.202	42.050

**Table 8** Gender Equality Index by State and in the Total of the Tourism Sector in Selected Tourism Municipalities 2003-2018  
*Source: elaborated with information from INEGI Economic Censuses, 2003, 2008, 2013 and 2018*

Table 6 shows the entities with a more important dynamic in reducing the gender gap in the tourism sector in the selected municipalities are located in the north of the country with higher levels of economic development or in the Yucatan Peninsula which is one of the entities with the highest tourism development.

<sup>1</sup> Total tourism sector in selected municipalities

Entidad		Indice de Igualdad de Género 2003	Indice de Igualdad de Género 2008	Indice de Igualdad de Género 2013	Indice de Igualdad de Género 2018	Promedio del Indice de Igualdad de Género 2003-2018
México	Total Sector Turístico <sup>2</sup>	51.844	52.704	54.577	54.495	53.405
	Total Sectorial Estatal	39.884	40.822	44.029	43.547	42.071
Michoacán	Total Sector Turístico	55.709	56.643	55.908	55.789	56.012
	Total Sectorial Estatal	41.555	43.639	45.381	45.866	44.110
Nayarit	Total Sector Turístico	60.994	59.966	64.354	65.167	62.620
	Total Sectorial Estatal	36.910	41.641	44.807	46.202	42.390
Nuevo León	Total Sector Turístico	43.696	45.966	47.983	45.996	45.910
Oaxaca	Total Sector Turístico	59.967	61.047	61.677	59.469	60.540
	Total Sectorial Estatal	44.044	46.618	48.425	49.351	47.109
Puebla	Total Sector Turístico	55.473	55.182	56.733	54.116	55.376
	Total Sectorial Estatal	42.003	43.156	45.038	44.693	43.723
Querétaro	Total Sector Turístico	54.569	56.755	57.278	54.731	55.833
	Total Sectorial Estatal	42.074	42.351	43.782	43.746	42.988
Quintana Roo	Total Sector Turístico	38.233	43.484	43.858	43.655	42.307
	Total Sectorial Estatal	35.922	39.161	41.423	41.931	39.609
San Luis Potosí	Total Sector Turístico	61.518	58.421	61.902	58.055	59.974
	Total Sectorial Estatal	39.437	41.768	44.024	43.959	42.297
Sinaloa	Total Sector Turístico	50.383	52.908	54.560	53.996	52.962
	Total Sectorial Estatal	35.159	39.069	39.983	40.812	38.756
Tabasco	Total Sector Turístico	49.417	48.615	50.503	52.548	50.271
	Total Sectorial Estatal	30.027	33.823	35.842	37.755	34.362
Tlaxcala	Total Sector Turístico	56.718	54.528	55.244	53.542	55.008
	Total Sectorial Estatal	43.295	45.407	48.138	46.787	45.907
Veracruz	Total Sector Turístico	58.404	58.408	58.205	57.731	58.187
	Total Sectorial Estatal	38.429	40.461	42.494	43.302	41.171
Yucatán	Total Sector Turístico	43.310	46.087	47.295	47.233	45.981
	Total Sectorial Estatal	38.905	41.566	43.940	44.572	42.246
Zacatecas	Total Sector Turístico	49.952	51.821	52.429	50.301	51.126
	Total Sectorial Estatal	40.141	41.559	41.993	41.420	41.278

**Table 9** Gender Equality Index by Federal Entity and in the Total Tourism Sector in Selected Tourism Municipalities 2003-2018  
*Source: elaborated with information from INEGI's Economic Censuses, 2003, 2008, 2013 and 2018*

<sup>2</sup> Total tourism sector in selected municipalities.

Nine of the 29 entities in the country show negative averages in the reduction of the gap in labor conditions between men and women in the tourism sector in the analyzed period.

Tables 8 and 9 show the values of the gender equality index in the personnel employed in sector 72 of the municipal economy and the total of the sectoral sector at the entity level. Thus, the most notable differences in the values at the municipal tourism sector level and for the total sectors of the state economies are observed in the entities of Durango, Nayarit, San Luis Potosí and Campeche, all of which are medium-sized cities, except for the last one with low levels of economic development. The smallest differences in the state total and the municipal tourism sector are found in the states of Quintana Roo, Yucatán, Baja California and Chihuahua, the first three of which have a strong tourist vocation.

Conclusions

The results come to complement the information on gender equality that has been generated at the national level and in particular to the report of the Sustainable Development Goals of the Agenda 2030 of the United Nations Organization. Tourism is a very important economic sector of the national economy for the regional development of the country and is traditionally an employer of a large number of women.

At the level of the country as a whole, a reduction of the gender gap is observed in the five-year periods from 2003 to 2018. While in the 70 most important tourist centers of the country, the progression in the reduction of the gap in working conditions between women and men is reduced in a more important way. Even so, in the total of the national tourism sector that register information in the sector 72 of temporary accommodation services and food and beverage preparation the dynamics of the reduction of the gender gap is lower, which would mean that the tourism specialization has a preponderant role in the reduction of gender inequalities.

The highest values of the gender equality index do not seem to follow a geographic pattern or regional development levels, however, it is notable that in the study period the entities of Quintana Roo shows the lowest average level. On the other hand, this same entity shows the most important dynamics in the reduction of gender inequality in the tourism sector. Throughout the period of analysis, a reduction in the interregional inequalities of the index of employed personnel in tourism is observed.

In all entities in the tourism sector of the selected tourism municipalities the gender equality index is higher than the value of the index of the state economic activity as a whole and the greater or smaller differences seem to be related to the levels of development or specialization of tourism activity.

Limitations are recognized in this study. The choice of economic indicators may not fully address all aspects of gender equality and future research could incorporate social and political metrics.

Qualitative studies are recommended to better understand the individual experiences of women in the tourism sector. The inclusion of direct voices can enrich the understanding of barriers and facilitators to gender equality. In addition, longitudinal research would allow for more accurate tracking of trends over time.

## References

- Acharya, B. P., & Halpenny, E. A. (2013). Homestays as an alternative tourism product for sustainable community development: A case study of women-managed tourism product in rural nepal. *Tourism planning & development* 10(4): 367-387 <https://doi.org/10.1080/21568316.2013.779313>
- Alston, M. (2014). Gender mainstreaming and climate change. *Women's studies international Forum*, 47(PB), 287–294. <https://doi.org/10.1016/J.WSIF.2013.01.016>
- Boluk, K., Cavaliere, C. T., & Higgins-Desbiolles, F. (2017). Critical thinking to realize sustainability in tourism systems: reflecting on the 2030 sustainable development goals. *Journal of sustainable tourism*, 25(9), 1201–1204. <https://doi.org/10.1080/09669582.2017.1333263>
- Boonabaana, B. (2014). Negotiating gender and tourism work: Women's lived experiences in Uganda. *Tourism and hospitality* 14 (1-2), 27-36 <https://doi.org/10.1177/1467358414529578>
- Carvalho, I., Costa, C., & Torres, A. (2019). *Gender awareness and women managers in tourism: perceptions of inequality and what could be done*. Advisory Board 218–238. <https://doi.org/10.4018/978-1-5225-9171-9.CH011>
- Cohen, S. A., & Cohen, E. (2019). New directions in the sociology of tourism. In *Current issues in tourism* (Vol. 22, Issue 2, pp. 153–172). Routledge. <https://doi.org/10.1080/13683500.2017.1347151>
- Cole, S. (2018). *Gender equality and tourism: beyond empowerment*, University of the West of England Bristol UK, Cole Stroma. <https://www.cabidigitallibrary.org/doi/book/10.1079/9781786394422.0000>
- DATATUR (2022). Compendio estadístico del turismo en México 2022. <https://datatur.sectur.gob.mx/SitePages/CompendioEstadistico.aspx>
- De la Cruz, C. (2015). Cambio, Poder y Justicia de Género en la Agenda 2030: Reflexiones para no perdernos en el camino. *Policy papers del Instituto Complutense de estudios Internacionales* 15(1), 1-41 <https://dialnet.unirioja.es/servlet/articulo?codigo=6867297>
- Duffy, L. N., Kline, C. S., Mowatt, R. A., & Chancellor, H. C. (2015). Women in tourism: Shifting gender ideology in the DR. *Annals of Tourism Research*, 52, 72–86. <https://doi.org/10.1016/J.ANNALS.2015.02.017>
- Farmaki, A. (2019). Women in Airbnb: a neglected perspective. *Current issues in tourism* 25(19), 3110-3114 <https://doi.org/10.1080/13683500.2019.1674257>
- Ferguson, L. (2011). Promoting gender equality and empowering women? tourism and the third millennium development goal. *Current Issues in Tourism*, 14(3), 235–249. <https://doi.org/10.1080/13683500.2011.555522>

