

ISSN 2410-4019

Volume 11, Issue 31 — e20241131 January — December

# Journal Economic Development



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**Journal Economic Development,**  
Volume 11, Issue 31: e20241131  
January – December 2024, is a  
Continuous publication - Journal edited  
by ECORFAN-Bolivia. Loa 1179, Sucre  
City. Chuquisaca, Bolivia. WEB:  
www.ecorfan.org, revista@ecorfan.org.  
Editor in Chief: Chiatchoua, Cesaire.  
PhD. ISSN 2410-4019. Responsible for  
the last update of this issue of the  
ECORFAN Informatics Unit. Escamilla-  
Bouchán, Imelda. PhD, Luna-Soto,  
Vladimir. PhD, updated as of December  
31, 2024.

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# **Journal Economic Development**

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In the first article we present *Financial transformation through Fintech in Mexico* by Jiménez-Lozano, Pilar Patricia, Medina-Mora, Samuel, Peña-Alvarado, Erika and Pérez-Castañeda, Nancy Elizabeth, with adscription in the Universidad Politécnica del Valle de México, in the next article we present *Organizational belonging of a footwear manufacturer in the city of León, Guanajuato* by Pérez-Flores, Angélica Josefina, Rivera-Cisneros, Miguel Ángel and Franco-Bravo, Azeneth Irazú, with adscription in the Universidad Tecnológica de León, in the next article we present *Measurement of work environment in a savings and loan cooperative* by Merino-Viazcán, Janet, Solano-Palapa, Nathaly, Ramírez-Cortes, Elva Patricia and Peña-Cruz Archundia, Félix Martín, with adscription in the Universidad Tecnológica de Izúcar de Matamoros, in the next article we present *Study of the satisfaction of tourists visiting a destination: the case of the state of Sonora* by Esparza-García, Irma, Sánchez Guerrero, Marisol, Clark-Mendivil, Yesenia and Espinoza-Castelo, Luz, with adscription in the Instituto Tecnológico de Sonora and Universidad Tecnológica de San Luis Río Colorado, in the next article we present *Women mentor program in science in the state of Mexico. experiences and results at the Universidad Politécnica del Valle de México* by Martínez-Pérez, Beatriz, Hernández-Acosta, Humiko Yahaira and Sánchez-Vázquez, Elizabeth, with adscription in the Universidad Politécnica del Valle de México, in the last article we present *Culinary traditions, endemic resources, San Juan del Río, Querétaro* by Pérez-Bravo, Julia, with adscription in the Universidad Autónoma de Querétaro.

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Financial transformation through Fintech in Mexico

Transformación financiera mediante las Fintech en México

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CONAHCYT classification:

Area: Social Sciences  
Field: Business and administration  
Discipline: Administration and management  
Sub-discipline: Business administration

 <https://doi.org/10.35429/JED.2024.11.31.1.7>

Article History:




Received: January 30, 2024  
Accepted: December 31, 2024

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Abstract




In the year 2024, Fintech in Mexico have experienced significant growth and have established themselves as important players in the country's financial sector, these platforms to carry out financial transactions, manage their personal finances and access alternative banking services; Fintech have expanded their service offering beyond digital payments and transfers, now offering products such as loans, insurance, investments and financial advice, covering a wide range of users' financial needs. This research aims to provide a general overview of the use of Fintech currently in Mexico, as well as regulation, financing, strategies, transformation, and statistical data. The methodology used in the research is mixed because it takes up characteristics of quantitative studies, through data obtained from different and qualitative sources in accordance with the research to be carried out rationally in data theory. Greater investment and financing since Fintech in Mexico has attracted significant investments from both national and foreign capital, this has allowed Fintech companies to expand, improve their technologies and offer better services to their users. It is important to recognize that Fintech in Mexico in 2024 is at a point of maturity and growth, offering a wide variety of digital financial services and contributing to financial inclusion and the modernization of the sector in the country.

Goals	Methodology	Contribution
		

Fintech, Transformation, Finance

Resumen

En el año 2024, las Fintech en México han experimentado un crecimiento significativo y se han consolidado como actores importantes en el sector financiero del país, estas plataformas para realizar transacciones financieras, gestionar sus finanzas personales y acceder a servicios bancarios alternativos; Fintech han ampliado su oferta de servicios más allá de los pagos digitales y las transferencias, ahora ofrecen productos como préstamos, seguros, inversiones y asesoría financiera, abarcando una amplia gama de necesidades financieras de los usuarios. La presente investigación pretende dar un panorama general del uso de las Fintech en la actualidad en México, así como la regulación, financiamiento, estrategias, transformación, datos estadísticos. La metodología que se utiliza en la investigación es mixta debido a que retoma características de los estudios cuantitativos, mediante datos arrojados en diferentes fuentes y cualitativos de acuerdo con la investigación a realizar de manera racional en la teoría de datos. Mayor inversión y financiamiento ya que Fintech en México ha atraído inversiones significativas tanto de capital nacional como extranjero, esto ha permitido a las empresas Fintech expandirse, mejorar sus tecnologías y ofrecer mejores servicios a sus usuarios. Es importante reconocer que las Fintech en México en 2024 están en un punto de madurez y crecimiento, ofreciendo una amplia variedad de servicios financieros digitales y contribuyendo a la inclusión financiera y la modernización del sector en el país.

Objetivos	Metodología	Contribución
		

Fintech, transformación, finanzas

**Citation:** Jiménez-Lozano, Pilar Patricia, Medina-Mora, Samuel, Peña-Alvarado, Erika and Pérez-Castañeda, Nancy Elizabeth. [2024]. Financial transformation through Fintech in Mexico. Journal Economic Development. 11[31]-1-7: e11131107.



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## Introduction

In recent decades, the financial sector has undergone a significant revolution around the world, marked by the emergence of financial technologies, known as Fintech. Mexico, no stranger to this transformation, has witnessed a rapid growth in the adoption of technology-based financial services, this research will explore the impact of Fintech in Mexico, highlighting their benefits, challenges and the key role they play in financial inclusion.

In 2018, Mexico implemented a Fintech Law that sought to provide a more specific regulatory framework for these companies, this law establishes requirements and obligations for financial technology institutions, promoting transparency, security and user protection.

## Method

The research on Fintech in Mexico as a mixed research is due to the multidisciplinary nature of this topic. The Fintech industry combines aspects of technology, finance, regulation and user behaviour, among others. Therefore, to fully understand its impact and functioning in Mexico, it is necessary to employ mixed research methods that include both quantitative and qualitative approaches.

## Exponential growth

Fintech in Mexico has experienced exponential growth in recent years. Start-ups have harnessed technology to offer more efficient, accessible and personalised financial services.

The proliferation of mobile apps, peer-to-peer lending platforms and digital payment services has transformed the way Mexicans manage their finances, and one outstanding achievement of Fintech in Mexico is its contribution to financial inclusion. Traditionally, a large part of the Mexican population has been excluded from the formal financial system.

Fintechs have facilitated access to financial services, allowing previously underserved segments to participate in the formal economy through solutions such as digital accounts, microcredit and affordable insurance.

In Mexico, the regulation of financial institutions, and thus of Fintech, is the responsibility of various government authorities and agencies. The main regulator is the National Banking and Securities Commission (CNBV), which oversees and regulates the activities of financial institutions in the country, including Fintechs.

In addition, the Ministry of Finance and Public Credit (SHCP) plays an important role in the supervision and regulation of Fintechs, particularly with regard to the prevention of money laundering and terrorist financing. The SHCP works together with the CNBV to establish policies and regulations governing the operation of these institutions.

Part of our work is to embrace new technologies and adopt financial education in both academic systems and organisations; Fintech is a new financial service tool that integrates various opportunities for handling money digitally, providing greater security in the handling of money.

The main entities applying Fintech are Digital payments with 32% which is applied by providing solutions for money transfer and management, as well as acceptance and authorisation of payments on digital platforms and devices; Fintech with its services with 41% applying services and infrastructure for the digitisation and operation of financial entities; loans and crowdfunding with 16%, used in platforms that facilitate online credit to individuals or companies with funds from individual or institutional lenders; financial assets and capital markets with 5%, used on platforms or platform enablers for buying and selling shares, debt, foreign currencies; insurtech with 2%, applying digital tools for savings management, organising expenses, debt restructuring; disruptive entities with 2%, on independent digital banks or created by traditional financial institutions.

Box 1

Table 1

The use of Fintech

Use of Fintech	Percentage of use
Digital payments	32 %
Fintech as a service	41 %
Loans and crowdfunding	16 %
Financial assets and capital markets	5 %
Insurtech	2 %
Disruptive entities	2 %

Fintech member survey data, NNTDATA

Box 2

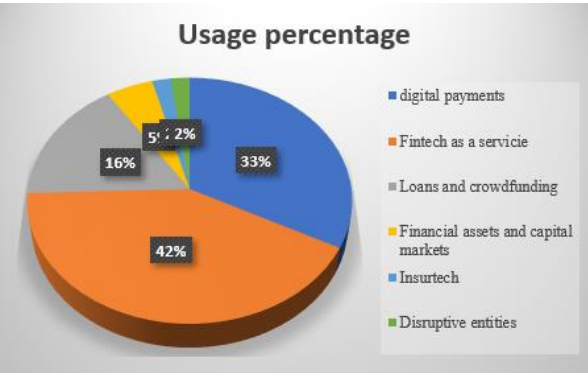


Figure 1

Graphic percentage

Source: Own elaboration

The key elements of how Fintech works are described below:

- Digitalisation of Services: Fintechs operate in a digital environment, using online platforms, mobile applications and information technologies to offer financial services. This allows users to access their services remotely, often through mobile devices or computers.
- Process Automation: Automation is a central component of how Fintechs operate. By leveraging technology, these firms can automate a variety of processes, from account opening to real-time decision-making based on algorithms and data analytics.
- Big Data and Predictive Analytics: Many Fintechs use advanced Big Data analytics and predictive modelling to assess risk, prevent fraud and personalise financial services. The ability to process large amounts of data in real time enables faster and more accurate decision-making.

- Peer-to-Peer (P2P) platforms: Some Fintechs operate on peer-to-peer lending or investment models, directly connecting lenders with borrowers or investors with projects. This eliminates the need for traditional intermediaries and can result in lower costs and greater efficiency.
- Specialised services: Fintechs often specialise in specific financial services, such as lending, payments, investment management, insurance, crowdfunding, among others. This specialisation allows them to adapt to particular needs and offer more focused solutions.
- APIs and Collaborations: Most Fintechs rely on application programming interfaces (APIs) to integrate with other platforms and services. This facilitates collaboration with other financial firms, traditional institutions and technology partners to offer more comprehensive solutions. As Fintechs handle data and offer financial services, they are subject to specific regulations. Collaboration with regulatory authorities is essential, and many Fintechs are actively working to comply with regulations and ensure the safety and security of users.

Compliance and regulation

Given the regulatory complexity in the financial sector, Fintechs must integrate systems to ensure compliance and manage regulatory requirements. Regulation of fintech (financial technology) companies varies by country and region. In many places, financial and regulatory authorities are responsible for overseeing and regulating the activities of fintech companies. Examples of these authorities include:

Mexico: In Mexico, the National Banking and Securities Commission (CNBV) regulates financial activities, including fintechs. It is important to note that specific regulations may vary by jurisdiction and may change over time as the fintech industry evolves.

Governments and financial authorities often adapt their regulatory frameworks to address the challenges and opportunities that arise in this ever-changing sector.

Cloud infrastructure

Many fintechs opt for cloud-based infrastructures to improve flexibility and scalability. This makes it easier to manage resources and adapt to changing business demands. In Mexico, fintech companies also leverage cloud infrastructure to develop, deploy and scale their financial services. The most widely used cloud service providers in the country include:

Amazon Web Services (AWS): AWS is one of the most popular cloud service providers globally and is also used by fintech companies in Mexico. It offers a wide range of services, including computing, storage, databases and security tools.

Microsoft Azure: Microsoft's Azure is another important option for fintech companies in Mexico. It provides cloud services, such as computing, storage, databases and artificial intelligence services, among others.

Google Cloud Platform (GCP): GCP is used by some fintechs to leverage cloud services, such as computing, storage, databases and data analytics tools provided by Google.

IBM Cloud: Some fintechs may opt for IBM's cloud infrastructure, which offers cloud services such as compute, storage and artificial intelligence tools.

The choice of cloud service provider will depend on a number of factors, such as application-specific requirements, business preference and compatibility with local regulations.

In terms of security and compliance in Mexico, fintechs must follow the regulations set by the National Banking and Securities Commission (CNBV) and other competent authorities. This includes the implementation of cybersecurity measures and the protection of users' sensitive financial information.

Monitoring in the context of fintech in Mexico involves the ongoing monitoring and supervision of various operational and security aspects to ensure regulatory compliance, efficiency in the provision of services and the protection of users' financial data.