- Ferguson, L., & Alarcón, D. M. (2015). Gender and sustainable tourism: reflections on theory and practice. *Journal of Sustainable Tourism*, 23(3), 401–416. <https://doi.org/10.1080/09669582.2014.957208>
- Figuerola-Domecq, C., Pritchard, A., Segovia-Pérez, M., Morgan, N., & Villacé-Molinero, T. (2015). Tourism gender research: A critical accounting. *Annals of Tourism Research*, 52, 87–103. <https://doi.org/10.1016/J.ANNALS.2015.02.001>
- Font, X., Garay, L., & Jones, S. (2016). Sustainability motivations and practices in small tourism enterprises in European protected areas. *Journal of Cleaner Production*, 137, 1439–1448. <https://doi.org/10.1016/j.jclepro.2014.01.071>
- INEGI. (28 de julio, 2023). Censo Económico. Sistema Automatizado de Información Censal (SAIC). [Base de datos]. Recuperado de <https://www.inegi.org.mx/app/saic/default.html>
- INEGI. (2019). *Sistema Automatizado de Información Censal*. [https://www.inegi.org.mx/contenidos/app/saic/saic\\_historico\\_metodologico\\_ce2019\\_23\\_10.pdf](https://www.inegi.org.mx/contenidos/app/saic/saic_historico_metodologico_ce2019_23_10.pdf)
- INEGI. (2021). *Indicadores de la Actividad Turística*. INEGI. <https://www.inegi.org.mx/temas/itat/#tabulados>
- International Labour Office. (2001). *Repertorio de recomendaciones prácticas de la OIT sobre el VIH/SIDA y el mundo del trabajo*. (Vol. 1). OIT.
- Kattara, H. (2005). Career challenges for female managers in Egyptian hotels. *International Journal of Contemporary Hospitality Management*, 17(3), 238–251. <https://doi.org/10.1108/09596110510591927/FULL/XML>
- Küfeoğlu, S. (2022). *Emerging Technologies: Value Creation for Sustainable Development*. Springer cham. <https://doi.org/10.1007/978-3-031-07127-0>
- Litwin, A., Ngan, H. F. B., & Atembe, R. (2019). Attitudes towards female managers in Austrian and Macau tourism industry. *Journal of Hospitality and Tourism Management*, 39, 1–8. <https://doi.org/10.1016/J.JHTM.2019.01.007>
- Masadeh, M., Al-Ababneh, M., Al-Sabi, S., & Habib Allah, M. (2018). Female tourist guides in Jordan: Why so few. *European journal of social sciences* 56(2), 89–102. [https://www.europeanjournalofsocialsciences.com/issues/PDF/EJSS\\_56\\_2\\_08.pdf](https://www.europeanjournalofsocialsciences.com/issues/PDF/EJSS_56_2_08.pdf)
- Nassani, A. A., Aldakhil, A. M., Abro, M. M. Q., Islam, T., & Zaman, K. (2019). The impact of tourism and finance on women empowerment. *Journal of Policy Modeling*, 41(2), 234–254. <https://doi.org/10.1016/J.JPOLMOD.2018.12.001>
- Nomnga, V. J. (2017). Unlocking the Potential of Women Entrepreneurs in the Tourism and Hospitality Industry in the Eastern Cape Province, South Africa. *Journal of Economics and Behavioral Studies*, 9(4(J)), 6–13. [https://doi.org/10.22610/jebs.v9i4\(J\).1817](https://doi.org/10.22610/jebs.v9i4(J).1817)
- NU. (2000). *Declaración del Milenio*. <http://undocs.org/es/A/RES/55/2>
- NU. (2015). *Transformar nuestro mundo: la Agenda 2030 para el Desarrollo Sostenible*.
- NU. (2019). *Acerca de nuestro trabajo para los Objetivos de Desarrollo Sostenible en México*.
- NU. (2022a). *Informe de los Objetivos de Desarrollo Sostenible 2022*.
- NU. (2022b). *Progress on the Sustainable Development Goals: The gender snapshot 2022*. [https://www.unwomen.org/sites/default/files/2022-09/Progress-on-the-sustainable-development-goals-the-gender-snapshot-2022-en\\_0.pdf](https://www.unwomen.org/sites/default/files/2022-09/Progress-on-the-sustainable-development-goals-the-gender-snapshot-2022-en_0.pdf)
- Nyaruwata, S., & Nyaruwata, L. T. (2013). Gender equity and executive management in tourism: Challenges in the Southern African Development Community (SADC) region. *African Journal of Business Management* 7(21), 2059–2070. <https://doi.org/10.5897/AJBM2013.1592>
- OIT. (2017). *Definición de la transversalización de la perspectiva de género*. <https://www.ilo.org/public/spanish/bureau/gender/newsite2002/about/defin.htm>
- Pardo, M. A., & Ruiz, D. M. (2002). *Guía de análisis de datos*. Mc Graw Hill.

- Rinaldi, A., & Salerno, I. (2020a). The tourism gender gap and its potential impact on the development of the emerging countries. *Quality and Quantity*, 54(5–6), 1465–1477. <https://doi.org/10.1007/S11135-019-00881-X/METRICS>
- Rinaldi, A., & Salerno, I. (2020b). The tourism gender gap and its potential impact on the development of the emerging countries. *Quality and Quantity*, 54(5–6), 1465–1477. <https://doi.org/10.1007/s11135-019-00881-x>
- Santero-Sanchez, R., Segovia-Pérez, M., Castro-Núñez, B., Figueroa-Domecq, C., & Talón-Ballesteros, P. (2015). Gender differences in the hospitality industry: A Job quality index. *Tourism Management*, 51, 234–246. <https://doi.org/10.1016/J.TOURMAN.2015.05.025>
- Scheyvens, R. (2010). Promoting Women's Empowerment Through Involvement in Ecotourism: Experiences from the Third World. *Journal of sustainable tourism* 8(3),232-249 <https://doi.org/10.1080/09669580008667360>
- Scheyvens, R., & Hughes, E. (2019). Can tourism help to “end poverty in all its forms everywhere”? The challenge of tourism addressing SDG1. *Journal of sustainable tourism* 7, 1061-1079 <https://doi.org/10.1080/09669582.2018.1551404>
- SECTUR. (2005). *Resultados acumulados de la actividad turística, enero-diciembre 2004*.
- SECTUR. (2009). *Turismo en México 2008*.
- SECTUR. (2014). *Resultados de la Actividad Turística enero-diciembre 2013*.
- Trupp, A., & Sunanta, S. (2017). Gendered practices in urban ethnic tourism in Thailand. *Annals of Tourism Research*, 64, 76–86. <https://doi.org/10.1016/J.ANNALS.2017.02.004>
- Tucker, H., & Boonabaana, B. (2012). A critical analysis of tourism, gender and poverty reduction. *Journal of sustainable tourism* 20(3), 437–455. <https://doi.org/10.1080/09669582.2011.622769>
- UNWTO. (2021). Informe mundial sobre las mujeres en el turismo. In *Informe mundial sobre las mujeres en el turismo – Segunda edición* (2nd ed.). World Tourism Organization. <https://doi.org/10.18111/9789284422753>
- Wilkinson, P. F., & Pratiwi, W. (1995). Gender and tourism in an Indonesian village. *Annals of Tourism Research*, 22(2), 283–299. [https://doi.org/10.1016/0160-7383\(94\)00077-8](https://doi.org/10.1016/0160-7383(94)00077-8)
- Xu, H., Wang, C., Wu, J., Liang, Y., Jiao, Y., & Nazneen, S. (2018). Human Poverty Alleviation through Rural Women's Tourism Entrepreneurship. *Journal of China tourism research*. 14(4), 445–460. <https://doi.org/10.1080/19388160.2018.1507860>
- Zhang, J., & Zhang, Y. (2020). Tourism and gender equality: An Asian perspective. *Annals of Tourism Research*, 85, 103067. <https://doi.org/10.1016/J.ANNALS.2020.103067>

Perception of the status of well-being of beneficiaries of the social program Jóvenes Construyendo el Futuro in Othón P. Blanco

Percepción del estado de bienestar de beneficiarios del programa social Jóvenes Construyendo el Futuro en Othón P. Blanco

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Abstract

This study focused on Othón P. Blanco municipality, aiming to comprehend the well-being perception of young participants in the "Youth Building the Future" social program. The objective was to assert that the variable under scrutiny significantly influences their worldview, subsequently impacting thoughts and mitigating antisocial (violence, addiction) and criminal behaviors reflective of social marginalization and inequality. The research is theoretically grounded in Sen's Human Development model, conceptualizing it as the expansion of individuals' capabilities and opportunities for a quality life. Employing a qualitative approach due to its phenomenological nature, the study adopted a narrative autobiographical life story design. The sample, comprising 36 subjects aged 18 to 29 with diverse socio-economic backgrounds, aimed for maximum variation. Results revealed that all subjects perceived a positive shift in their quality of life, encompassing physical, social, and psychological well-being. The study concludes that the journey towards a healthier society commences with access to opportunities, affirming Amartya Sen's theory. Human development and well-being indicators are incorporated through policies promoting equity and equal opportunities, fostering peace and non-violence. The program aligns with the well-being objectives of the 2030 agenda.

Human development, Social well-being, Sustainable development

Resumen

Esta investigación se llevó a cabo en el municipio de Othón P. Blanco, México; con el fin de entender la percepción del bienestar entre los jóvenes beneficiarios del programa social "Jóvenes Construyendo el Futuro". El objetivo era argumentar que la variable estudiada impacta directamente en su interpretación del mundo, reduciendo conductas antisociales y delictivas reflejo de la marginación y desigualdad social. Teóricamente, se basa en el modelo de Desarrollo Humano de Sen, concebido como la expansión de capacidades y oportunidades para una calidad de vida. Utilizando un enfoque cualitativo y un diseño narrativo autobiográfico, se trabajó con 36 participantes de 18 a 29 años y diversas condiciones socioeconómicas. Los resultados indican que todos percibieron un cambio positivo en su calidad de vida, manifestado en bienestar físico, social y psicológico. Se concluye que la transformación hacia una sociedad saludable inicia con el acceso a oportunidades, confirmando la teoría de Amartya Sen. La incorporación de indicadores de desarrollo humano y bienestar se logra mediante políticas que promueven la equidad y la igualdad de oportunidades, contribuyendo así a los objetivos de bienestar de la agenda 2030.

Desarrollo humano, Bienestar social, Desarrollo sostenible

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## Introduction

Social supports play a crucial role in people's lives, according to John Rawls' theory of Justice (Fuenmayor, 2021) they have a significant impact on emotional well-being, mental health and overall quality of life (Ferrans 1990). Paulo Freire asserts that empowering vulnerable people through social support frees them from oppression and encourages their active participation in a society (Rosaneli, 2015). For Sen (2021), social supports are fundamental to increase the capacities of vulnerable people, allowing them to participate in society, access resources and achieve their goals.

According to the Mexican Institute for Competitiveness [IMCO] (2023), there are currently 65 social programmes in Mexico that seek to address different problems and provide support to vulnerable groups in areas such as health, education, food, housing and social development, among which the programme Jóvenes Construyendo el Futuro has stood out due to the series of critical and sometimes scathing remarks that have been made about the recipients, pejoratively identified as "NiNis" (Balarezo, 2019).

The term 'Neet', an acronym for 'not in employment, education or training', was expressly used in England 1999 during the report: Bridging the gap: new opportunities for 16-18 year olds not in education, employment or training (Bridging the gap: New opportunities for 16-18 year olds not in education, employment or training) from this term was derived the word "NiNi" neologism, used to characterise young people who are in a complicated social situation in terms of education, training or work, according to the Fundación del Español Urgente [Fundéu] (López, 2019), however, it also includes young people who despite having completed their educational process, have not had the possibility of accommodating themselves in the world of work. In Mexico, the population between 15 and 29 years of age who were not doing what they were socially supposed to do at that age: study or work, were labelled as "NiNi". According to Arceo and Campos (2011) the increase of the male population in this condition increased with the 2008 crisis, during the period 2000 - 2010, however, the condition of women decreased, basically as a consequence of the increase in labour supply and school attendance.

According to the aforementioned authors, in Mexico in 2010 it was estimated that 2.5 million men and 6.5 million women were in this classification. The causal factors were established as the lack of employment for men and for women, their decision to devote themselves to housework. It is worth mentioning that housework and caring for others is not considered as work, so it is not included in the official employment figures.

This phenomenon of "NiNis" has been approached from two perspectives that are mutually exclusive. The first identifies the phenomenon under study as a problem of social exclusion, lack of opportunities and neglect by the state, whereby young people are the consequences of a rampant policy of exploitation, as a result of an economic model that restricts the possibilities of development and growth of individuals. The second position characterises young people in this category as lazy, without aspirations, with a bad attitude towards work and progress and their condition is the result of a wrong existential choice, so their life is in the situation they deserve (Márquez, 2018).

The Government of the Republic, with respect to the issue, has established a very firm position, considering that young people who do not work and do not study, are people who somehow have not had the opportunity to do so, so they should not be considered in a disparaging and classist way, but rather achieve their social inclusion. For President Andrés Manuel López Obrador, opportunities must be created so that young people can emerge from their social condition and be incorporated into society in a productive and healthy way (Gómez Vilchis, 2022).

He therefore establishes the "Youth Building the Future" programme as a development strategy for this sector of the population, for which he has received innumerable criticisms from conservative groups, whose organicist conception of society values authority and hierarchy in social and institutional relations. (Rodríguez Fontenla, 2018); They openly disapprove of his interest in granting scholarships, which they see as a waste of state resources, encouraging ineptitude, mediocrity and laziness.

It has been proposed that "Jóvenes construyendo el futuro" is a programme that aims to generate welfare and quality of life, in which a scholarship of \$6310.00 per month and medical insurance is given to young people between 18 and 29 years old, who are not studying or working, to receive training for 12 months, in a work centre, where they will learn some work skills in exchange for their labour force.

By enrolling, young people become apprentices and register with the organisation of their interest; the requirements to join the programme are: To be between 19 and 29 years old, to attend work training five times a week, between 5 and 8 hours a day for their training process, to respect the regulations of the place where they work and to carry out a monthly evaluation of the tutor's performance. The work centre defines in its training plan the timetable and the days of training; holidays and rest days are not contemplated (Hernández, 2022).

Based on the above, the following research question is established: Is there a relationship between the social programme "Jóvenes Construyendo el Futuro" and the current state of well-being of the participants in the municipality of Othón P. Blanco? The general objective is to identify the relationship between the social programme "Jóvenes Construyendo el Futuro" and the current state of well-being of the participants in the municipality of Othón P. Blanco.

### **Theoretical framework**

The social programme "Jóvenes Construyendo el Futuro" has had its detractors, who have openly manifested themselves in a scathing and sarcastic manner, considering it a misuse of state resources for people who, in their opinion, do not deserve it and should continue to be left in social neglect, branding them as lazy. Members of political parties, opponents of the 4th transformation, aim, according to important and emblematic actors of these parties, to eliminate this welfare programme, among others, because they do not consider them viable or effective, given that they consider them populist and their scope does not reach any other place than keeping the unemployed and useless (Martínez Espinoza, 2021).

On the other hand, in line with the 2030 agenda and its 17 goals for sustainable development, proposed by the United Nations [UN] which includes the elimination of poverty and hunger, ensuring healthy lives and promoting well-being for all at all ages, achieving gender equality, ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all (Girón, 2016), among others, one might think that the "Youth Building the Future" programme has the intended direction in the concert of nations today, and that the official policy is on the right track. However, it can all be speculation of good and bad intentions, if no study is carried out that can provide evidence in either direction, i.e. for or against the welfare programme, as it has been identified.

In its Human Development Report (2022) the UN underlines the goal of ensuring that people have the opportunity to lead healthy, educated and prosperous lives. This implies not only economic growth, but also equity, environmental sustainability, and respect for human rights. In the Human Development (HD) model, it can be considered that the lack of participation in the life of the community through socially recognised and encouraged activities is the result of the impoverished capacity of the same society to generate satisfactory and feasible aspirational alternatives through productive and work relationships, since, as Sen (2001) understands it, HD represents the increase in the range of options and possibilities from which a human being can choose, linked to the freedom to choose or the alternatives that are presented to him/her for this purpose; Options are understood as everything that human beings value or desire with an important motive, based on reasonable and morally valid arguments.

Referring to Dr. Sen's (1999) concept of human development, they comment in his work that, for example, a rich person who fasts can achieve the same functional outcomes in terms of eating or nutrition as a disadvantaged person who is forced to starve, but the former has a different set of capabilities than the latter; the former can decide to eat well and be well nourished, while the latter cannot (p. 100). This means that human development is an optional condition for people where they can have a certain lifestyle or way of being as a product of free choice and not of economic, psychological, ethical, moral or even operational constraints.

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For Dr. Sen (2000), the concept of HR represents the capacity that individuals and organisations possess to expand the range of options with which to access a healthy and lasting life, to have access to knowledge, to have sufficient and necessary means to live in dignity, and the possibility to collaborate in the life of society in collective affairs, however, this goes further; HR represents the opportunity to enjoy a job in a socially healthy environment and the possibility to work without fear of being harassed by others.

If it is accepted that options are changeable from situation to situation and from person to person, HR must be understood as an open, continuous and inexhaustible process, since it is the result of the manifestation of interrelated functionings and capacities, which as Dr. Sen (2003) also says, translate into the manifestation of the interrelated functionings and capacities, which, as Dr. Sen (2003) also says, translate into the manifestation of the interrelated functionings and capacities. Sen (2003) translates into what an individual does immediately and what he or she can do or achieve; in this order of ideas, Cejudo (2006) affirms that functioning is something that is achieved, while capacity refers to the power to achieve, and this is how he mentions it: capacity is to be able to really achieve something, and not only to have permission to do so; concretely, it is the ability to function, and therefore there are as many capacities as functionings, that is, as many as are necessary to assess human well-being and development; to explain the freedom of the subject to be able to live in one way or another, we must consider the entire repertoire of functionings within its reach (p. 368). 368).

Functionings are thus defined as "states" according to Sen (2003); where the individual recognises himself within an individual status; to be well protected or to be at ease are conditions of being, e.g. to be free, to be respected. Capabilities are understood as the various combinations of functionings that each individual can achieve in the exercise of his or her freedom. Therefore, HR is the process of offering new functionings and expanding capabilities, and as Urzúa (2012) mentions, this process needs to be approached from a systemic-holistic point of view where different dimensions can be visualised in the short term.

Given the current work situation, the author reflects: the HR model is in no way opposed to Economic or Technological Development, it only places people as the *raison d'être* of everything that happens in society; one should not, but does not, subordinate people's development interests to economic growth and unequal enrichment.