Some key elements of fintech monitoring in Mexico include:

Box 3

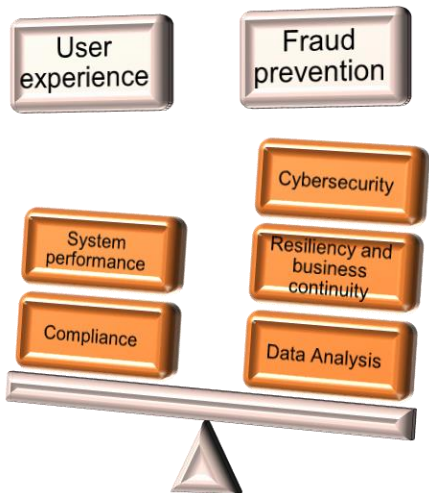


Figure 2

Monitoring

Source: Own elaboration

Some Mexican companies that have integrated Fintech technologies into their business models are as follows:

Box 4

Table 2

Models

COMPANY	PLATFORM	SERVICE
MercadoLibre	Latin America's leading e-commerce platform has expanded its presence in the financial sector.	It offers services such as Mercado Pago, a digital payments platform that facilitates online transactions and user-to-user payments.
Rappi	Home delivery platform, has diversified its services to include Fintech solutions. In addition to food and product deliveries	has incorporated digital payment options and financial services through the application.
Kueski	Mexican Fintech that focuses on online lending. It offers microcredit services quickly and without requiring extensive credit history.	uses Fintech technologies to assess credit risk and streamline approval process
Konfío	Online lending platform for small	It uses algorithms and



Article

	and medium-sized enterprises (SMEs)	data analytics to assess SME credit risk and facilitate access to finance.
Clip	Payments company offering solutions for accepting credit and debit card payments via mobile devices.	useful for small businesses looking for more flexible payment options
Bitso	Cryptocurrency platform that allows users to buy, sell and trade cryptocurrencies such as Bitcoin and Ethereum.	provides custody and settlement services for crypto-assets
Conekta	Financial technology company offering online payment solutions for e-merchants	secure and reliable online transactions through a variety of payment methods
Credijusto	Platform providing finance to SMEs in Mexico	It uses Fintech technologies to streamline the credit assessment process and offer loans tailored to the needs of businesses.

Source: Own elaboration

Here are some statistics and trends that were relevant:

1. Investment in Fintech:

Global investment in Fintech companies has been significant in recent years, with billions of dollars invested in startups and established companies. This investment has contributed to the growth and development of the Fintech ecosystem.

2. Adoption of Fintech Services:

The adoption of Fintech services has seen a steady increase worldwide. Consumers are turning to Fintech apps and platforms to manage their finances, make payments, invest and access more efficient financial services.

3. Growth of Digital Payments:

Digital payments and e-wallets have seen a significant increase. The adoption of mobile payment solutions and other technologies has changed the way people conduct everyday transactions.

4. Lending and Alternative Finance:

Peer-to-peer (P2P) lending platforms and other alternative financing models have gained popularity. These platforms offer alternatives to traditional lending methods and have contributed to financial inclusion.

5. Cryptocurrencies and Blockchain:

Interest in and adoption of cryptocurrencies, as well as the underlying blockchain technology, have continued to grow. Fintech companies are exploring new ways to use these technologies to improve efficiency and security in financial transactions.

6. Regulation and Regulatory Framework:

As Fintechs grow in importance, the regulation and regulatory framework has also evolved. Several countries have implemented or are considering specific regulations to address the challenges and opportunities posed by Fintech.

7. Collaboration between Fintech and traditional banks:

There has been an increase in collaboration between Fintech companies and traditional banks. Rather than seeing them as competitors, many banks are working with Fintech to improve their own services and offer more innovative solutions to customers.

8. Fintech in Emerging Markets:

Fintechs are playing an important role in financial inclusion in emerging markets, where digital solutions can overcome infrastructure limitations and offer financial services to previously unserved segments of the population.

Conclusions

It is important to recognise the good work done by technology developers that has enabled marketing and financial movement in a secure way, thus adapting to the new demand for digital transactions quickly and efficiently; although the distrust of some small businesses still works with cash, offering innovative and accessible solutions for people and businesses that have traditionally had difficulty accessing conventional banking and financial services.

Fintechs seek to bring financial inclusion to segments of the population that have been underserved or excluded from the traditional financial system, such as small entrepreneurs, informal workers and low-income people, through technologies such as mobile apps, online platforms and electronic payment systems that simplify and make more accessible a variety of financial services, such as loans, investments, insurance and payments.

Fintechs are using AI and machine learning to improve the accuracy of risk assessment, personalise product offerings and detect fraud. These technologies will continue to evolve, enabling fintechs to offer more efficient and personalised services. Blockchain technology has the potential to transform various aspects of finance, from international payments and transfers to smart contracts and decentralised finance (DeFi). Cryptocurrencies will also continue to play an important role, with increased adoption by financial institutions and users. Fintechs have the potential to enhance financial inclusion, providing financial services to people and businesses that have not traditionally had access to them. This includes everything from microcredit to insurance and financial management tools, open banking allows third-party developers to build applications and services around financial institutions, using APIs. This will foster innovation and competition in the financial sector.

Fintechs will continue to innovate the user experience, using emerging technologies such as augmented reality (AR) and virtual reality (VR) to create more intuitive and engaging user interfaces, so the future of Fintech looks bright, with significant potential to transform the financial sector through innovation and technology.

Mexico is one of the leaders in the Fintech ecosystem in Latin America. According to a report by Finnovista, Mexico is the second largest Fintech ecosystem in the region, after Brazil.

The country has more than 400 Fintech startups, covering a variety of financial services such as payments, lending, personal finance management, and insurance.

In 2018, Mexico passed the Law to Regulate Financial Technology Institutions, known as the 'Fintech Law'. This law establishes a regulatory framework for fintech, providing legal certainty and fostering innovation.

Mexican regulation is considered advanced compared to many other Latin American countries, which has created a safer and more attractive environment for Fintech investments.

Mexican Fintechs have introduced innovative solutions for financial inclusion, such as peer-to-peer (P2P) lending platforms, digital banking services and mobile payment solutions.

The adoption of Fintech services in Mexico is growing rapidly. A survey by Finnovista and Fintech Mexico indicated that more than 70% of Fintechs in the country reported an increase in the number of users over the last year.

Mexico has seen an increase in venture capital investment in Fintech. Companies such as Konfío, Clip and Bitso have attracted significant investment and have established themselves as industry leaders.

Compared to other countries in the region, Mexico stands out for its ability to attract foreign investment in Fintech.

Globally, Mexico is well positioned, but still faces challenges to catch up with global leaders such as the United States, the United Kingdom and China in terms of market size and level of innovation.

However, the rapidly evolving fintech ecosystem in Mexico and regulatory support are creating an environment conducive to closing this gap.

In summary, fintechs in Mexico are well positioned and showing robust growth, benefiting from a favourable regulatory framework and increasing user adoption. Compared to other Latin American countries, Mexico stands out as one of the leaders in the sector, although it still has some way to go to catch up with the major global players.

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Organizational belonging of a footwear manufacturer in the city of León, Guanajuato

Pertenencia organizacional de una manufacturera de calzado de la ciudad de León, Guanajuato

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CONAHCYT classification:

Area: Social Sciences

Field: Business and administration

Discipline: Administration and management

Sub-discipline: Business administration

 <https://doi.org/10.35429/JED.2024.11.31.1.9>

Article History:

Received: January 29, 2024

Accepted: December 31, 2024



Abstract

The purpose of the research is to understand the dynamics of the psychological and social environment through a diagnosis of the factors that affect the performance of workers in order to understand the problems in the direction and management of personnel and the high turnover of personnel. in a footwear company in the city of León Guanajuato. The method applied is quantitative, non-experimental, Cross-sectional: The data were obtained only once, descriptive statistics were used, the recording of the measurements was through observation of the workers' behavior, a structured questionnaire and analysis tools were developed. , the population is the workers in the production area, the census is 150 people. The result obtained is the need to apply internal marketing strategies to improve the work environment in the footwear manufacturing company in the city of León, Guanajuato.

El propósito de la investigación es comprender la dinámica del ambiente psicológico y social a través de un diagnóstico de los factores que afectan el desempeño de los trabajadores con la finalidad de comprender la problemática en la dirección y gestión del personal y la alta rotación de personal en una empresa de calzado de la ciudad de León Guanajuato. El método aplicado es cuantitativo, no experimental, Transversal: Los datos se obtuvieron una sola vez, se utilizó estadística descriptiva, el registro de las mediciones fue a través de la observación del comportamiento de los trabajadores, se elaboró un cuestionario estructurado y herramientas de análisis, la población son los trabajadores del área de producción, el censo es de 150 personas. El resultado que se obtuvo es la necesidad de aplicar estrategias de marketing interno, para mejorar el ambiente laboral en la empresa manufacturera de calzado de la ciudad de León, Guanajuato.

Objective	Methodology	Contribution
To understand the dynamics of the psychological and social environment through a diagnosis of the factors that affect the performance of workers, in order to understand the problems in the direction and management of personnel and the high turnover of personnel in a footwear company in the city of León, Guanajuato.	Quantitative, non-experimental, Cross-sectional: The data were obtained only once, descriptive statistics were used, the recording of the measurements was through the observation of the behavior of the workers, a structured questionnaire and analysis tools were developed, the population is the workers of the production area, the census is 150 people.	Understanding the work environment contributes to detecting the problems that arise, containing risk factors, preventing and improving the work environment in order to reduce harmful situations, even more, the benefits it brings to the organization in general and the image that you want to transmit to customers.

Objetivo	Metodología	Contribución
Comprender la dinámica del ambiente psicológico y social a través de un diagnóstico de los factores que afectan el desempeño de los trabajadores con la finalidad de comprender la problemática en la dirección y gestión del personal y la alta rotación de personal en una empresa de calzado de la ciudad de León Guanajuato.	Cuantitativo, no experimental, Transversal: Los datos se obtuvieron una sola vez, se utilizó estadística descriptiva, el registro de las mediciones fue a través de la observación del comportamiento de los trabajadores, se elaboró un cuestionario estructurado y herramientas de análisis, la población son los trabajadores del área de producción, el censo es de 150 personas.	Comprender el clima laboral, contribuye a detectar las problemáticas que se presentan, contener los factores de riesgo, prevenir y mejorar el ambiente laboral con el propósito de disminuir situaciones perjudiciales, más aún, los beneficios que trae para la organización en general y la imagen que se desea transmitir a los clientes.

Belonging, Stress, Work environment  
Resumen

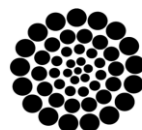
Pertenencia, Estrés, Clima Laboral

**Citation:** Pérez-Flores, Angélica Josefina, Rivera-Cisneros, Miguel Ángel and Franco-Bravo, Azeneth Irazú. [2024]. Organizational belonging of a footwear manufacturer in the city of León, Guanajuato. Journal Economic Development. 11[31]-1-9: e21131109.



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## Introduction

To achieve competitiveness, positioning and image, companies must create the conditions for staff to develop their skills, have a sense of belonging, security, an enabling environment and clear goals. Productivity, customer satisfaction and stakeholder satisfaction require a great deal of effort, and the leadership and management of staff is a key issue in achieving objectives and goals. Measuring the work climate and organisational culture allows to understand what are the factors that directly or indirectly affect the context to establish strategies to reduce unwanted risk factors and maximise the opportunities that arise.

Understanding the work environment is relevant for organisations, the challenges that the context demands puts the emphasis on the leader's abilities to understand reality, prioritise actions, plan them, execute them, measure them, analyse them and control them, working with the human element demands knowledge, abilities, attitudes, values and skills in communication, motivation, supervision, decision making and team work.

The research presents the results obtained in the diagnosis of the work climate in a footwear maquiladora company located in the city of León, Guanajuato, during the period January-August 2024. The need arises from the attitudes of apathy to achieve objectives, lack of commitment, constant tardiness and a high turnover rate, which has caused processes to be affected and results not to be achieved.

Understanding the work environment helps to detect the problems that arise, contain risk factors, prevent and improve the work environment in order to reduce harmful situations, moreover, the benefits it brings to the organisation in general and the image it wishes to convey to customers.

The high turnover rate is a worrying factor for the company, since it is one of the main causes of a forgotten work environment, considering also that the reasons why employees terminate their employment relationship with the organisation are not known.

From the organisational climate approach, the value of measurement is preserved by understanding how employees' perceptions affect the organisation and its results, being the distinctive reflection of each entity and even of specific areas of a unit.

Although the concept of 'organisational climate' involves the interpretations and perceptions of an institution's stakeholders about their work, it relates to the overall improvement of staff, workers and collaborators in their performance; its analysis also contemplates how the organisation can survive and compete with its rivals.

Therefore, the climate of an organisation, company or institution is similar to the personality of an individual, as it contains something that makes it unique and different from others.

Work stress is the set of negative expressions, determined by factors that are produced by overload of activities in a monotonous way.

Within an organisation when the balance between individual factors and working conditions is achieved, work creates feelings of self-confidence, increases motivation, increases the work capacity and well-being of the employee.

The work environment is not similar to another work environment, the set of actions where people working in an organisation may play equal roles, but are different from each other in terms of their needs, desires for responsibility or authority, ability or capacity, and in terms of their sense of satisfaction.

## *Working hypotheses*

H1: Communication, teamwork, motivation, belonging to the organisation, working environment, ergonomics, leadership, health and safety, training are factors that contribute to decrease staff turnover, increase staff commitment and satisfaction to contribute to improve the objectives of the footwear manufacturing organisation in the city of León, Guanajuato.

*Null Hypothesis*

H0: Communication, teamwork, motivation, belonging to the organisation, working environment, ergonomics, leadership, health and safety, and training are not factors that contribute to reduce staff turnover, increase staff commitment and satisfaction and contribute to improve the objectives of the footwear manufacturing organisation in the city of León, Guanajuato.

**Methodology**

The paradigm used is quantitative, hypothetical deductive, based on descriptive statistics, the control criterion is observational; temporality: it is retrospective; dimensionality: it is transversal, the data were collected only once; the comparability criterion: it is descriptive. A questionnaire was applied to 155 people, representing 100% of the company's employees.

A questionnaire was designed with 40 questions on a Likert scale, considering the answers: a) always, b) almost always, c) sometimes, d) almost never, e) never. The average response time for each employee was 13 minutes, at the time of application there was no problem in understanding the questions, the instructions for filling out the questionnaire were made known, and the following dimensions of analysis were considered:

- Communication.
- Teamwork.
- Motivation.
- Belonging to the organization.
- Work Climate.
- Ergonomics.
- Leadership.
- Health and Safety.
- Training.

The questions that were asked were as follows:

*Communication*

- 1.- There is good communication between all members of the organisation.
- 2.- All collaborators address each other in a respectful way and the words they use or express are words that we all understand for work matters.
- 3.- The instructions you receive from your direct line manager are clear.
- 4.- My manager actively listens and is receptive to the opinions of others.
- 5.- There is interdepartmental communication for the achievement of objectives.

*Teamwork*

- 6.- Working as a team means taking on all the tasks to be carried out together, and not simply dividing them up and then putting them together.
- 7.- One should avoid assuming the thinking of others (making assumptions) and instead provide as much useful information to the team as possible.
- 8.- I willingly share my knowledge, skills and experience with my whole team, in order to get better results.
- 9.- When I make mistakes, I take them on board and share the experience with my team, so that it does not happen to them.
- 10.- My team inspires, motivates and supports me.
- 11.- I receive the help I need from the HR, Production, Engineering, Sales, Maintenance departments.

*Motivation*

- 12.- You feel motivated or stimulated.
- 13.- You receive this type of motivators: motivational phrases, congratulations for your work, etc. These are small details that can brighten up your day, and that directly favour your motivation and work performance.

14.- Within the Company I am motivated through the following aspects:

I. The person who supervises me notices my work and progress.

II. By asking me what I need to do my job well.

III. Giving me constant feedback and acknowledging the good work I have done. work I have done.

IV. Offering me opportunities for growth. V. In salary or in kind

IV. Belonging to the Organisation

15.- We are all treated equally in the Company's organisational structure.

16.- The distribution of tasks among the members of my work team is equitable or egalitarian.

17.- I have witnessed acts of violence in my workplace.

18.- I receive destructive criticism towards myself and/or the work that I do.

19.- I am blocked or prevented from opportunities to get a promotion or improve in my job.

#### *Work Climate*

20.- From your point of view; all the employees have a good relationship with their colleagues.

21.- I am able to get along with all the staff in the company and create a good working environment.

22.- There is trust between me and my co-workers.

23.- You have observed confrontation or interaction between your co-workers that are detrimental to the organisation or prevent the achievement of its objectives.

24.- Within your hierarchical level in the organisation, you have had some kind of conflict that is detrimental to your responsibilities and/or work activities.

25.- All the employees of the company are integrated in order to be able to relate to each other and identify themselves with the objectives and values of the company, and also so that their work is done as well as possible.

26.- I collaborate in the resolution of conflicts.

#### *Ergonomics*

27.- Due to the amount of work I have, I have to work non-stop.

28.- My job requires me to make a lot of physical effort.

29.- My job requires me to attend to several matters at the same time.

30.- I have long working days.

31.- Because of the amount of work I have, I have to stay extra time in my shift.

32.- The activities I do at work lead to high levels of stress.

#### *Leadership*

33.- My supervisor provides me with regular feedback on my performance.

34.- My supervisor treats me fairly and avoids any kind of favouritism.

35.- I have the information I need to perform my job with excellence.

36.- My supervisor is clear and specific when defining my work objectives or those of the department.

#### *Health and Safety*

37.- The Company complies with health and safety standards in the workplace in a differential way.

38.- The conditions of space, noise, temperature, lighting, allow me to perform my work normally.

#### *Training*

39.- When I joined the company I received sufficient information to perform my job.

40.- I receive training to update my job knowledge.

Results

The results of the diagnosis are described below.

In question 1, 15% said that there is always good communication, 44% almost always, 37% almost never and 4% never.

In Question 2 communication is respectful: 37% always, 48% almost always, 15% sometimes, 0% almost never and never.

In Question 3 instructions are communicated, the workers' opinion was: 70% always, 19% almost always, 11% sometimes, 0% almost never and never.

In Question 4 the organisation considers opinions, the workers' opinion was: 74% always, 11% almost always, 15% sometimes, 0% almost never and never.

There is interdepartmental communication for the achievement of objectives, 47% answered always, 42% almost always, 2% sometimes, 3% almost never and 6% never.

Box 1

5. There is interdepartmental communication for the achievement of objectives.

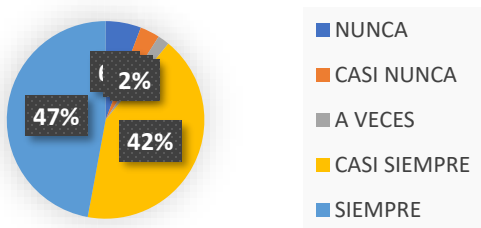


Figure 1 Interdepartmental communication

Source. Own elaboration

Teamwork

In Question 6 the set of tasks, the workers' opinion was: 67% always, 26% almost always, 7% sometimes, 0% almost never and never.

In Question 7 avoid assumptions, the workers' opinion was: 56% always, 37% almost always, 4% sometimes, 0% almost never and never.

In Question 7 avoid assumptions, the workers' opinion was: 56% always, 37% almost always, 4% sometimes, 0% almost never and never.

In Question 8 knowledge sharing, the workers' opinion was: 85% always, 15% almost always, 0% sometimes, 0% almost never and never.

In Question 9 Acceptance of mistakes, the workers' opinion was: 85% always, 15% almost always, 0% sometimes, 0% almost never and never.

My team inspires, motivates and supports me, 26% answered always, 14% almost always, 39% sometimes, 13% almost never and 8% never.

Box 2

10. My team inspires, motivates and supports me.

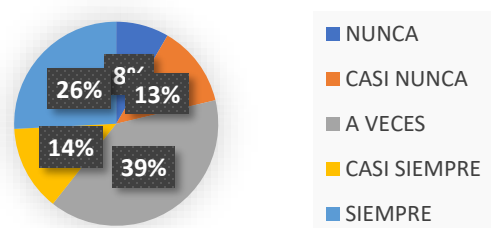


Figure 2 Teamwork

Source. Own elaboration

Figure 3. shows the results of question 11. I receive the help I need from the human resources, production, engineering, sales and maintenance departments, 39% answered always, 12% almost always, 27% sometimes, 6% almost never and 16% never.

Box 3

11. I get the help I need from the HR, Production, Engineering, Sales, Maintenance and Sales departments.

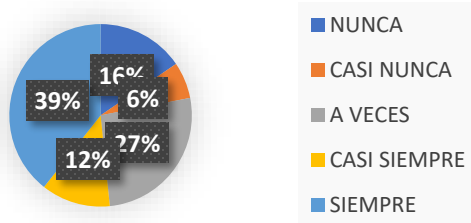


Figure 3

Help from departments

Source: Own elaboration

In Question 12 Motivation, the workers' opinion was: 22% always, 59% almost always, 11% sometimes, 4% almost never and 3% never.

In Question 13 Motivational phrases, the workers' opinion was: 41% always, 37% almost always, 15% sometimes, 4% almost never and 3% never.

In Question 14 Within the company, motivation is achieved through the following aspects: I) realising my work, the workers' opinion was: 56% always, 19% almost always, 10% sometimes, 12% almost never and 4% never.

In Question 14 Within the company is motivated through the following aspects: II) needs, the workers' opinion was: 41% always, 33% almost always, 10% sometimes, 12% almost never and 5% never.

In Question 14 Within the company, motivation is achieved through the following aspects: III) feedback, the workers' opinion was: 37% always, 30% almost always, 10% sometimes, 16% almost never and 7% never.

In Question 14 Within the company, employees are motivated through the following aspects: IV) Growth opportunities, the opinion of the workers was: 37% always, 26% almost always, 19% sometimes, 10% almost never and 8% never.

Figure 4. describes the results of question 14. Motivation within the company is provided by the following aspects: V) In salary or in kind, 16% answered always, 42% almost always, 0% sometimes, 16% almost never and 26% never.

Box 4

14.- Within the company I am motivated by the following aspects: V) In salary or in kind

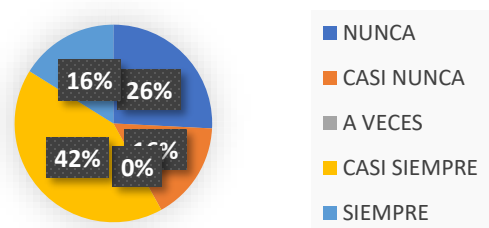


Figure 4

Motivation. V) Salary or in kind

Source: Own elaboration

Figure 5. describes the results of question 15. We are treated equally to all the people in the organisational structure of the company, 40% answered always, 18% almost always, 3% sometimes, 16% almost never and 23% never.

Box 5

15.- Se nos da el mismo trato a todas las personas de la estructura organizacional de la Empresa.

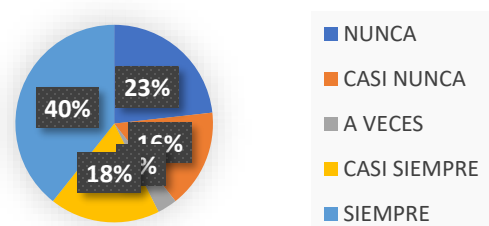


Figure 5

Equal treatment of all people

Source: Own elaboration

In Question 16 Task sharing, the workers' opinion was: 63% always, 26% almost always, 3% sometimes, 4% almost never and 4% never.



*Work climate*

In Question 17 Good relationship, the workers' opinion was: 30% always, 37% almost always, 10% sometimes, 15% almost never and 9% never.

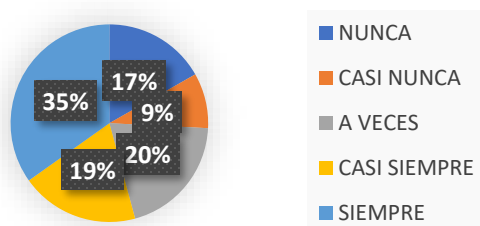
In Question 18 Employees are connected, the workers' opinion was: 78% always, 19% almost always, 4% sometimes, 0% almost never and 0% never.

In Question 19 Trust, the workers' opinion was: 48% always, 44% almost always, 3% sometimes, 4% almost never and 0% never.

Figure 6. describes the results of question 20. From your point of view, all employees have a good relationship with their colleagues, 35% answered always, 19% almost always, 20% sometimes, 9% almost never and 17% never.

**Box 6**

20.- From your point of view; all employees have a good relationship with their colleagues.

**Figure 6**

Good relationship between co-workers

Source: Own elaboration

In Question 21 Conflicts that damage responsibilities, the workers' opinion was: 19% always, 7% almost always, 26% sometimes, 28% almost never and 20% never.

In Question 22 Integration of employees, the workers' opinion was: 22% always, 48% almost always, 10% sometimes, 16% almost never and 4% never.

In Question 23 Collaboration in problem solving, the workers' opinion was: 48% always, 26% almost always, 11% sometimes, 10% almost never and 5% never.

In Question 24 Non-stop work, the workers' opinion was: 7% always, 37% almost always, 20% sometimes, 26% almost never and 10% never.

In Question 25 Physical effort, the workers' opinion was: 7% always, 30% almost always, 26% sometimes, 30% almost never and 7% never.

In Question 26 Attending to several matters, the workers' opinion was: 41% always, 26% almost always, 19% sometimes, 15% almost never and 10% never.

In Question 27 Long working hours, the workers' opinion was: 15% always, 7% almost always, 26% sometimes, 30% almost never and 22% never.

In Question 28 Additional time, the workers' opinion was: 15% always, 7% almost always, 26% sometimes, 30% almost never and 22% never.

In Question 29 Activities with difficulty - stress, the workers' opinion was: 7% always, 19% almost always, 7% sometimes, 37% almost never and 30% never.

In Question 30 Violence at work, the workers' opinion was: 0% always, 7% almost always, 7% sometimes, 1% almost never and 85% never.

In Question 31 Destructive criticism, the workers' opinion was: 7% always, 19% almost always, 7% sometimes, 30% almost never and 37% never.

In Question 32 Block to growth opportunities, the workers' opinion was: 11% always, 19% almost always, 19% sometimes, 20% almost never and 31% never.

Figure 7. depicts the results of question 33. My supervisor provides me with regular feedback on my performance, 26% answered always, 16% almost always, 21% sometimes, 20% almost never and 17% never.

Box 7

33. My supervisor provides me with regular feedback on my performance..

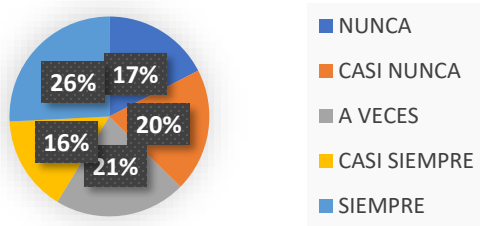


Figure 7

Supervisor provides feedback on performance

Source: Own elaboration

In Question 34 Supervisor fair treatment, the workers' opinion was: 60% always, 19% almost always, 9% sometimes, 10% almost never and 2% never.