In the HD model, the Human Development model is based on a multidimensional approach that goes beyond simply measuring economic growth. The central concept of HD involves improving the quality of life of people and is expressed primarily through the Human Development Index (HDI).

It is a model that looks at indicators such as per capita income to assess the economic standard of living of a population. Health is a fundamental aspect of Human Development. Life expectancy at birth and other health indicators are considered in assessing this component; similarly, access to education and literacy are important. Civic participation and respect for human rights are essential components. This implies the ability of people to participate in decision-making that affects their lives and the protection of their fundamental rights.

The promotion of gender equality as well as inclusion reflect the commitment to human rights. Environmental sustainability becomes important in ensuring that current development does not compromise the ability of future generations to meet their own needs. The multidimensional approach to Human Development seeks to reflect the complexity of the human experience and provide a more comprehensive and equitable assessment of a society's progress. The HDI ranks countries according to these various indicators to provide a more comprehensive measure of human well-being than economic growth alone (Sen et al, 2006).

Choices are, says Sen (2000b) the field where freedom operates, affirming that human development is the result of the orientation of freedom towards universal values of coexistence and a sense of autonomy, stating that "The dominant values and social practices exert a significant influence on the existence or lack of corruption, as well as on the performance of trust in economic, social or political relations.

The expression of freedom is conditioned by these values, but, in turn, these values are shaped by public debates and social interactions. These debates and social interactions are, in turn, influenced by participation in freedoms, creating an interactive cycle where freedom, values and participation influence each other.

Therefore, human development is the development of freedom or the increase of the concrete freedoms that each human being enjoys, as it can be foreseen that labour and educational unemployment can be understood, from this point of view, as a threat to human freedom.

According to Verdugo *et al* (2013), quality of life can be defined as the state of personal well-being resulting from the satisfaction or dissatisfaction of important and relevant conditions for the subject. Urzúa (2012) defines quality of life as the full satisfaction of needs arising from the physical, psychological, social, material, or structural spheres. Shaw (1990) injecting scientific rigour defines quality of life in mathematical terms and states the following formula:  $QL=NE \times (H+S)$ , where NE represents the natural endowment of the subject, H the contribution made by his home and family to the person and S the contribution made by society.

In this order of ideas, it is understood that the quality of life is not only the subjective feeling of the person, but must be accompanied by the historical, material, social, emotional, ethical and spiritual circumstances in which he/she lives. Therefore, personal well-being is the human development and quality of life experienced by a person under obvious circumstances of growth.

Methodology

This study used a qualitative approach, which is considered essential for researching perceptions because of its ability to explore the subjectivity, complexity and diversity of human experiences. With this approach, it was possible to understand more fully how the young beneficiaries interpret the world around them as a result of a social programme called "Jóvenes Construyendo el Futuro" that seeks to improve the quality of life and personal well-being.

It is worth mentioning that the present study was carried out under a phenomenological perspective, in order to understand the subjectivity and the nature of the experience of the subjects involved.

Based on the importance of the story as access to the subject's inner world (Bolívar, 2012). The autobiographical narrative interview was used as a method, which allowed the interviewers to explore significant events, relationships, experiences and their personal meaning, from the experience of the young beneficiaries. To analyse the data from the interviews, the interview transcripts were transcribed and the relevant units of meaning in the transcripts were identified. This was followed by open coding to label and categorise the meaning units.

As for the population, the maximum variation sample is used. This is used to seek and show different perspectives and represent the complexity of the phenomenon under study, or to document diversity in order to locate differences and coincidences, patterns and particularities (Pérez-Luco et al, 2017).

The present research was carried out with 36 people from the municipality of Othón P. Blanco in Quintana Roo, Mexico, aged between 18 and 29, with different social, academic, working and religious conditions. All had experience of participating in the "Jóvenes Construyendo el Futuro" programme".

	Status	Sex	Company	Age
Group 1	11 students one year ago	8 women 3 men	Business Services 9	18-21/13
Group 2	13 employed one year ago	4 women 9 male		22-25/12
Group 3	12 more than one year without work or study	9 women 3 men		26-29/11

Table 1 Socio-economic data of the study subjects

Basic questionnaire for the in-depth interview, with open-ended items about the programme "Jóvenes Construyendo el Futuro" with the questions: What did it mean to you to participate (or to have participated) in the programme "Jóvenes Construyendo el Futuro"?

What effect did participating (or having participated) in the programme "Jóvenes Construyendo el Futuro" have on you? Does the programme "Jóvenes Construyendo el Futuro" have any social impact? Does the programme "Jóvenes Construyendo el Futuro" have any obvious benefits for those who participate in it?

According to López (2016), in every narrative it is imperative to identify the real experience, based on its quality and content; therefore, in this study we used the Criteria Guide extracted from the Criteria-Based Content Analysis as suggested by (Moreno and Moreno, 2023) who assess the veracity of the stories narrated in psychological expert opinions. Based on the aforementioned authors, the criteria used in this research were related to the structuring, logical consistency, amount of detail, characteristics of the context, description of interactions and reproduction of the conversations.

As a basic instrument, a matrix was developed to guide the interpretivist work with dimensions, categories and units of analysis, based on the metamodel established by Bandler and Grinder and based on Noam Chomsky's transformational grammar. (Moreno y Moreno, 2023).

Dimensions	Categories	Units of analysis
Transformation processes	Linguistic referents in the world model	
Generalisations. A process in which certain elements or parts of the person's model are separated from the original experience to come to represent the whole category, of which the experience is only a specific instance. (Bandler and Grinder, 1996)	Incomplete specific verbs. Absence of referential indexes. Universals. Complex equivalences. Presuppositions. Cause and effect. Mind reading.	Words or expressions. Associated gesticulation. Intrusions. Theme. Changes of subject.
Deletions Process that removes fragments of the original experience (the world) or of the complete linguistic representation (deep structure) (Bandler and Grinder, 1996).	Adverbs followed by "mind". Universal statements Modal operators Universal quantifiers.	
Distortions A process that enables us to modify our perception of the sensory data we receive (Bandler and Grinder, 1996).	Nominalisations. Good semantic formation. Performative lost	

**Table 2** Matrix of dimensions, categories and units of analysis developed by Moreno and Moreno (2023, pp. 10-11)

In order to have the chronological sequence of data, information and events of interest on the subject, the logbook was used. A video camera was also used to record information, to record data that could be retrieved to verify information.

Results

The results for the 36 people interviewed are shown below:

Criteria	Quality level of content	
	Not credible %	credible %
Unstructured production	7	93
Logical consistency	4	96
Amount of detail	4	96
Contextual features	6	94
Description of interactions	7	93
Reproduction of conversations	5	95

**Table 3** Credibility of Autobiography results

Table 3 indicates that people's discourse has a high degree of credibility, so that the narrative of the study subjects can be trusted, meaning that the information is accurate and reliable, which according to López, L. (2016) allows us to have a concrete position based on the perceived reality of the interviewee. In other words, the interviewees did not have a dual intention in each of their comments; they recounted events based on their own perceived reality comments; they narrated events based on what they think, see and perceive.

Question	Result	%
What did it mean to you to participate (or to have participated) in the "Jóvenes Construyendo el Futuro" programme?	Acknowledge that it was meaningful to have participated in the programme.	100%
What effect did participating (or having participated) in the "Jóvenes Construyendo el Futuro" programme have on you?	They recognise that participating in the programme did have an effect.	100%
Does the programme "Jóvenes Construyendo el Futuro" have any social impact?	They affirmed that this programme has social importance, especially in the environment where they are located.	77%
	They consider that the social impact is not as high as could be expected.	23%
Is there an obvious benefit of the "Jóvenes Construyendo el Futuro" programme for those who participate in it?	They consider that they have benefited not only economically, but also socially and emotionally.	88%
	They believe that the wellbeing they experience is momentary and that sooner or later it will be cancelled, a situation that generates uncertainty.	12%
Do young people know how to take advantage of such social programmes?	They consider that if they take advantage of the opportunities once they are granted.	83%

**Table 4** Beliefs about the well-being of the respondents

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When asked to express what it meant to them to participate (or to have participated) in the programme "Jóvenes Construyendo el Futuro"? 100% found that they could identify that it had a meaning in their life, i.e. that it was not an unimportant event; regarding the effect of participating (or having participated) in the programme "Jóvenes Construyendo el Futuro"? 100% had a well-defined idea about the impact of the programme on their personal life, the social relevance and the benefits that a programme of this nature can have.

When asked if the programme benefited everyone in the same way, 65% felt that it was a good opportunity to demonstrate that young people have qualities and potential and had the possibility to be hired by the organisations they had been apprenticed to. 25% considered that although the programme had a benefit, the most important thing was how dignified it was for them to regain the dignity they felt they had lost, as they were unable to contribute satisfactorily to their family environment and although they were not working at the moment, they were already motivated to work in what they had learnt. Even working on their own. 10% experience that the programme has helped them or is really helping them, but they do not know what to do when the programme ends.