In Question 35 I have the information I need to do my job, the workers' opinion was: 48% always, 19% almost always, 13% sometimes, 30% almost never and 10% never.

In Question 36 My supervisor is clear and specific when defining my objectives, the workers' opinion was: 48% always, 20% almost always, 12% sometimes, 30% almost never and 10% never.

Figure 8. depicts the results of question 37. The company complies with occupational health and safety standards differentially, 35% answered always, 17% almost always, 32% sometimes, 8% almost never and 8% never.

Box 8

37. The Company complies with occupational health and safety standards in a differential manner.

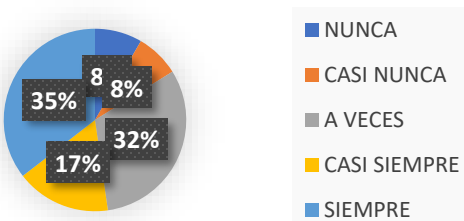


Figure 8

Company complies with health and safety regulations

Source: Own elaboration

Figure 9. shows the results of question 38. The conditions of space, noise, ventilation, lighting, allow me to carry out my work, 32% answered always, 19% almost always, 26% sometimes, 12% almost never and 11% never.

Box 9

38. The conditions of space, noise, temperature, lighting, allow me to carry out my work normally.

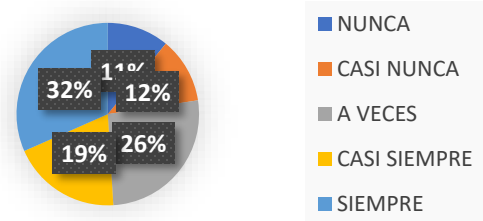


Figure 9

Space, noise, ventilation, lighting conditions

Source: Own elaboration

In Question 39 When I joined the company I received enough information to do my job, the opinion of the workers was: 40% always, 16% almost always, 25% sometimes, 11% almost never and 8% never. Figure 10. describes the results of question 40. I receive training to update my job knowledge, 40% answered always, 16% almost always, 27% sometimes, 9% almost never and 8% never.

Box 10

40. I receive training to update my job knowledge.

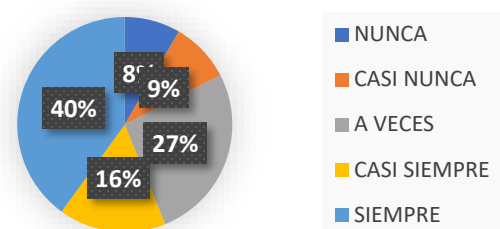


Figure 10

Refresher training

Source: Own elaboration

## Conclusions

To conclude, it can be considered that the formal and informal communication of the company is strengthened due to the fact that there is interdepartmental communication as the company's strategic objectives are communicated. Creativity and respect are encouraged.

In relation to teamwork, the performance reflects that it is in a mature stage because they sometimes feel supported by their colleagues. Business motivation can be diversified by conducting a human capital profile analysis to identify staff requirements based on gender, seniority, profession and age. The work climate is affected due to long working hours, a programme can be designed to help reduce work stress through ergonomic strategies: conditioning of the work area for the care of human capital: active breaks, alliances with recreational centres. Design a programme of belonging to the organisation through an internal marketing programme that can have an impact on the induction of human capital.

## Declarations

### Conflict of interest

The authors declare that they have no conflicts of interest. They have no known competing financial interests or personal relationships that might have appeared to influence the article reported in this paper.

### Authors' contribution

*Pérez-Flores, Angélica Josefina*: Project, idea, methodology and technique.

*Rivera-Cisneros, Miguel Angel*, compilation of information, elaboration of graphs.

*Franco-Bravo, Azeneth Irazú*, elaboration of theoretical framework.

### Availability of data and materials

Indicate the availability of the data obtained in this research.

## Funding

The research was carried out with own resources, no external resources were received.

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Measurement of work environment in a savings and loan cooperative



Medición de clima laboral en una cooperativa de ahorro y préstamo

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CONAHCYT classification:

Area: Social Sciences

Field: Economic Sciences

Discipline: Economic theory

Sub-discipline: Theory of saving

 <https://doi.org/10.35429/JED.2024.11.31.1.11>

Article History:

Received: January 30, 2024

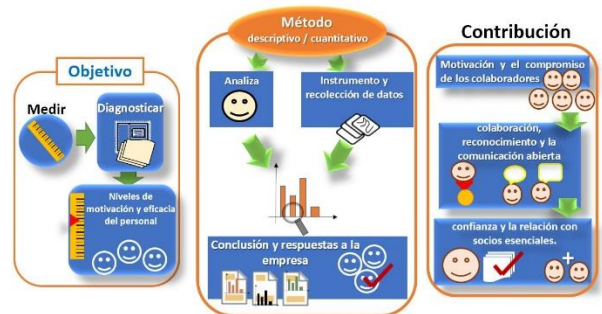
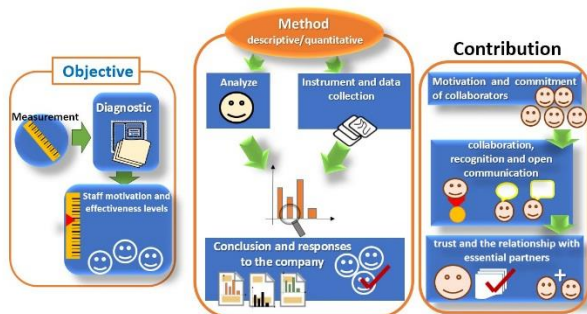
Accepted: December 31, 2024



Abstract

The objective of this research is to analyze the Organizational climate in a Savings and Loan Cooperative, located in the municipality of Izúcar de Matamoros, Puebla, an organization with more than 60 years serving the savings, investment and credit needs of our region. through nine branches. The type of research to be developed for the study of this case is descriptive in nature, since its purpose is to study the current state of the different factors that can influence the formation of the Climate. An instrument was applied to measure climate, which was provided to 25 employees of the company, without discrimination, type of contract, age, or seniority. This study showed favorable results for it, which makes it possible to reach a conclusive result, since the workers have been very clear, and their perceptions have coincided in many of the situations that have arisen.

La presente investigación tiene como objetivo el análisis del clima Organizacional en una Cooperativa de ahorro y préstamo, ubicada en el municipio de Izúcar de Matamoros, Puebla, una organización con más de 60 años atendiendo las necesidades de ahorro, inversión y crédito de nuestra región a través de nueve sucursales. El tipo de investigación a desarrollar para el estudio de este caso es de carácter descriptivo, ya que su finalidad es estudiar el estado actual de los diferentes factores que pueden influir en la conformación del Clima organizacional. Se aplicó un instrumento para la medición, el cual se proporcionó a 25 colaboradores de la empresa, sin discriminar, tipo de contrato, edad, o antigüedad. Este estudio arrojó resultados favorables para la misma, que posibilita llegar a un resultado conclusivo, ya que, los trabajadores han sido muy claros y sus percepciones han coincidido en muchas de las situaciones que se han planteado.



Measurement, Diagnosis, Organizational climate  
Resumen

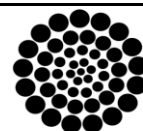
Medición, Diagnóstico, Clima organizacional

**Citation:** Merino-Viazcán, Janet, Solano-Palapa, Nathaly, Ramírez-Cortes, Elva Patricia and Peña-Cruz Archundia, Félix Martín. [2024]. Measurement of work environment in a savings and loan cooperative. Journal Economic Development. 11[31]-1-11: e31131111.



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## Introduction

Nowadays, the organisational climate has become a key element for the success and permanence of organisations in an increasingly competitive and dynamic environment. In reference to this context, in the municipality of Izúcar de Matamoros, Pue., savings and loan cooperatives operate in a highly competitive and regulated environment, therefore, the principles of collaboration and participation are fundamental to understand and measure themselves, acquiring with this measurement, a significant relevance.

This research will measure the organisational climate in a savings and loan cooperative with the sole objective of identifying its characteristics, strengths and areas for improvement, as well as its impact on performance and employee satisfaction.

The diagnosis will provide valuable information for senior management to implement improvement strategies based on the areas of opportunity detected. Several studies have shown that a healthy organisational environment is associated with higher productivity, lower absenteeism and staff turnover, as well as better customer service. Therefore, in addition to analysing the data, this research also seeks to offer an improvement plan that will contribute to the development and growth of the savings and credit cooperative.

To carry out this research, quantitative and qualitative methodologies will be used. An instrument will be implemented for members of the savings and credit cooperative to obtain numerical data reflecting their perceptions of different dimensions of the subject under study, such as Structure, Responsibility, Reward, Challenges, among others.

## Measuring the organisational climate

The measurement will diagnose internal aspects of the organisation of a formal and informal nature in order to subsequently analyse how these affect the behaviour of employees, based on their perceptions and attitudes, as well as how they influence their work motivation (Méndez, 2006).

The purpose of measuring is to carry out a diagnosis of the perception and attitude of the personnel, by means of ten chosen dimensions, in this way it will be possible to identify aspects of a formal and informal nature that describe the company, which in turn will have an impact on the levels of motivation and efficiency of the personnel. With the results, the purpose is to build an improvement plan, so that in the future higher levels of efficiency and fulfilment of goals can be achieved through the action of human capital.

## Background of Organisational Climate

The concept of organisational climate has advanced convincingly since its beginnings, being the object of study in various areas of knowledge such as psychology, sociology and management. Understanding the background of this phenomenon allows us to establish a solid basis for its analysis and application in contemporary organisations.

## Origins of Organisational Climate

According to the literature, the first studies on the subject emerged in the context of organisational theory in the 20th century. One of the pioneers in this field was Kurt Lewin, who in the 1930s introduced the notion of 'social climate' as part of his theory of organisational behaviour.

Lewin (1936) argued that the behaviour of individuals in a group is influenced by the social context and interactions within that group. This idea laid the foundation for future research on how the work environment affects employees.

## Development of Classical Theories

In the following decades, more defined theories related to organisational climate were developed, such as Maslow's (1943) needs theory and McGregor's (1960) X and Y theory which contributed to the understanding of how employees' perceptions of their environment influence their motivation and performance.

Maslow suggested that human needs are organised in a hierarchy, where basic needs must be satisfied before individuals can focus on higher needs, such as self-actualisation. McGregor, in the same vein, argued that managers' beliefs about employees affect organisational culture and environment.

### Empirical Studies and Models

It is important to mention that in the 1970s, the organisational environment began to be the subject of empirical studies. Litwin and Stringer (1968) developed the 'Organisational Climate Questionnaire', which allowed researchers to measure employees' perceptions of their work environment. This questionnaire focused on dimensions such as organisational structure, commitment and motivation. Their findings showed that a positive climate correlates with higher job satisfaction and performance.

Regarding the Spanish-speaking world, authors such as [Quintero and Tovar \(2015\)](#) adapted these tools to evaluate Latin American organisations, emphasising the need to consider specific cultural factors in the interpretation of the results.

#### *Impact on Productivity and Job Satisfaction*

In the 1980s, interest in the impact of organisational environments on productivity and job satisfaction increased. Schneider and Reichers (1983) proposed the organisational fit model, which argues that a positive climate attracts and retains more competent employees, which in turn improves organisational performance. This model has been validated in multiple studies showing that a favourable organisational climate not only improves job satisfaction, but also efficiency and job quality ([González & Martínez, 2019](#)).

In their research Rodriguez et al. (2020) conducted in Spanish companies, told us that, 'the organisational climate has a direct and significant effect on employee satisfaction and their commitment to the organisation'. The results support the idea that organisations should pay attention to their work environments in order to maximise the potential of their employees.

### Measurement Instruments

Measurement instruments such as [Moos' \(1986\)](#) "Survey of Organisations" and the "Cuestionario de Clima Organizacional" have been adapted by several Spanish-speaking authors and widely used in various organisations. These instruments allow organisations to identify areas for improvement and implement effective strategies to foster a healthy work environment.

A study by [Alvarado \(2024\)](#) suggests that 'regular measurement of organisational climate allows companies to adapt to changes and challenges in the environment, ensuring that a positive work environment is maintained'.

### New Perspectives and Trends

Today, the evolution of organisational climate is noticeable, due to factors such as diversity, inclusion and emotional well-being. Technological advancement and remote working have changed work dynamics, causing leaders to reconsider how climate is measured and improved. For [López and Pérez \(2023\)](#), 'organisational climate in the virtual environment requires new communication and collaboration strategies to maintain team cohesion'.

The COVID-19 pandemic has also accelerated this transformation, leading many organisations to implement work flexibility and emotional well-being policies. A study by Salazar (2022) concludes that 'organisations that prioritise the well-being of their employees, especially in times of crisis, manage to maintain a positive and sustainable organisational climate'.

### Methodology

The type of research to be developed for this case study is descriptive in nature, as its purpose is to study the current state of the different factors that may influence the shaping of the Organisational Climate of the Savings and Loan Cooperative, in order to then determine the general perception held by employees, according to [Hernández, et al. \(2014\)](#):

Descriptive studies seek to specify the important properties of people, groups, communities or any other phenomenon that is subjected to analysis. They measure or evaluate various aspects, dimensions or components of the phenomenon or phenomena to be investigated. From a scientific point of view, to describe is to measure. p.92.

The method used is of a quantitative descriptive nature; descriptive because it aims to analyse from the perception of the individual by means of ten dimensions and quantitative because an instrument will be applied for data collection, after the application of the same, a statistical analysis will be carried out, where from the results obtained a conclusion and answers can be provided to the company with respect to the Organisational Climate.

The company where the study was carried out is a savings and loan cooperative located in the municipality of Izúcar de Matamoros, with the support of the staff working in this institution. For the purpose of this research, 25 employees were considered, excluding the general manager.

The results were obtained through the application of an instrument, which was based on the model of Litwin and Stringer (1968), which is based on the idea that the organisational environment has a significant influence on the behaviour and satisfaction of employees:

- Structure.
- Responsibility.
- Reward.
- Challenges.
- Relationships.
- Cooperation.
- Standards.
- Conflicts.
- Identity.

The instrument was adapted for application in the Savings and Loan Cooperative, also including the leadership dimension.

The instrument consists of 60 items distributed as follows:

Dimension/Factor	No. de Ítems
Structure	8
Responsibility	4
Reward	5
Challenges	6
Relationships	5
Cooperation	6
Standards	6
Conflicts	6
Institutional identity	8
Leadership	6

The evaluation scale to be used will be the Likert scale, which consists of a series of statements on the topic of interest, to which staff respond by indicating their degree of agreement or disagreement on a scale ranging from 0 to 4 points, where 0 corresponds to totally disagree and 4 corresponds to totally agree.

Criteria for carrying out the survey:

1. Be aware that the most important thing about conducting surveys is not the accuracy of the results. The most important thing is to make the organisation committed and aware of the value of improvement (through the analysis of the work climate).
2. The authorisation of the general management was obtained, after informing them of the instrument to be applied.
3. The instrument was applied by means of Google Forms, totally anonymous.
4. The link was sent to the Human Resources department for socialisation among employees.
5. The instrument was applied and the data was obtained, in order to be processed for graphing and drawing conclusions.



6. The responses were analysed to make the following diagnosis: Pilligua et al. (2019)

t Healthy Climate (From 67% to 100%) = Slight modifications required

t Climate To Be Improved (From 34% to 66%) = Some modifications are required

t Unhealthy Climate (0% to 33%) = Improvement urgently required

Results

The results obtained from the instrument applied to the company's staff are shown below.

Box 1

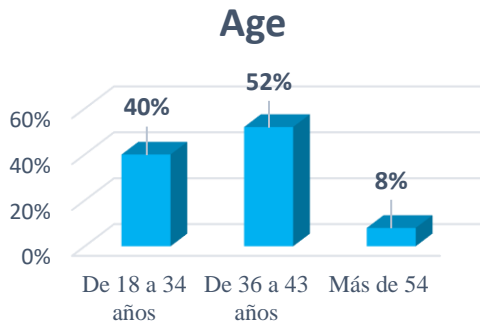


Figure 1  
Percentage of employees' age

Source: Own elaboration

It can be observed that the staff is young within the company, with only 8% of the employees being over 54 years of age.

Analysis of the dimensions/factors applied to the economic entity

The results obtained in each of the dimensions are shown below.

In relation to 'structure', this represents 71.02%, which falls into a 'healthy' climate, but closer to the 'to be improved' category, the staff recognises that there is room for improvement, for example, that it is not always clear who should make decisions or that work is not always organised and planned.

Box 2

Table 1

Dimension rating

Structure	I fully agree	Agreed.	Neither agree nor disagree	Disagree	Strongly disagree	TOTAL
TOTALS	33	94	35	12	2	176
FACTOR	X4	X3	X2	X1	X0	-
CALIF.	132	282	70	12	0	=500/704
Rating= Result / Maximum Possible Rating = 500/704=71.02%.						

0	----	33	---	66		71.02%	100
UNHEALTHY		TO BE IMPROVED			HEALTHY		

Source: Own elaboration

In the dimension of "responsibility" there is a 79.82%, with a tendency towards a "healthy" climate due to what the personnel expressed, despite the fact that they do not always assume responsibility for the work assigned to them.

Box 3

Table 2

Rating of the dimension

Responsibility	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL
TOTALES	31	45	10	2	0	161
FACTOR	X4	X3	X2	X1	X0	-
CALIF.	124	135	20	2	0	=281/352
Rating= Result / Maximum Possible Rating = 281/352=79.82%.						

0	----	33	--	66	--	79.82%	100
UNHEALTHY		TO BE IMPROVED			HEALTHY		

Source: Own elaboration

With regard to "reward", a percentage of 60.68 was observed under the heading "to be improved", due to the lack of recognition for the best work done.

Box 4

Table 3

Dimension rating

Recompensa	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL
TOTALES	13	39	43	12	3	110
FACTOR	X4	X3	X2	X1	X0	-
CALIF.	52	117	86	12	0	=267/440
Rating= Result / Maximum Possible Rating = 267/440=60.68%.						

0	----	33	--	60.68%	66	--	100
UNHEALTHY		TO BE IMPROVED			HEALTHY		

Source: Own elaboration

73.10% in the "challenges" are considered as a "healthy" climate but with a tendency to "to be improved", because staff feel that the organisation does not take risks when necessary.

Box 5

Table 4

Dimension Rating

Challenges	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL	
TOTALES	36	58	30	8	0	132	
FACTOR	X4	X3	X2	X1	X0	-	
CALIF.	144	174	60	8	0	=386/528	
Rating= Result / Maximum Possible Rating = 386/528=73.10%.							
0	----	33	--	66	--	73.10%	100
UNHEALTHY		TO BE IMPROVED			HEALTHY		

Source: Own elaboration

Staff contribution to "relationships" is considered 69.09% as "healthy", close to the limit of "to be improved" due to the fact that most people working in the cooperative show little empathy towards others.

Box 6

Table 5

Dimension rating

Relations	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL	
TOTALES	18	53	35	3	0	109	
FACTOR	X4	X3	X2	X1	X0	-	
CALIF.	72	159	70	3	0	=304/440	
Rating= Result / Maximum Possible Rating = 304/440=69.09%.							
0	----	33	--	66	--	69.09%	100
UNHEALTHY		TO BE IMPROVED			HEALTHY		

Source: Own elaboration

In relation to "cooperation", it showed 62.87%, which is in the "to be improved" category because the staff consider that the cooperative's management does not make an effort to know their aspirations.

Box 7

Table 6

Rating of the dimension

Cooperation	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL
TOTALES	17	51	48	15	1	132
FACTOR	X4	X3	X2	X1	X0	-
CALIF.	68	153	96	15	0	=332/528
Rating= Result / Maximum Possible Rating = 332/528=62.87%.						

0	----	33	--	62.87%	66	-----	100
UNHEALTHY		TO BE IMPROVED			HEALTHY		

Source: Own elaboration

74.05% represents a "healthy" climate in the "standards" dimension, as staff are regularly informed about the progress of goals and the achievement of objectives.

Box 8

Table 7

Rating of the dimension

Standards	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL
TOTALES	29	76	21	5	0	131
FACTOR	X4	X3	X2	X1	X0	-
CALIF.	116	228	42	5	0	=391/528
Rating= Result / Maximum Possible Rating = 391/528=74.05%.						

0	----	33	--	66	--	74.05%	100
UNHEALTHY		TO BE IMPROVED			HEALTHY		

Source: Own elaboration

In the same vein, "conflicts" scored 62.31%, which indicates a climate "to be improved", as they feel that they do not feel confident enough to say what they think and do not have the means, forms or mechanisms for conflict resolution.

Box 9

Table 8

Rating of the dimension

Conflicts	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL
TOTALES	16	47	56	12	1	132
FACTOR	X4	X3	X2	X1	X0	-
CALIF.	64	141	112	12	0	=329/528
Rating= Result / Maximum Possible Rating = 329/528=62.31%.						

0	----	33	--	62.31%	66	--	-----	100
UNHEALTHY		TO BE IMPROVED			HEALTHY			

Source: Own elaboration

In "institutional identity", 73.43% is observed, due to the fact that the staff consider that they are loyal to the co-operative, so they consider themselves part of it and are proud to be part of the institution.

Box 10

Table 9

Rating of the dimension

Institutional identity	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL
TOTALES	36	99	36	4	1	176
FACTOR	X4	X3	X2	X1	X0	-
CALIF.	144	297	72	4	0	=517/ 704
Rating= Result / Maximum Possible Rating = 517/704=73.43%.						
0 ---- 33 -- 66 -- 73.43% 100						
UNHEALTHY		TO BE IMPROVED		HEALTHY		

Source: Own elaboration

Finally, the leadership dimension shows a "healthy" climate with 76.32%, as they recognise that their immediate boss strengthens trust among team members and is congruent in his actions when exercising leadership.

Box 11

Table 10

Rating of the dimension

Leadership	I fully agree	Agreed.	Neither agree neither disagree	Disagree	Strongly disagree	TOTAL	
TOTALES	40	64	23	5	0	132	
FACTOR	X4	X3	X2	X1	X0	-	
CALIF.	160	192	46	5	0	=403/528	
Rating= Result / Maximum Possible Rating = 403/528=76.32%.							
0	----	33	--	66	--	76.32%	100
UNHEALTHY		TO BE IMPROVED			HEALTHY		

Source: Own elaboration

Conclusions

The measurement of the organisational climate has identified specific areas that require attention. Aspects such as Reward, Cooperation, Conflicts, emerged as factors to be improved, which affect the well-being of the staff, due to the lack of recognition for the best work done and the granting of rewards when they perform their work well, not always economic recognition, but also emotional. In addition to the above, in relation to the conflict dimension, staff do not recognise the means, ways and mechanisms for resolving conflicts, which is why they perceive uncertainty in resolving them. Improving these dimensions could lead to a significant increase in job satisfaction and, therefore, in staff retention. This finding is particularly relevant in a context where employee turnover can generate significant costs and affect service continuity.

On the other hand, it can be observed that in terms of institutional identity, employees feel proud to be part of the organisation and to belong to it, as well as recognising the leadership of top management.

It can be concluded that indeed the organisational climate has a direct impact on the motivation and commitment of the employees of the Izúcar de Matamoros savings and loan cooperative, in a work environment where collaboration, recognition and open communication are fostered not only increases staff satisfaction, but also improves their performance. Motivated employees are more likely to provide quality service, which is essential in the savings and loan sector, where trust and relationships with members are essential.

Annexes

Instrument applied to the organization

The purpose of this instrument is to contribute to the continuous improvement of the company in which you work, and the information you provide will be very useful. We guarantee total discretion and anonymity in your answers.

The answers are opinions based on your work experience, therefore, there are no right or wrong answers.

Please read carefully and tick the box corresponding to the answer that best describes your perception and opinion of the institution. No question should be left blank. Please answer according to the following scale:

Strongly agree = 4

Agree = 3

Neither agree nor disagree = 2

Disagree = 1

Strongly Disagree = 0

Age:

( ) From 18 to 35 years old      ( ) From 36 to 53 years old      ( ) Over 54 years old

FACTOR	(4 points)	(3 points)	(2 points)	(1 points)	(0 points)
STRUCTURE					
Activities and jobs are well defined and organised, so that it is clear what the tasks and responsibilities of each person are.					
It is always clear who should make decisions					
I always work in an organised and planned manner					
There is clarity in knowing who my boss is in all the jobs I do.					
The managers of the institution prefer to bring together the most suitable people to do a job, even if this means moving them from their usual positions.					
The institution has confidence in individual responsibility for work.					
Those who run the institution trust that if you are doing well, you will move on rather than consulting with them about everything.					
Bosses give general directions for what needs to be done and staff are given responsibility for specific work.					
RESPONSIBILITY					
For a job to be good it needs to be done with boldness, responsibility and initiative.					
When problems arise at work, they are solved as long as I am within my powers, without the need to turn to my immediate					



boss.					
It is common in the institution that when a mistake is made, the person must look for a solution and assume it with responsibility and ethics.					
Staff always assume their responsibilities in the work assigned to them.					
REWARD					
The person who performs better at his or her job can move on to better positions.					
In the institution there is greater concern for highlighting a job well done than a job badly done, because recognition is given to a job well done.					
In the institution, the better the work done, the greater the recognition received.					
Rewards and recognition are given to staff when they do their job well.					
In the institution, the way in which errors are sanctioned is known in advance and these sanctions are complied with.					
CHALLENGES					
The institution works safely and without risks that threaten the stability of the institution.					
The institution has developed because it takes risks when necessary.					
Decision-making in the institution is done in a cautious way in order to achieve the proposed goals.					
The management of the institution is willing to take the risks of a good initiative.					
For the institution to be superior to others, it is sometimes necessary to take big risks.					
Our work is a daily challenge and not just another task.					
RELATIONS					
Among the staff of the institution there is a predominant atmosphere of companionship and/or friendship.					
The institution is characterised by a comfortable and relaxed atmosphere in all aspects.					
It is possible and easy to make friends in the institution.					
Most of the people working in the institution are empathetic towards others.					
There are good human relations between management and staff in the institution.					
COOPERATION					

In the institution the bosses are understanding when a mistake is made (as long as it does not threaten the stability of the institution).					
The administration of the company makes an effort to know the aspirations of each individual.					
The management of the institution makes an effort to know the aspirations of each individual.					
There is trust between superiors and subordinates					
The management of the institution shows interest in people, their problems and concerns.					
When I have to do a difficult job, I can count on the help of my boss and my colleagues.					
STANDARDS					
High performance is required of us in our work					
For the administration of the institution every task can always be done better.					
The administration continually insists that we improve our individual and group work.					
I believe that performance will improve by itself when employees have job satisfaction.					
The performance of the employee is valued more than the personal characteristics of the employee					
Staff are regularly informed about the progress of goals and achievement of objectives.					
CONFLICTS					
People in the institution seem to place a lot of importance on doing their job well.					
Most staff avoid arguments and disagreements.					
The institution's management believes that disagreements between different sections and individuals can be useful to the institution.					
We are encouraged in the institution to speak our minds, even if we disagree with our bosses.					
Work or interpersonal differences are resolved fairly for the benefit of the institution.					
The means, forms and mechanisms for conflict resolution exist in the institution and are known to the staff.					
INSTITUTIONAL					

IDENTITY					
People are satisfied in the institution					
I feel that I belong to a well-functioning working group.					
I feel that there is loyalty to the institution on the part of the staff.					
Staff are more concerned with the institution than with their own interests.					
Staff are aware of the goals and their contribution to them.					
My colleagues often speak positively about the institution					
I feel part of the institution and am proud of it.					
I know the organisational philosophy of the institution					
LEADERSHIP					
My line manager promotes positive attitudes					
My line manager is results oriented at work					
My line manager builds trust among team members					
My line manager demands results positively and consistently					
I receive adequate and timely training to meet the new demands of the job					
My line manager is consistent in his or her actions in exercising leadership.					