Welfare criteria	Dimensions	Evidence
Physical	Health	100% Medical insurance
	Hygiene	Daily grooming and lining up for work 88
	Food	Regulation of food according to working day 90%
Social	Membership	Feels part of a group 94
	Participation in work decision making	Considered by others 90%
	Commitment	Giving importance to work 94%
Psychological	Dignification	Better self-concept and self-esteem
	Motivation for achievement and improvement	Desire for self-improvement and search for new opportunities

**Table 5** Perceived effects of the programme on the welfare state

Table 5 shows the perception of the Jóvenes Construyendo el Futuro programme on the state of well-being. In the physical criterion, related to the dimensions of health, hygiene and nutrition, they perceive that the quality of life is improved because since they are accepted in the social programme, they have medical insurance; they all assume that going to work requires a certain personal projection, so they tend to present themselves at the different facilities with proper alignment and grooming. Also, the working hours allow them to regulate their food, regardless of the fact that on some occasions (especially when they work in food-related businesses, they are given the opportunity to have access to food at no cost or at a lower cost).

On the social well-being criterion, the young people agree that there is membership between the old workers and them, sometimes they are asked for their point of view to carry out activities and this generates commitment and enthusiasm, adding that they say they feel special. And from the psychological well-being criterion, the young people perceive the dignification of their person, and they have realised that they are capable of being socially useful, some have started their own businesses, some are currently studying and working, and others are looking for new opportunities. But they all agree that they can live better and be socially useful to their family and society as a sign of gratitude.

**Discussion**

According to the results of the research that has been carried out, it can be seen that the welfare programme "Youth building the future" has had an impact on the people who have had the opportunity to enroll as apprentices, which goes beyond the economic, it impacts the whole individual; by working in a recognized job, in which they have the possibility to acquire skills, which can be a mechanic, administrative officer, baker, trader, etc., they give young people the opportunity to acquire skills, which can be a mechanic, administrative officer, baker, merchant, etc., It is important to highlight that in this research it was found that 40% of the subjects who had participated in the programme had stayed on to work, hired by the business where they had been apprentices, due to their level of performance and productivity.

It is important to highlight that the dignity felt by the subjects, as well as the feeling of inclusion, gave them the possibility of contemplating a better future.

Criticisms that this type of programme is a waste are proven to be the result of ideological beliefs about the superiority of one class over the others, considering that poverty is a condition that a person has by choice.

In this study it can be corroborated that when a person is given an obvious opportunity for development, he or she mobilises his or her resources to optimise it. It is important to point this out because it coincides with the model of human development and well-being, which assures that by increasing functionings and capacities, the level of well-being rises and with it the quality of life.

## Conclusion

If there is a relationship between the social programme "Jóvenes Construyendo el Futuro" and the current state of well-being of the people who have participated in this programme in the municipality of Othón P. Blanco. Therefore, it can be indicated that:

The welfare programme called "Jóvenes Construyendo el Futuro" fulfils an important social service; it certainly addresses inequality and improves the living conditions of young people who face situations of vulnerability and exclusion, given that by providing economic support it opens the possibility of satisfying basic needs such as food, housing and medical care, which is why the programme contributes to the reduction of poverty and improvement of the quality of life of young people in the municipality of Othón P. Blanco.

Also, the programme "Jóvenes Construyendo el Futuro" is directly related to the well-being of the people who participate or have participated in it. Independently of the economic benefit granted and the access to goods and services, the individuals who participate acquire skills to carry out various activities, even gaining access to permanent job opportunities; this is what Sen (2000, 2001) refers to as well-being. Recalling that, according to the aforementioned author, well-being is not only measurable in terms of achievements, but also in terms of opportunities, which give the freedom to decide and achieve those achievements.

Young people who have this opportunity for development will use it, mobilising their resources to optimise it.

This programme has physical, social and psychological effects that are important for the participating population; by providing access to health care services and promoting healthy habits, social programmes can improve the health and well-being of marginalised youth, reducing the burden of disease and improving quality of life; similarly, the programme under study recognises the inherent dignity of all marginalised youth by providing opportunities to live with dignity and respect.

Young people, disparagingly called "NEETs" by a rampant system, have been given a false interpretation of themselves, justifying their stigmatisation and disallowing them to grow by accusing them of their status. It is important to recognise that conservative thinking limits a developing society, and as Bunge said "the economic policies of conservative and reactionary governments are enemies of the welfare of ordinary people" (Gil, 2020, p.18).

The "Youth Building the Future" programme is aligned with the wellbeing goals of the UN 2030 agenda, as they relate to human development (SDG 1. Health and well-being, SDG 8. Decent work and economic growth, SDG 10. Reducing inequalities, SDG 16. Peace, justice and strong institutions) thus contributing to the regeneration of the social fabric, peace and non-violence that the world longs for.

Finally, it is important to prioritise the most vulnerable and disadvantaged sectors of society when making decisions and designing policies, recognising that inequality and poverty are an obstacle to sustainable development and social justice. The author of this study, as an active part of a society that seeks human development and well-being, joins the ideology "for the sake of all, poor people first".

## References

Arceo, E., y Campos, R. (2011). *¿Quiénes son los NiNis en México?* El Colegio de México, Centro de Estudios Económicos. 524. <https://bit.ly/3R2ACcr>

MORENO-GARCÍA, Blanca Verónica, DÍAZ-RODRÍGUEZ, Eustacio and BELTRÁN-LÓPEZ, Robert. Perception of the status of well-being of beneficiaries of the social program Jóvenes Construyendo el Futuro in Othón P. Blanco. Journal-International Economy. 2023

Balarezo López, G. (2019). Generación nini: jóvenes que ni estudian ni trabajan. *Paideia* XXI, 9(1), 77–103. <https://doi.org/10.31381/paideia.v9i1.2266>

Bandler, R., y Grinder, J. (1996). *Estructura de la magia I (The Structure of Magic I): Lenguaje y terapia (Vol. 1)*. Cuatro vientos. <https://bit.ly/3uNshli>

Bracho Fuenmayor, P. L. (2021). Teoría de la justicia de John Rawls, desde una perspectiva de la filosofía política. *Revista Chilena de Derecho y Ciencia Política*, 12(2), 109-132. <https://doi.org/10.7770/rchdcp-V12N2-art2650>

Bolívar, A. (2012). Metodología de la investigación biográfico-narrativa: recogida y análisis de datos. *Dimensões epistemológicas e metodológicas da investigação (auto) biográfica*, 2, 79-109. <https://bit.ly/49Xz4sV>

Cejudo, R. (2006). Desarrollo humano y capacidades. Aplicaciones de la teoría de las capacidades de Amartya Sen a la educación. *Revista española de pedagogía*, (234), 365-380. <https://bit.ly/47O00K0>

Ferrans C. E. (1990). Quality of life: conceptual issues. *Seminars in oncology nursing*, 6(4), 248–254. [https://doi.org/10.1016/0749-208\(90\)90026-2](https://doi.org/10.1016/0749-208(90)90026-2)

Gil, J. M. (2020). BUNGE. Una despedida insuficiente. *Teuken Bidikay - Revista Latinoamericana de Investigación en Organizaciones, Ambiente y Sociedad*, 11(16), 17–20. <https://revistas.elpoli.edu.co/index.php/teu/article/view/1742>

Girón, A. (2016). Objetivos del Desarrollo Sostenible y la Agenda 2030: Frente a las políticas públicas y los cambios de gobierno en América Latina. *Revista Problemas del Desarrollo*, 186(47), 3-8. <https://bit.ly/3N6BuM4>

Gómez Vilchis, R. R. (2022). ¿Populismo o lealtad racional hacia el presidente Andrés Manuel López Obrador (AMLO)? (El perfil del partidario de la 4T y las elecciones intermedias 2021). *Revista Mexicana de Opinión Pública*, (32), 77–95. <https://doi.org/10.22201/fcpys.24484911e.2022.32.80376>

Hernández, M. M. (2022). Una visión del funcionamiento del programa “Jóvenes Construyendo el Futuro”. *Palimpsesto*, 12(20), 111-125.

Instituto Mexicano para la Competitividad [IMCO] (2023). *Recursos para programas sociales en México*. <https://imco.org.mx/recursos-para-programas-sociales-en-mexico/#:~:text=Recursos%20para%20programas%20sociales%3A%20El,11%20a%C3%B1o%20en%20t%C3%A9rminos%20reales>

López, L. (2016). *Evaluación de la credibilidad del testimonio a través del análisis de contenido basado en criterios y de la medición de variables psicofisiológicas*. [Tesis Doctoral]. Universidad de Extremadura. <http://hdl.handle.net/10662/4383>

Márquez Jiménez, A. (2018). Ninis en México: problema y propuestas. *Perfiles Educativos*, 40(159), 3-14. <https://doi.org/10.22201/iisue.24486167e.2018.159.58771>

Martínez Espinoza, M. I. (2021). La política social de la cuarta transformación en México. Un balance del primer año de gobierno de López Obrador. *Revista Española De Ciencia Política*, (55), 121–142. <https://doi.org/10.21308/recp.55.05>

Moreno García, B. V., & Moreno Cuahtecotzi, F. J. (2023). Necesidades neuróticas: condicionantes en la percepción de la paz y la construcción de una vida digna: Neurotic needs: conditioning factors in the perception of peace and the construction of a dignified life. *LATAM Revista Latinoamericana de Ciencias Sociales y Humanidades*, 4(2), 3090–3107. <https://doi.org/10.56712/latam.v4i2.820>

Organización de las Naciones Unidas [ONU] (2022). *Evolución de los últimos 10 años en desarrollo humano*. Programa de las Naciones Unidas para el Desarrollo [PNUD]: Suecia

Pérez-Luco Arenas, R., Lagos Gutiérrez, L., Mardones Barrera, R., y Sáez Ardura, F. (2017). Taxonomía de diseños y muestreo en investigación cualitativa. Un intento de síntesis entre las aproximaciones teórica y emergente. *Ámbitos. Revista Internacional de Comunicación*, 39.