Authors' contribution

*Peña Cruz Archundia, Félix Martín:* Preparation of a graphic summary in English and Spanish, attendance at meetings with the company to present the instrument, drafting of the body of the article.

*Ramírez Cortes, Elva Patricia:* Preparation of a summary in English and Spanish, introduction, methodology and conclusions.

*Solano Palapa Nathaly:* determination of the project, management with the companies in the centre of Izúcar de Matamoros for the measurement of the climate, adaptation of the instrument, attendance at meetings with the company to present the instrument.

*Merino Viazcán, Janet:* project definition, management with the companies in the centre of Izúcar de Matamoros for the climate measurement, capturing the instrument in Google Forms, monitoring the responses, analysing the results, drawing up tables and writing up the results.

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Study of the satisfaction of tourists visiting a destination: the case of the state of Sonora

Estudio de la satisfacción de los turistas que visitan un destino: caso estado de Sonora

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CONAHCYT classification:

Area: Social sciences  
Business and administration.  
Discipline: Administration and management.  
Sub-discipline: Tourism and catering administration

<https://doi.org/10.35429/JED.2024.11.31.1.8>

Article History:

Received: January 17, 2024  
Accepted: December 31, 2024

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Abstract

The State of Sonora, located in northwest Mexico, is known for its rich culture, diverse landscapes, and unique cuisine. The general objective of this study is to determine the profile of the tourist who visits Sonora, analyzing their demographic characteristics, travel reasons, preferences, consumer behaviors and satisfaction. The methodology applied has been with a quantitative approach, non-experimental, transversal and descriptive design, the population under study is tourists who visit municipalities in the State of Sonora, a sample of 1262 people surveyed was obtained. The contribution of the study is to obtain a comprehensive vision that can be useful for the development of tourism promotion strategies in the region, thereby improving tourism activities and products of the destination based on the profile detected. Additionally, promote collaborative work between the government and the population, allowing the development of attractions that serve as a source of economic income for the population.

Objetivo	Metodología	Contribución
Determine the profile of the tourist who visits Sonora, analyzing their demographic characteristics, travel reasons, preferences and consumer behaviors.	With a quantitative approach, non-experimental, transversal and descriptive design, the population under study is tourists who visit municipalities in the State of Sonora, a sample of 1262 people surveyed was obtained.	Obtain a comprehensive vision that can be useful for the development of tourism promotion strategies in the region, thereby improving tourism activities and products of the destination based on the profile detected. Additionally, promote collaborative work between the government and the population, allowing the development of attractions that serve as a source of economic income for the population.

Resumen

El Estado de Sonora, ubicado en el noroeste de México, es conocido por su rica cultura, paisajes diversos y gastronomía única. El presente estudio tiene como objetivo general determinar el perfil del turista que visita Sonora, analizando sus características demográficas, motivos de viaje, preferencias, comportamientos de consumo y su satisfacción. La metodología aplicada ha sido con enfoque cuantitativo, diseño no experimental, transversal y de tipo descriptivo, la población bajo estudio son los turistas que visitan municipios del Estado de Sonora, se obtuvo una muestra de 1262 sujetos. La contribución del estudio es obtener una visión integral que puede ser útil para el desarrollo de estrategias de promoción turística en la región, mejorando con ello actividades y productos turísticos del destino en base al perfil detectado. Además, fomentar el trabajo colaborativo entre el gobierno y la población, permitiendo el desarrollo de atractivos que sirvan como fuente de ingresos económicos para la población.

Objetivo	Metodología	Contribución
Determinar el perfil del turista que visita Sonora, analizando sus características demográficas, motivos de viaje, preferencias y comportamientos de consumo	Con enfoque cuantitativo, diseño no experimental, transversal y de tipo descriptivo, la población bajo estudio son los turistas que visitan municipios del Estado de Sonora, se obtuvo una muestra de 1262 personas encuestadas	Obtener una visión integral que puede ser útil para el desarrollo de estrategias de promoción turística en la región, mejorando con ello actividades y productos turísticos del destino en base al perfil detectado. Además, fomentar el trabajo colaborativo entre el gobierno y la población, permitiendo el desarrollo de atractivos que sirvan como fuente de ingresos económicos para la población.

Tourist profile, Satisfaction, Consumption

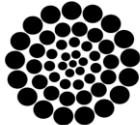
Perfil turista, Satisfacción, Consumo

**Citation:** Esparza-García, Irma, Sánchez Guerrero, Marisol, Clark-Mendivil, Yesenia and Espinoza-Castelo, Luz. [2024]. Study of the satisfaction of tourists visiting a destination: the case of the state of Sonora. Journal Economic Development. 11[31]-1-8: e41131108.



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## Introduction

For people, travelling is an experience that is considered rewarding, motivating and mentally healthy, as it allows them to get to know different places, cultures, new knowledge and environments.

Tourism is considered one of the most important activities for the economic development of each country (Olmos, Almendarez and Ibáñez, 2021), because thanks to it, tourists arrive at various destinations, causing an improvement in the economy of each city, state and country in general. It should be noted that Mexico is considered the sixth most visited nation in the world (UN Tourism, 2024), and the Ministry of Tourism has indicated that during the first four months of the year 2024 it has received 14 million 700 thousand international tourists. Beaches, Magic Towns and archaeological sites are the most visited places. This has earned it recognition from international organisations for its cultural and natural wealth.

Now, on a national level, according to statistical data presented by the National Institute of Statistics and Geography (INEGI, 2024), Sonora closed the first quarter with an increase of 27% in the hiring of the tourism sector and also reflecting an increase of 14% in the generation of employment and economic opportunities for the population. This shows that many Sonorans depend on the tourism industry for their livelihood, through hotels, gastronomy or recreational activities. This boosts the regional economy and infrastructure development.

In addition, tourism also promotes cultural exchange by allowing visitors to learn about the traditions and customs of Sonoran communities. This not only enriches the traveller's experience, but also helps to preserve and value the local culture.

In this sense, the objective of this work is to determine the profile of the tourist who visits Sonora, analysing demographic characteristics, travel motives, preferences and consumption behaviour, which allows us to compare the level of visitor satisfaction based on their attributes.

Based on the information generated by the research work, important elements are provided for the definition of the profile of the national tourist visiting Sonora, yielding useful information for decision making that will allow the offering of more complete and innovative services in accordance with the needs of travellers.

## Literature review

The present research project is explained under the theoretical approach of the General Systems Theory based on the new conceptual perspective of tourism (Ibáñez and Cabrera, 2011), understood as the interrelated set of elements, which brings together an important number of relationships in its dynamics within the tourism system, generating concepts and proposals on the elements that make it up.

To understand the aspects that influence the motivations of visitors, we study them through cognitive-affective currents, related to the evolution of the tourist with the appreciation of their emotions and causal reasoning on cognitive factors related to the perception of the experience lived by the tourist (Bagozzi et al., 1999; Oliver, 1999; Ritchie and Crouch, 2005; Williams and Soutar, 2009; Femenía 2011; Moo et al., 2015). Expectation theory has also been taken, looking at the desired outcomes of visitors who end up with a comparison of what was consumed with what was actually expected (Liljander and Strandvick, 1995).

Likewise, in order to obtain a conceptual overview it is important to highlight the following concepts: tourism, tourist, tourist profile and destination according to the glossary of the UN tourism through the International Recommendations for Tourism Statistics (RIET, 2008). Tourism refers to visitor activity (RIET 2008, para. 2.9). Tourist is the visitor, whether domestic, inbound or outbound, who is classified as a tourist or an overnight visitor if their trip includes an overnight stay, or a day visitor or excursionist (RIET 2008, para. 2.13). The tourist destination is the physical space, where the visitor can stay overnight.



Furthermore, Nava Jiménez et al., (2017), define the national tourist as the people who travel within the country, so that the tourist profile is the characterisation such as: nationality, place of residence, gender, age, income, occupation, schooling and marital status of the consumers of tourism services. In addition, depending on the socio-economic and demographic variables of the tourist, it is possible to define preferences, tastes, expectations and various needs, which allows companies to manage their services and tourist destinations (Torres et al., 2015).

On the central theme of the present study, and based on research carried out, there are studies focused on analysing the profile and degree of satisfaction, as well as the motivations of tourists who visit for cultural, beach, ecotourism, family or business visits, among others (Madrid and Cerón 2013; Robleda, Pérez, Kantún, and Jonapá, 2017; Proaño, Pazmiño, and Tapia, 2018; Estela and Pillaca, 2023; García, Thomé, González, and López, 2023).

As can be seen, there is academic empirical evidence on the interest in identifying the tourist profile and the knowledge of the perception and level of satisfaction, but for the particular case of the state of Sonora there is still a lack of research that would provide information that would contribute to decision-making about new tourism proposals that provide tools to promote innovation and satisfaction of tourists visiting Sonora.

## Methodology

As empirical evidence, a sample of 1262 subjects was obtained through non-probabilistic sampling where the choice of subjects depended on causes related to the characteristics of the research (Hernández, Fernández and Baptista, 2014). The criterion used was that the subjects had visited a destination in Sonora and were willing to collaborate. The sample was carried out through an electronic survey where the subjects were asked to read and accept the informed consent, as well as sharing it by groups related to the research, ensuring that the established criteria were met.

A total of 1262 questionnaires were applied and all were answered with satisfaction in the cities of Obregón, Navojoa, Huatabampo, Guaymas, Empalme, Hermosillo, Agua Prieta, Álamos, Bahía de Kino, Cócorit, Caborca, Camahuiroa, Cananea, Yecora, Nogales, Imuris, Huatabampito, Las Bocas, Yavaros, Magdalena, Melchor Ocampo, Moroncarit, Puerto Peñasco, Rayón, Ruta del Río Sonora, San Carlos, San Luis Río Colorado, Santa Ana, Siaric and Tesopaco, among others that were digitally collected throughout the state.

The analyses carried out were descriptive in nature on the most relevant variables regarding the satisfaction of tourists visiting a destination in the state of Sonora. The statistical validation of the questionnaire was carried out through Cronbach's Alpha, the results obtained in the dimensions that measure the satisfaction of tourists visiting a destination was .94, exceeding the value of .70 which is considered as a minimum for an instrument (questionnaire) to have validity and be statistically acceptable Quero (2010).

The scale used to measure the variables corresponding to the measurement of the satisfaction of visiting tourists in the state of Sonora, was a Likert-type scale of 10 points ranging from (Very dissatisfied = 1 to Very satisfied = 10), in the case of satisfaction was measured through 10 items that evaluate the concept of satisfaction of tourists visiting a destination Hernández, Fernández and Baptista (2014).

## Results

### *Destinations, services and stay for tourists visiting Sonora*

The most relevant results of the research describe aspects related to the destinations visited by tourists, as well as the levels of satisfaction regarding the services received by tourists visiting the different destinations in the state of Sonora. In Sonora, the main destinations most visited by local, national and international tourists are the main cities in the state with the largest populations located in the south of the state, such as Obregon City with 24% of the sample, Hermosillo with 14% and San Carlos Guaymas with 20%, making up 58% of the sample of tourists visiting the main destinations in Sonora.

The remaining 42% of the sample is located in other cities in the state of Sonora, distributed in less significant percentages. See table 1

Box 1

Table 1  
Most visited destinations in Sonora

Destination	% Percentage	% accumulated
Obregón	24	
Hermosillo	14	58
San Carlos	20	
Other cities in Sonora	42	42

Source: Own elaboration based on statistics

The survey asked about the time it takes both national and international tourists to plan a trip to the destinations they visit in Sonora and the most relevant response was that 54% of the sample took 1 month or less to plan their trip, compared to 24% who took between 1 and 3 months to plan their trip to a destination in the state of Sonora. See table 2

Box 2

Table 2  
Duration of your stay in nights

Time/months	% Percentage
1 a 3	24
1 month or less	54
Less than one month	22

Source: Own elaboration based on statistics

In terms of the length of stay within the destinations chosen in the state of Sonora, the highest percentage is 2 nights during their stay. However, there is an extraordinarily interesting fact: 69% of the sample stated that the duration of their stay is one day round trip, which means that the tourism that moves the most through the state is local tourism, which is the most representative in this case. See table 3

Box 3

Table 3  
Duration of your stay in nights

Nights	% Percentage
1 Night	14
2 Nights	22
3 Nights	16
4 Nights	8
6 o More Nights	9
To and from the destination	69

Source: Own elaboration based on statistics

On the other hand, the average expenditure per person per day for accommodation services, food, transfers in the destination, attractions and entertainment, shopping, souvenirs and/or handicrafts, we have that the average expenditure for accommodation ranges from 1,100 to 1,500 and expenditure for the rest of the services such as food, transfers, attractions and shopping are less than or equal to 500 Mexican pesos. See table 4

Box 4

Table 4  
Average expenditure per person per day in Mexican pesos on accommodation, food, transfers in the destination, attractions and entertainment, shopping, souvenirs and/or handicrafts

Service at Sonora destinations	Average daily expenditure in Mexican currency
Hospices	Ranges from 1,100 to 1,500
Food	≥ at 500 Mexican pesos
Transfer at destination	≥ at 500 Mexican pesos
Attractiveness and entertainment	≥ at 500 Mexican pesos
Shopping, souvenirs and/or handicrafts	≥ at 500 Mexican pesos

Source: Own elaboration based on statistics

Finally, the city, state and country of residence of tourism visiting destinations in Sonora, we can observe a very interesting fact, 70% of the sample corresponds to tourism travelling from Cd, Obregon to other destinations in the state of Sonora, followed by the city of Hermosillo which is 20% of the sample and the last 10% corresponds to the city of Navojoa within the same state of Sonora. See table 5.

Box 5

Table 5  
City, state and country of residence of tourism visiting destinations in Sonora

Residence of tourists visiting destinations in Sonora	% Percentage of tourists visiting destinations in Sonora
Obregón	70%
Hermosillo	20%
Navojoa	10%

Source: Own elaboration based on statistics

These aspects related to the destinations visited by tourists show us a profile of consumption of services by tourists visiting the state of Sonora, which we can deduce that the tourism that caused the greatest economic spillover during 2023 and 2024 is local tourism, which consumes the main services offered by the establishments in the state of Sonora and which cater to international, national and local tourism.

### Satisfaction of tourism visiting Sonora as a destination

With regard to the levels of satisfaction of tourists visiting the state of Sonora as a destination, 60% of the tourists who choose Sonora as a destination are satisfied or very satisfied with the services offered in the destinations they visit in the state of Sonora.

65% of those surveyed in the sample indicated that even the access to the destination was satisfactory, choosing the response of very satisfied with the access to the destination. However, 90% of the sample made reference to the fact that they did not use any type of tour guide on their trip to the chosen destination.

The 10% of the sample who indicated that they had used a tour guide mentioned that they were very satisfied with the service provided by these experts in guiding tourists to their destinations.

Other aspects evaluated in terms of satisfaction are related to the tourist attractions of the destination, where 60% of the people who visit a destination in Sonora mentioned being very satisfied with the attractions of the destination.

However, there are four items related to the experience in the destination, expectations of the visit, the attention of the host community and satisfaction with their trip to the destination. Where the percentages of satisfaction were less than 50%, ranging between 35% and 40%, this percentage of the sample indicates that visitors to the different destinations in Sonora mentioned that they were satisfied or very satisfied with their experience according to the evaluation scale, their expectations of the visit, with the community that received them and satisfaction with their trip to the destination.

The data obtained in this research is of utmost importance for the tourism sector in the state of Sonora, it provides real evidence of what is happening with visitors in different destinations in the state, the information may be relevant to provide new work strategies to improve all services provided throughout the sector and to raise the percentage of local, national or international tourists satisfied with all that Sonora offers in their destinations and seek the growth of the same.

### Conclusions

For Mexico, the tourism sector represents an important catalyst for the economic development of the country and the creation of jobs that will support thousands of families dedicated to this activity. According to figures for the first quarter of 2024, the quarterly indicator of the tourism gross domestic product (ITPIBT) increased by 2.4%, demonstrating once again the importance of the sector remaining strong to provide the growth that the regions require (INEGI, 2024).

This research aims to provide a profile of the tourist who brings economic benefits to the state of Sonora and who is constantly looking for quality in the destinations he or she chooses. This profile will allow tourism service providers to always look for the best opportunities to develop higher quality services to meet the expectations of their visitors in the most visited destinations in the state of Sonora and to develop the potential and capabilities and take advantage of the advantages that these cities have to grow in this sector. An interesting fact in this study is that the centre and south of the state of Sonora are the most visited destinations in the state by the same domestic market. This result may lead us to think that the promotion of the state of Sonora at a national and international level needs to be more intense.

Another important aspect is the satisfaction that visitors to the different tourist destinations in the state of Sonora have expressed. While it is true that the percentages of satisfaction are good, there is a part of the sample that is not very satisfied in terms of access, services and experiences.



This could be a red light for the state of Sonora because they must improve in these aspects in order to look for a more demanding tourism profile, more national and international, that can provide more economic revenue in the state of Sonora and that can make use of services that are still unprotected, such as the use of tour guides, for example, which the study found to be in low demand among visitors.

Annexes

Annex 1

Box 6

Table 6

Satisfaction of tourists visiting destinations in Sonora, with respect to access, services and experiences

Satisfaction in access, services and experiences	% Percentage	Level of satisfaction
How satisfied were you with the access to the destination?	65%	Ranges from satisfied to very satisfied
How satisfied were you with the destination's services?	60%	Ranges from satisfied to very satisfied
During your visit, did you have the opportunity to receive the attention of a tour guide?	90%	Approximately 90% of destination visitors in Sonora do not receive this service.
The evaluation of the degree of satisfaction in case of having received the service of a tourist guide.	10%	The 10% who receive the guide service are Very Satisfied with the service.
How satisfied were you with the tourist attractions of the destination?	60%	Satisfied and Very Satisfied
How satisfied were you with the destination experience?	40%	40% of respondents are Satisfied and Very Satisfied with their experience.
How satisfied were you with your trip to the destination?	40%	40% are very satisfied.
According to your expectations, how satisfied were you with your visit?	35%	Satisfaction with the visit ranged from Satisfied to Very Satisfied.
How satisfied were you with the attention you received from the people of the host community?	35%	Satisfaction with the host community ranged from Satisfied to Very Satisfied.
How satisfied were you if you used taxi services from the airports of Ciudad Obregón, Hermosillo and Guaymas to your destination in Sonora?	2%	Only 2% of the sample used the taxi service from the airport to their destination and were very satisfied.

Source: Own elaboration based on statistics

Statements

Conflict of interest

All authors contributed substantially to the preparation of this manuscript.

*Esparza-García, Irma Guadalupe:* was responsible for the research design, data collection and processing.

*Espinoza-Castelo, Luz María:* She was responsible for statistical analysis, research design and writing up the results.

*Clark-Mendivil, Yesenia:* was responsible for the methodological part of the research, the handling of references in the corresponding format and conclusions.

*Sánchez-Guerrero, Marisol:* was responsible for all the literature, its writing and graphic summaries.

Authors' contribution

All authors contributed substantially to the preparation of this manuscript. From obtaining the database, literature review, method development, statistical analyses and conclusions.

Availability of data and materials

The availability of the data obtained in this research is in the hands of the lead author and the corresponding author at the following e-mail addresses:  
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Funding

This research was funded by the Instituto Tecnológico de Sonora, through the PROFAPI programme (programme for the promotion and support of research) and the infrastructure to carry it out.

Acknowledgements

Thanks are extended to the current authorities of the Instituto Tecnológico de Sonora Obregón unit, for their support in this research work that provides data on tourism, specifically on the satisfaction of visitors, destinations, services and stays in the state of Sonora as a tourist destination in Mexico.

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Women mentor program in science in the state of Mexico. experiences and results at the Universidad Politécnica del Valle de México

Programa de mujeres mentoras en la ciencia en el estado de México. Experiencias y resultados en la Universidad Politécnica del Valle de México

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CONAHCYT classification:

Area: Humanities and behavioural sciences

Field: Ethics

discipline: Group ethics

Sub-discipline: Other

 <https://doi.org/10.35429/JED.2024.11.31.5.1.9>

History of the article:

Received: September 29, 2024

Accepted: December 11, 2024

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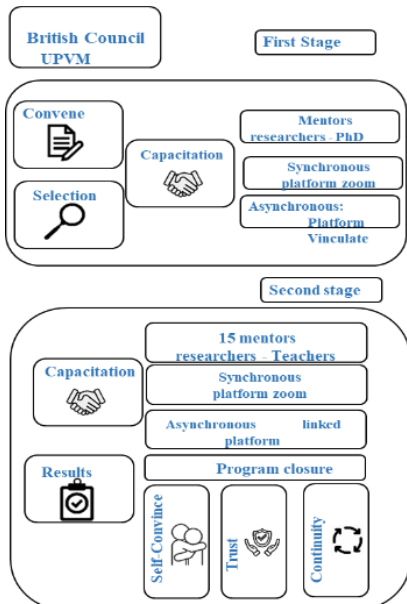
Abstract

In this work presents the results of the application of the Women in Science Mentoring program in the State of Mexico, as part of the British Council – CONAHCYT program at the Universidad Politécnica del Valle de México (UPVM). The program had the participation of 15 women with a doctorate degree as mentors and 15 women with a master's degree as mentees. The program was developed with the training of synchronous and asynchronous sessions (MOOC). The results of the application of the program show that the participants obtained greater self-knowledge of themselves, greater confidence to continue their scientific and/or academic work, and finally obtained training to support women in STEM areas.



Resumen

En el presente trabajo se presentan los resultados de la aplicación del programa de Mentoría Mujeres en la Ciencia en el Estado de México, como parte del programa del British Council – CONAHCYT en la Universidad Politécnica del Valle de México (UPVM). El programa tuvo la participación de 15 mujeres con grado de doctorado como mentoras y 15 mujeres con grado de maestría como mentees. El programa se desarrolló con la capacitación, a partir de sesiones síncronas como asíncronas (MOOC). Los resultados de la aplicación del programa muestran que las participantes obtuvieron un mayor autonoconimiento de sí mismas, mayor confianza para dar continuidad a su labor científica y/o académica, y finalmente obtuvieron una capacitación para el acompañamiento de mujeres en las áreas STEM.



Mentoring Women, STEM, Gender Gap



Mentoría de mujeres, STEM, Gender Gap

**Citation:** Martínez-Pérez, Beatriz, Hernández-Acosta, Humiko Yahaira and Sánchez-Vázquez, Elizabeth. Women mentor program in science in the state of Mexico. experiences and results at the Universidad Politécnica del Valle de México. Journal Economic Development. 11[31]-1-9: e51131109.



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Peer review under the responsibility of the Scientific Committee MARVID®- in the contribution to the scientific, technological and innovation Peer Review Process through the training of Human Resources for continuity in the Critical Analysis of International Research.



## Introduction

Women's participation in science, technology, engineering and mathematics (STEM) is low globally. Although in recent years there has been increased participation of women in STEM fields, inequality is still present. The under-representation of women in STEM, in addition to being a social justice issue, also has economic and scientific implications.

The lack of equity in STEM limits the potential to solve complex issues such as climate change, inclusive technological development and technological innovation in various areas. Minimising women's participation in these disciplines means missed opportunities to achieve the goals of the 2030 Agenda (UNESCO, 2019). For example, 1.5% of climate change-related aid recognised gender equality as one of the main objectives and only 0.2% of aid is through women-led organisations. Yet 80% of people displaced due to climate change are women and girls (The lancet, 2024).

The low participation of women in STEM fields is due to factors of gender discrimination, race, class, socio-cultural factors, institutional bias, etc. Underrepresentation of women's participation in STEM may be due to the influence of male-dominated environments, stereotypes that STEM fields are masculine. The metaphor of the leaky pipeline explains the gender gap in STEM. The STEM pipeline lets women interested in STEM escape, or when they are in university, they change their major before finishing their studies or if they graduate, they have jobs that do not correspond to STEM fields (Meolli *et al.*, 2024).

The gender gap in STEM is caused by cultural, educational and institutional factors. From an early age, women are confronted with stereotypes that keep them away from STEM areas, because of stereotypes that women have neither the physical capacities, such as strength, nor the intellectual capacities to belong to these areas. Moreover, at the professional level, women face systematic barriers, such as lack of leadership opportunities, unequal pay, and unconscious biases that affect their recruitment and promotion.

Another factor that has decreased women's participation in STEM fields is the belief that care and domestic tasks are women's responsibility (Abuwatfa *et al.*, 2021). Squazzoni *et al.* (2020) report that the effects of the pandemic caused women scientists to decrease the number of manuscripts submitted to journals during the COVID-19 pandemic.

This gap not only represents a loss of talent, but also perpetuates structural inequities. Several studies have identified factors such as gender stereotypes, lack of role models and insufficient support networks as key barriers for women in STEM.