Rodríguez Fontenla, E.R. (2018). *La teoría política del conservadurismo de la tradición*. [Tesis Doctoral]. Universidad de Santiago de Compostela. <http://hdl.handle.net/10347/18029>

Rosaneli, C. F., Ribeiro, A. L. C., Assis, L. D., Silva, T. M. D. y Siqueira, J. E. D. (2015). La fragilidad humana frente a la pobreza y el hambre. *Revista Bioética*, 23, 89-97.

Sen, A. (1999). *Nuevo examen de la desigualdad*. Alianza Editorial.

Sen, A. (2000). *Desarrollo y libertad*. Planeta.

Sen, A. (2000b). El desarrollo como libertad. *Gaceta ecológica*, (55), 14-20.

Sen, A. (2001). *El nivel de vida*. Editorial Complutense.

Sen, A. (2003). *El valor de la democracia*. Ediciones de Intervención Cultural.

Sen, A. (2021). *Nuevo examen de la desigualdad*. Comercial Grupo Anaya.

Sen, A., London, S. y Formichella, M. (2006). *Capital humano y capacidad humana*. Foro de Economía Política.

Shaw, A. (1990). Defining the quality of life. *Quality of Life: The New Medical Dilemma*, 91-92.

Urzúa, A. (2012) Calidad de vida: Una revisión teórica del concepto. *Revista Terapia Psicológica* 2012, 30 (1), 61-71.

Verdugo, M. A., Schalock, R. L., Arias, B., Gómez, L. y Jordán de Urríes, B. (2013). Calidad de vida. MA Verdugo & RL Schalock (Coords.) *Discapacidad e inclusión manual para la docencia*, 443- 461.

Formulation of gummies with Persian lemon bagasse (*Citrus latifolia* Tanaka) and stingless bee honey (*Scaptotrigona mexicana*): acceptance and purchase intention

Formulación de gomitas con Bagazo de limón persa (*Citrus latifolia* Tanaka) y miel de abeja sin aguijón (*Scaptotrigona mexicana*): aceptación e intención de compra

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Abstract	Resumen
<p>Objectives: This project proposes the integration of stingless bee honey (<i>Scaptotrigona mexicana</i>) and Persian lemon bagasse (<i>Citrus latifolia</i> Tanaka) in the formulation of a functional product to promote its commercial use as by-products of food generated in supply chains. supply. Methodology: Seven formulations of Persian lemon bagasse, glucose and stingless bee honey were evaluated for the gummy candy proposal. The study was conducted with consumers in a centralized location setting. The level of liking was measured with a 9-point hedonic scale. Acceptability and purchase intention were measured with a binomial scale. Contribution: it was observed that the samples with the highest acceptance by consumers were those that did not contain Persian lemon bagasse.</p>	<p>Objetivos: En este proyecto se propone la integración de miel de abeja sin aguijón (<i>Scaptotrigona mexicana</i>) y bagazo de limón persa (<i>Citrus latifolia</i> Tanaka) en la formulación de un producto funcional para potenciar su aprovechamiento comercial como subproductos de alimentos generadas en las cadenas de suministro. Metodología: Siete formulaciones de bagazo de limón persa, glucosa y miel de abeja sin aguijón se evaluaron para la propuesta de dulce gomoso. El estudio se realizó con consumidores en una modalidad de ubicación centralizada. El agrado se midió con una escala hedónica de nueve puntos. La aceptabilidad y la intención de compra se midieron con una escala binomial. Contribución: se observó que las muestras con mayor aceptación por los consumidores fueron las que no contiene bagazo de limón persa.</p>
<p>Confectionery, Stingless bee honey, Mixes design</p>	<p>Confitería, Miel de abeja sin aguijón, Diseño de mezclas</p>
<p>Citation: ALATRISTE-PEREZ, Ismae, CONTRERAS-OLIVA, Adriana, ZARATE-CASTILLO, Gregorio and HERRERA-CORREDOR, José Andrés. Formulation of gummies with Persian lemon bagasse (<i>Citrus latifolia</i> Tanaka) and stingless bee honey (<i>Scaptotrigona mexicana</i>): acceptance and purchase intention. Journal-International Economy. 2023. 7-13:31-37.</p>	

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## Introduction

Losses and waste of plant origin are a worldwide concern, since a large amount of fruit and food peels are wasted in good condition and can be reused and consumed. Globally, organic solid waste accounts for about 46% of total solid waste (Matiacevich, S., et al., 2022).

It is estimated that just over one million tons of food is lost or wasted during industrial processes, post-harvest, storage and transportation, an amount that could feed approximately two million people (FAO, 2019). Within these food losses, the largest share corresponds to fruits and vegetables (40-50 %), followed by fish, cereals and meat and dairy products (35, 30 and 20 %, respectively) (Preciado-Saldaña, A., et al. 2022).

Circular economy (CE) is primarily a system that attempts to maximize the utility and value of the products, components and raw materials used in each process and in each period of the life of the material (Matiacevich, S., et al., 2022). A CE system must be restorative and regenerative, so that products, components and materials at all levels are always maintained at a high level, and materials that were previously discarded can be converted into a resource for the creation of new products (Preciado-Saldaña, A., et al. 2022).

This project seeks that the synergy of these two components (stingless bee honey and dietary fiber) can give us a product with added value that is functional for human beings and of greater economic importance, thus making use of two losses obtained from two systems (lemon and bees), to enhance their commercial use.

Today's consumers are concerned about their health, showing interest in plant foods that contain bioactive or functional ingredients (Younesi, M., et al, 2023).

A gummy consists of hydrocolloids as gelling agents, sweeteners, acids, flavorings, and colorings. Hydrocolloids are large molecules large molecules that are dispersed in water and bind to form a gel composed of the three-dimensional network that absorbs water and particles under the right conditions (Gerry Renaldi, G. et al., 2022).

When evaluating a product, consumers are influenced by sensory characteristics (appearance, aroma, taste and texture) resulting from the balance of compounds in food, and also by non-sensory characteristics that include extrinsic product information such as brand, price, product origin, color and illustrations stamped on the label and several other factors, such as those related to the consumer himself.

Acceptance of the food depends on its sensory characteristics and the psychological aspects of the consumer. Sensory acceptance can be affected by information about the new product. Therefore, providing detailed information about the technology used can increase the expectation and liking of a product, although information in itself does not guarantee greater consumer acceptance (Alvés Mauricio, R., et al., 2022).

## Problem

Food losses and wastes are generated in the supply chain due to lack of specific quality attributes; Persian lemon (*Citrus latifolia* Tanaka) for not complying with size, weight and appearance standards and bee honey (*Scaptotrigona mexicana*) due to lack of freshness, are discarded or not cultivated; therefore, integrating them as an option for their valorization is a fundamental part.

## Hypothesis

It is feasible to identify the effect of ingredients in a gummy based on stingless bee honey (*Scaptotrigona mexicana*) and Persian lemon bagasse (*Citrus latifolia* Tanaka) and to determine the sensory factors of acceptance and purchase intention of the product.

## Methodology to be developed

The study was conducted at the Sensory Analysis

Sensory Analysis Laboratory of the Colegio de Postgraduados Campus Córdoba, located at Km 348 of the Federal Highway Córdoba-Veracruz in Amatlán de los Reyes, Veracruz, Mexico.

Sample Collection and Conditioning

Honey was collected from stingless honey bees (*Scaptotrigona mexicana*) harvested from the period January - March 2017 from the Córdoba Campus of the Colegio de Postgraduados located at km 348 of the Córdoba-Veracruz federal highway, whose coordinates are 18° 51.347' LN and 96° 51.622' LO, within the south-central zone of the state of Veracruz, Mexico. The honey was cultivated in clay pot hives which were removed with syringes and filtered to avoid extracting foreign matter.

The second quality Persian lime (*Citrus Latifolia Tanaka*) was provided by a producer in the municipality of Cuitlahuac, Veracruz, and selected at medium ripening stage. This ripening stage is characterized mainly by green-yellow shades, as well as by a slight adherence of the bagasse to the peel, making bagasse removal easy. The fruit was washed with water to remove possible foreign organic matter for subsequent handling and sliced into 2 mm thick cuts manually with a sharp stainless-steel knife. Drying was carried out in a Felisa® digital drying oven (Feligneo, Zapopan Jalisco, Mexico) at a temperature of 60°C for 6 h. The bagasse was then separated from the water and dried. The bagasse and husk were then separated manually. The samples were ground in a moulinex® blender with a 250 mL beaker. At the end, they were sieved in a Montinox No. 60 (0.245 mm) physical test sieve (Manufactured by Montiel inoxidable México) to obtain the dry Persian lime bagasse.

Mix design

The mix design used for the proposed gummies was

The mixture design used for the gummies proposal was carried out in the simplex coordinate system where the total proportions of each ingredient (Persian lime bagasse, stingless honey and glucose) in the confection was adjusted to 100 % according to Table 1.

As a restriction, a maximum of 70% and a minimum of 0% were used.

% and a minimum of 0 % were used for all ingredients.

Preparation of gummy candy For the optimization process, seven gummy candy formulations were designed. The formulations consisted of variable ingredients (142.5 g) representing 38.25 % and fixed ingredients (230 g) representing 61.74 %. The ingredients that were varied in the formulations were: dry bagasse of Persian lime, glucose and stingless bee honey (*Scaptotrigona mexicana*). The fixed ingredients were: grenetin and water.

No.	Code	Bagasse	Glucose	Honey	Total
1	257	0	70	30	100
2	943	15	55	30	100
3	591	30	40	30	100
4	739	0	55	45	100
5	861	10	50	40	100
6	524	15	40	45	100
7	391	0	40	60	100

Table 1 Percentages of ingredients used for the formulation of the confectionery

For the preparation of each formulation 372.5 g were used, the ingredients were weighed according to the corresponding formulation and 200 mL of water and 30 g of grenetin were added in a stainless-steel container. The mixture of ingredients was heated over direct heat at 145°C until lumps were eliminated.

145°C until the dried Persian lime bagasse lumps were eliminated. It was then removed from the heat and cooled to 90°C. The mixture was transferred to silicone molds and the gummies were left to set.

Physicochemical characterization of gummies

The pH was determined according to the AOAC methodology.

14.002 of the AOAC (1984), which consists of weighing 10 g of sample, mixing it with 100 ml of distilled water, shaking it for 5 minutes and letting it stand for 5 minutes to later take the reading by introducing the electrode into the supernatant. The potentiometer (Thermo Scientific Orion 3-star benchtop, 115/220 VAC) was adjusted to a temperature of 25 °C (± 1°C) with a reference buffer of pH 7; the determination was carried out in triplicate.

For moisture, a moisture determinator (Moisture Analyzers, MX-50, A&D's Company, limited USA) was used, for the determination a weight of 5 g. of the sample was used and placed in the tray of the meter, then the lid was lowered and the determination began, after a few minutes the equipment gave the results, the determination was carried out in triplicate.

Consumption study

The study was carried out with inexperienced Mexican consumers N = 119, who regularly consume candy, participated in this study.

In this study. The participating consumers reside in the State of Veracruz, the tests were performed in the facilities of the Universidad Tecnológica del Centro de Veracruz (UTCV) in the State of Veracruz, Mexico. The tests were conducted in a room illuminated with natural and fluorescent light, as well as air-conditioned. The questionnaire was written in Spanish. Consumers were informed about the questionnaire, particularly the sensory attributes and their meaning, and the handling of the samples during their evaluation.

Scale	Value numeric
I am extremely displeased	1
I dislike myself very much	2
I dislike myself moderately	3
I dislike slightly	4
I neither liked nor disliked	5
I liked it slightly	6
I liked it moderately	7
I liked it very much	8
I liked it extremely	9

Table 2 Hedonic scale

Each consumer received a set of three (1 piece per sample) out of the 7 samples for evaluation according to the incomplete balanced block design (an arrangement in which each block contains only some of the complete pieces), in the following order: general appearance, color, transparency, odor, consistency, general taste; sweet, bitter and/or sour. They rated the samples in the order in which they were presented using a 9-point hedonic scale. Part III: The binomial (yes/no) was used as a scale to determine the overall acceptability and purchase intention of each sample (Sae-Eaw et al., 2007).

Statistical analysis

Seven (7) formulations were used, A block balance design was employed to reduce consumer fatigue. With this statistical design, each consumer evaluated 3 formulations according to the 11.7 plan ( $t = 7$   $k = 3$   $r = 3$   $b = 7$   $\lambda = 1$ ,  $E = 0.78$ , Type V (Cochran and Cox 1957).

The design was repeated 3 times. For the analysis of data collected on liking from the hedonic scale, a balanced incomplete block design was used to reduce consumer fatigue at the 0.05 significance level. Tukey's test was used to compare between formulations. To identify similarity between formulations, all attributes were considered simultaneously using principal component and cluster analysis. To identify the critical attributes for acceptability and purchase intention, a multiple regression analysis was used (Prinyawiwatkul and Chompreeda, 2007), where the significance level of each of the coefficients associated with each of the attributes was according to the following model:

$t = 7$   $k = 3$   $r = 3$   $b = 7$   $\lambda = 1$ ,  $E = 0.78$ , Type V )

(Cochran and Cox 1957) and allow to reduce consumer fatigue. In this study, each sample was tested 30 times. Additional test samples were given to consumers upon request. To reduce bias and allow consumers to focus only on sensory acceptability no filler was provided. Water and expectoration cups were provided to consumers for use during testing to minimize any residual effects between samples. Consumers were asked to respond to the questionnaire which consisted of three parts. Part I: They were asked to provide demographic information, including age, sex, place of origin. These questions were asked prior to performing the sensory evaluation of the samples. Part II: Consumers were asked to evaluate the acceptability of each gummy attribute.

To identify the effect of providing more information to the information to the consumer (the use of Persian lemon bagasse in the confection) on purchase intention, McNemar's test was used. R software version 4.0.2 and the integrated development environment RStudio 1.3.959 were used.

## Results

In the analysis of variance of taste level for sensory attributes, no differences were found. In the analysis of variance of the taste level for sensory attributes, no significant differences were found in the attributes appearance, color and odor. In general, consumers indicated that they liked the confectionery in the range of 4 (I slightly disliked it) to 6 (I slightly liked it). These results suggest that even with different ratios of ingredients in the formulations, liking the confectionery ingredients and adding the Persian lemon bagasse had no effect on consumer taste. A significant difference was found for transparency, consistency and overall flavor in a range of attributes from 2 (I disliked it very much) to 6 (I liked it slightly). In the case of overall taste the lowest value was for formulation 2 (dried Persian lemon bagasse 15%, glucose 55%, honey 30%), which has an intermediate proportion of dried Persian lemon bagasse.

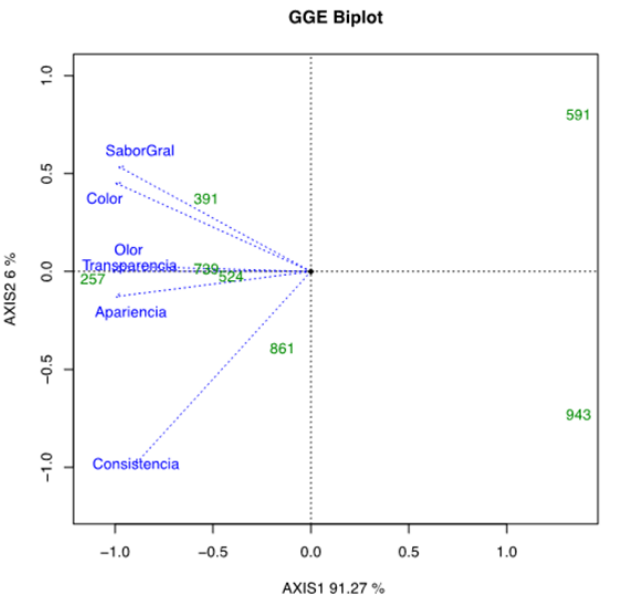
No.	Apariencia	Color	Transparencia
257	6.45 ± 1.05 a	6.63 ± 1.08 a	6.96 ± 0.98 a
943	4.55 ± 1.65 b	4.53 ± 1.96 c	4.58 ± 1.44c
591	4.22 ± 2.04 b	5.12 ± 1.71 bc	4.61 ± 1.51c
739	6.4 ± 1.23 a	6.17 ± 1.54 a	6.27 ± 1.67ab
861	5.58 ± 1.45 a	5.81 ± 1.62 ab	6.04 ± 1.33b
524	6.16 ± 1.62 a	6.14 ±1.68 a	5.9 ± 1.46 b
391	6.2 ± 1.45 a	6.24 ± 1.66 a	6.33 ± 1.44 ab

No.	Olor	Consistencia	SaborGral
257	6.61 ± 1.67a	6.2 ± 1.6a	6.45 ± 1.08a
943	4.45 ± 2.08b	5 ± 2.04b	2.67 ±1.61d
591	4.65 ± 1.45b	3.8 ± 1.78c	3.59 ± 1.9 d
739	5.71 ± 1.74a	5.65 ± 1.57ab	5.76 ± 1.83 ab
861	6.06 ± 1.93 a	5.74 ± 1.83ab	4.64 ± 1.93c
524	6.38 ± 1.95a	5.58 ± 2.25ab	5.18 ± 1.64 bc
391	6.1 ± 1.48a	5.41 ± 1.82 ab	6.02 ± 1.94ab

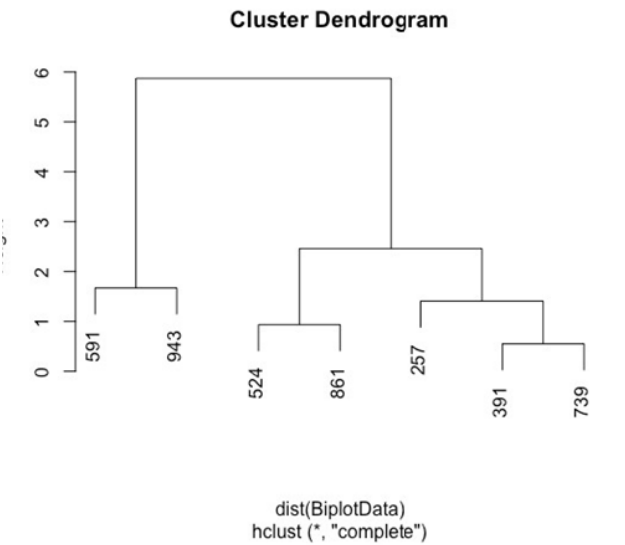
**Table 3** Agreeableness values for the attributes of the formulations

Multivariate analysis of the results of the principal component and cluster analysis is shown in Figure 1 and 2. The formulations were projected on the first of the two principal components: AXIS1 (which explains 91.27 % of the total variability) and AXIS2 (which explains 6 % of the total variability), for a total of 97.27 %.

The formulations were projected along this line, where more clarity is observed between the values with the hedonic scale assigned to the attributes. Formulation 1 (257), with the highest proportion of glucose and lowest amount of bee honey, was the most consumers in the six attributes appearance, color, transparency, odor, consistency, and overall taste. Formulations 7 (391) and 4 (739) show similar characteristics in lacking dried Persian lemon bagasse content and consumer preference in appearance, color and transparency. Formulations 6 (524) and 5 (861) are similar in attributes such as transparency and odor. While formulations 2 (943) and 3 (591) which have the same amount of stingless bee honey. **DISCUSSION.** Cluster analysis allowed visualizing two groups, clearly separating formulations 2 (943) and 3 (591).



**Figure 1** Principal component analysis relating the attributes of the gummies



**Figure 2** Dendrogram of formulations

The multiple logistic regression analysis is presented in Table 3. In this analysis, the coefficient for each attribute in the model for acceptability was significant with the attributes; odor, consistency and overall taste. Purchase intention was mainly determined by appearance, odor, consistency and overall taste. Buying fiber was significant with appearance, consistency and overall taste.

Atributo	Aceptación			Compra		
	Estimación	Pr > z	Odds ratio	Estimación	Pr > z	Odds ratio
Apariencia	0.15	0.36	1.16	0.4856	0.02	1.62
Olor	-0.17	0.30	0.83	-0.6293	0.005	0.53
Transparencia	0.01	0.93	1.01	-0.0961	0.54	0.90
Sabor general	-0.25	0.01	0.77	0.0746	0.47	1.07
Consistencia	0.45	0.00002	1.58	0.4213	0.0001	1.52
Fibra	0.63	0.0000003	1.88	0.7338	0.000	2.08

Table 4 Coefficients for the multiple logistic regression model for acceptance and purchase intention

It is worth mentioning that our consumers were young people who tend to consume gummies eventually, therefore, they reflected an interest in a new product with health benefits. In the study of attributes we observed that there is a significant difference between the formulations, obtaining markedly different formulations. After analyzing all the results obtained from this project, we could observe that the honey content in the formulations was important since the formulations obtained a better preference since they have an adequate level of sweetness.

In this way we can recommend formulations F1, F4 and F7 as they are the ones that could be more successful when introduced to the market, since they were the best qualified by the panelists.

This product would be aimed at all types of consumers, since they can consume the product providing the aforementioned nutrients from both honey and fiber.

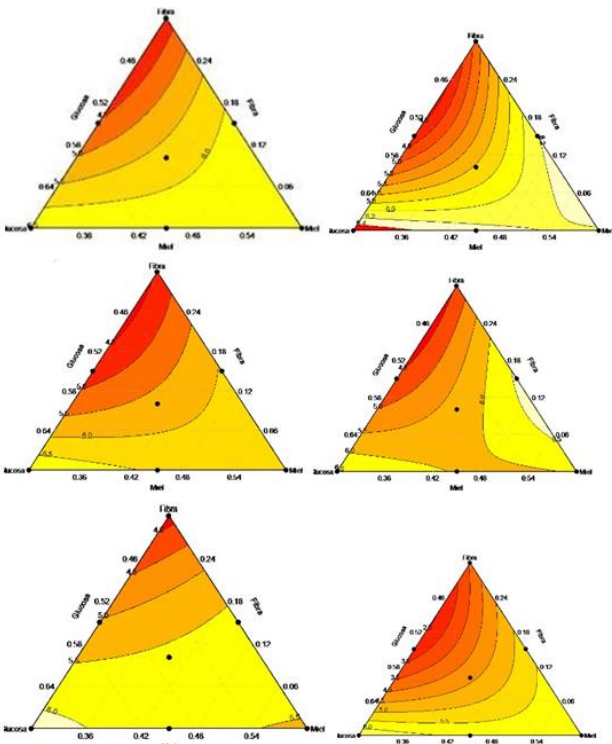


Figure 3 a) Appearance, b) color, c) transparency, d) odor, e) consistency and f) general flavor.

Conclusions

Based on the results obtained in the present work, it was observed that the samples with the highest consumer acceptance were those with the least amount of lemon fiber.

It is worth mentioning that our consumers were young people who tend to consume gummies eventually, therefore they reflected an interest in a new product with health benefits. In the study of attributes we observed that there is a significant difference between the formulations, obtaining markedly different formulations. After analyzing all the results obtained from this project, we were able to observe that the honey content in the formulations was important since the formulations obtained a better preference since they have an adequate level of sweetness.

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This product would be aimed at all types of consumers, since they can consume the product providing the aforementioned nutrients from both honey and fiber.

## Funding

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## References

Matiacevich, Silvia, Soto Madrid, Daniela, & Gutiérrez Cutiño, Marlen. (2023). Economía circular: obtención y encapsulación de compuestos polifenólicos provenientes de residuos agroindustriales. RIVAR (Santiago), 10(28), 77-100. <https://dx.doi.org/10.35588/rivar.v10i28.5343>

Preciado-Saldaña, Alejandra M.; Ruiz-Canizales, J.; Villegas-Ochoa, Mónica A.; Domínguez-Avila, J. Abraham; González-Aguilar, Gustavo A. Aprovechamiento de subproductos de la industria agroalimentaria. Un acercamiento a la economía circular. Revista Iberoamericana de Tecnología Postcosecha, vol. 23, núm. 2, 2022

Food and Agriculture Organization of the United Nations. (2019). The state of food and agriculture. Moving forward on food loss and waste reduction. Rome. Licence: CC BY-NC-SA 3.0IGO.

Younesi, M., Peighambardoust, S. H., Sarabandi, K., Akbarmehr, A., Ahaninjan, M., & Soltanzadeh, M. (2023). Application of structurally modified WPC in combination with maltodextrin for microencapsulation of Roselle (*Hibiscus sabdariffa*) extract as a natural colorant source for gummy candy. International journal of biological macromolecules, 242(Pt 3), 124903.

Gerry Renaldi, G. Renaldi, Kanthaporn Junsara, K. Junsara, Taruedee Jannu, T. Jannu, Nualpun Sirinupong, N. Sirinupong, & Rajnibhas Sukeaw

Samakradhamrongthai, R. Sukeaw Samakradhamrongthai. (2022). Physicochemical, textural, and sensory qualities of pectin/gelatin gummy jelly incorporated with *Garcinia atroviridis* and its consumer acceptability. International journal of gastronomy and food science, 28, 100505. doi: 10.1016/j.ijgfs.2022.100505

Alves Mauricio, R., Alvares Duarte Bonini Campos, J., & Tiekko Nassu, R. (2022). Meat with edible coating: Acceptance, purchase intention and neophobia. Food research international (Ottawa, Ont.), 154, 111002. <https://doi.org/10.1016/j.foodres.2022.111002>

Cochran WG, Cox GM. 1957. Experimental designs. 2nd ed., New York: John Wiley & Sons. 617 p.

Saw-Eaw A, Chompreeda P, Prinyawiwatkul W, Haruthaithanasan V, Suwonsichon T, Saidu JE, Xu Z. 2007. Acceptance and purchase intent of US consumers for nonwheat rice butter cakes. J Food Sci 72(2):s92–7.

Prinyawiwatkul W, Chompreeda P. 2007. Applications of discriminant and logistic regression analysis for consumer acceptance and consumer-oriented product optimization study (chapter 16). In: Beckley JH, Foley M, Topp EJ, Huang JC, Prinyawiwatkul W, editors. Accelerating new food product design and development. Ames, Iowa: Blackwell Publishing Professional.

A.O.A.C. Official Method of Analysis. Association of Official Analytical Chemistry. 1990. 16th ed, Washington, USA.

R Core Team. (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>.

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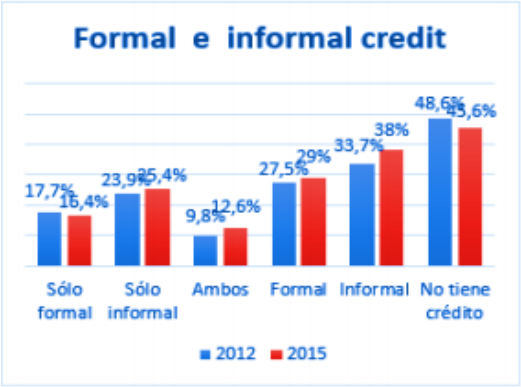
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