Strategies to promote women's participation in STEM include: a) Mentoring and Support Networks, through the creation of mentoring networks and institutional support specifically for women, enabling them to access resources and advice to facilitate their progress in their academic careers. b) Inclusive institutional policies, this involves institutions implementing measures that balance teaching, research and service responsibilities, ensuring that they do not fall disproportionately on women. c) Awareness and training on unconscious bias, as well as fostering an inclusive culture in academic institutions (Dobele *et al.*, 2019).

Mentoring programmes in STEM targeting women have emerged as a strategy to break down gender gap barriers and foster greater inclusion. One of the key factors contributing to widening this gap is the lack of role models and support networks.

This is where mentoring programmes play a crucial role. By connecting students and emerging professionals with experienced female mentors, these programmes help overcome barriers of trust, access and perception. The benefits of STEM mentoring programmes are:

1. **Personal and Professional Empowerment:** Mentorships enable women to develop technical and soft skills, such as problem solving, leadership and communication. They also provide a safe space to discuss challenges and strategies for overcoming them (Corbett *et al.*, 2010).



2. **Reducing the Confidence Gap:** Many women face **impostor syndrome**, especially in male-dominated fields. A female mentor can offer emotional support and share personal experiences to help overcome these insecurities.
3. **Professional Networking:** Mentoring programmes not only connect mentors and mentees, but also foster the creation of broader networks that can be crucial for career advancement (Chuco-Aguilar, 2023).

Programmes such as Million Women Mentors in the United States and INWES (International Network of Women Engineers and Scientists) have demonstrated the positive impact of these initiatives. These organisations have created global platforms to connect women in STEM, promoting development opportunities and removing cultural and educational barriers.

The British Council's Women in Science Programme, is also another successful programme, which aims to promote more diverse and gender-representative science by: increasing the presence of girls in STEM; supporting women scientists in STEM with training; strengthening networks of female researchers in collaboration with the UK; and developing policies to promote greater access and influence for women in science (UNESCO, 2022).

Since 2018, the British Council Americas Women in Science programme promotes the strengthening of links and capacity building of girls and women scientists in the Americas and the UK. The programme is based on three pillars: Inspiration, Performance and Recognition, from which strategic priorities are developed, such as: attracting more girls and women to STEM careers, strengthening capacities to support the development of professionals in the field, generating networks and partnerships that promote a positive transformation towards a more diverse science, impacting the political and institutional spheres (TLRHWP, 2024). This paper shows the results of the application of the Women Mentors in Science programme in the State of Mexico, as part of the British Council - CONAHCYT programme at the Polytechnic University of the Valley of Mexico (UPVM).

## Methodology

The programme consisted of two stages: the first was a training course to train mentors, which lasted 11 sessions, based on the accompaniment of experts and certified in the subject, at the same time as the candidates took the course: Training for Mentors: Women in STEM, from the CONCYTEC's Vinculate platform.

The second part was the assignment of a mentee to each mentor, the purpose of this action was to exercise her role as a mentor and evaluate her role through the progress of her mentee. At this stage, the mentees also took the Training Course for Mentees: Women in STEM of the Vinculate platform of CONCYTEC. The number of participants was 15 women with a doctorate degree in science and 15 mentees, women with a master's degree.

## Box 1



**Figure 1**

Inauguration of the Women in Science Programme in the State of Mexico at UPVM

*Source: Own Elaboration*

The synchronous sessions conducted for the mentoring training were designed in such a way that the participants acquired the tools for mentoring and matching with their mentee. The sessions were divided into: a) Conceptual tools for mentoring, b) Soft skills, c) Female leadership in science, d) Technological entrepreneurship, as well as providing them with tools for better self-awareness and introspection through mindfulness sessions.



## Results

## Box 2



Figure 2

Synchronous sessions held in the Women in Science Programme in the State of Mexico at UPVM

Source: Own Elaboration

The training provided to the mentors was evaluated through the application of a survey with the following questions:

1.- Why did you decide to study a career in STEM? Some of the answers to the question are: 'Because since middle and high school I was genuinely attracted to science and although I still did not have great mathematical skills, it was not a limitation and I put myself at a level to achieve it', 'My main reasons for studying a STEM career were the interest in understanding and solving complex problems through science and technology, as well as the curiosity to explore how this knowledge can be applied in the real world', 'In order to seek solutions and address challenges that provide solutions to problems that benefit society', 'I like technology'. These responses show that, even knowing the challenges and difficulties in studying any of the STEM areas, the interviewees answered that they like their area of knowledge out of conviction, despite the difficulties inherent to the area, as well as the stereotypes formed.

The above responses are consistent with a study carried out by Hernández-Herrera (2022), to find women's perceptions of their transition in the STEM area, which indicates that the women participants indicated that the motivations that led them to study STEM careers are related to: becoming the first woman in their family to obtain a university degree; studying something related to mathematics in an innovative field;

Applying the knowledge acquired for the benefit of society; and that they have envisioned becoming researchers.

2.- Did you have a female teacher or professional role model in STEM who motivated you to study? 50% of the interviewees answered that they did not. The lack of STEM professionals and teachers is a multifaceted problem that affects both educational institutions and companies. In education, the shortage of qualified teachers reduces the ability to inspire new generations in science and technology disciplines, which in turn affects student interest and retention in these fields (Diekmaan et Benson-Greenwald, 2018).

The lack of role models or inspirational role models is one of the major barriers that women face for entry into STEM fields. López Navajas (2016), who analysed the presence of female characters in the books of Santillana and Oxford Publishers (ESO) for 48 subjects from 1st to 4th grade (secondary-preparatory in Mexico), found a significant bias in the contributions of women in all areas in the published books of these publishers.

This implies a deficient cultural transmission in education by neglecting the contributions of women in the area of science, conditioning them to a low motivation to participate in STEM areas. Another example is that, currently 28% of researchers are women and only 17 women have won the Nobel Prize in Physics, Chemistry or Medicine, as opposed to 572 men (UNESCO, 2019). The low recognition of women in science makes women invisible, leaving a huge gap in inspirational female role models.

3.- What are the main barriers to overcome in your professional field? The vast majority of the responses focused on the words shown in Figure 1. Some of the female mentors mentioned pregnancy, family care, job change, financial problems as personal problems. The vast majority of the female mentors mentioned the following as the main barriers in their work environment: lack of job and professional recognition, lack of confidence to access leadership positions and one of the biggest barriers, institutional machismo (Figure 3).

Dobele et al (2019) explain that in academia, sticky floors and glass ceilings are metaphors that represent, respectively, the difficulty of progressing from the initial levels of an academic career and the impossibility of reaching higher positions.

Among the main findings that the authors found were: a) Under-representation in Leadership Positions, suggesting that the glass ceiling is a significant barrier. b) Gender Expectations and Roles: Women are relegated to caring, mentoring and teaching tasks, limiting their time and ability to research and publish, activities that are paramount for academic promotion and recognition. c) Work Environment and Microaggressions:

Microaggressions and lack of institutional support create a hostile environment for women, perhaps leading them to leave academia. d) Impact on Professional Development: Work overload, lack of support networks, lack of funding opportunities and collaboration were identified as key factors limiting women's advancement and perpetuating sticky floors keeping women in an unadvanced position. It is recognised that employment favours men and that the required profiles maintain a preference for men in the majority of cases, in addition, situations that cause discrimination against women continue to prevail, as well as various manifestations of gender-based violence in the difficult road they have had to travel (Henández-Herrera, 2023)

### Box 3



**Figure 3**

Main professional barriers of participants as Women Mentors in the Mentoring programme

Source: Own Elaboration

4.- Why would you like to be a mentor and what do you hope to gain from participating in the mentoring programme? To this question they answered that being a mentor would give them the opportunity to guide and empower other women in their personal and professional development. They also commented that in order to achieve women's empowerment, it is crucial for women to mentor others, as they face unique barriers in the work environment.

Finally, the interviewees felt that training as mentors would provide them with the necessary tools to gain experience, empathy with other women scientists and give other women the opportunity to motivate them to get others increasingly into STEM fields. Mentoring offers a safe space to discuss challenges and strategies for overcoming them, as well as providing role models who inspire young women. This support creates collaborative networks that benefit not only the women, but the entire community. In addition, mentoring can contribute to building a more equitable future (Figure 2). In the context of mentoring, women scientists acting as role models have been shown to have a significant impact on the development of new generations of women scientists.

These inspirational role models not only foster technical skills, but also the development of self-confidence and resilience, key qualities in disciplines where women are often under-represented. Research shows that the involvement of female leaders in STEM mentoring programmes increases the retention of female students in these areas by reducing the deterrence effect that can arise in predominantly male environments (Diekman et al, 2017). (Alexander et al, 2016).

Exposure to female role models can increase girls' interest and confidence in their ability to succeed in STEM, especially when the role models are seen as accessible and representative of qualities they value. Role models that emphasise both STEM competence and femininity tend to have a more positive impact on younger girls, who are still developing their personal identity (Bamberger, 2014).

5.- One of the final questions asked of the participants as mentors was to learn about their barriers overcome, as well as their strengths gained at the end of the programme. The results of the mentoring training in Women Researchers at UPVM were: 1) Strengthening the strategies used to orient, direct and guide people (Figure 4), 2) Organisation and gaining time for their training, 3) Gaining greater confidence, 4) Achieving collaborative work and forming inter-institutional networks, 5) Empathy and improved listening skills, 6) Better self-knowledge and recognition as women and researchers, 7) Motivation to give continuity or resume their scientific work, 8) Recognition of their entrepreneurial capacity (Figure 5).

The mentoring programme seeks to provide women students in the STEM fields, through other women whose life experience and professional careers in STEM inspire and share their experiences. One of the main impacts of mentoring is the professional guidance that mentors provide to participants. UNESCO (2017) mentions that mentoring helps women identify their career goals, understand the specific challenges of STEM disciplines and develop strategies to overcome institutional and cultural obstacles. Mentoring is crucial at key stages such as the transition from academia to the workplace.

On the other hand, mentoring also fosters the building of strong professional networks. These networks allow participants to access collaboration opportunities, resources and visibility within their fields (IFE, 2022). Another benefit is the strengthening of women's confidence in their ability to succeed in STEM. Many STEM women face impostor syndrome, which they sometimes do not even perceive, therefore, through mentoring programmes, participants report a significant improvement in their professional self-efficacy and their perception of belonging in STEM disciplines.

Box 4



**Figure 4**  
Podcast of the interview of the work done with the Mentoring Programme between participants Judith Ruby Sánchez García (mentor) and Belén Itzel Solano (mind)  
*Source: Own Elaboration*

Box 5



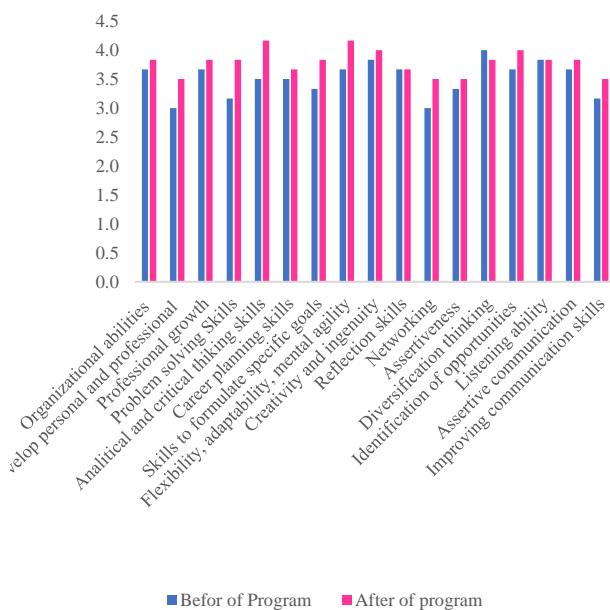
**Figure 5**  
Opening of the Laboratory for Scientific and Technological Innovation and Entrepreneurship in the State of Mexico  
*Source: Own Elaboration*

On the other hand, the achievements of *mentees* were rated through the evaluation of skills obtained by mentees at the beginning and end of the programme.



Figure 6 shows that the mentoring programme achieved an increase in the recognition of mentees' skills, results that also demonstrate an effective empowerment of women mentors. These results show that the different skills and strengths acquired by the mentors were permeated to the *mentees*, achieving a match by achieving an improvement in the skills of their *mentees*.

### Box 6



**Figure 6**

Skills assessed to participants as mentees before and after the Mentoring programme

Source: Own Elaboration

### Conclusions

The application of the Women in Science programme in the State of Mexico enabled the women participating as mentors to acquire tools such as organisation and planning for training in the field of mentoring, as well as gaining strengths such as confidence, self-knowledge and self-recognition, which led them to break with the impostor syndrome.

At the end of the programme, some of the participants were able to continue their scientific work by publishing some of their research results, as well as considering technological entrepreneurship as an option for their professional growth. On the other hand, the women participants as *mentees*, achieved an improvement in their skills and recognised the work of their mentors as inspirational role models.

The results of the programme applied with this small population of women researchers at UPVM, also makes the reflection and motivation to give continuity to the programme and reduce the gender gap in the STEM area.

### Statements

#### Conflict of interest

The authors declare that they have no conflicts of interest. They have no known competing financial interests or personal relationships that might have appeared to influence the article reported in this paper.

#### Authors' contribution

*Martínez-Pérez, Beatriz*, carried out the methodological development as well as the writing of this research paper.

*Hernández-Acosta, Humiko Yahaira* and *Sánchez-Vázquez, Elizabeth* reviewed and provided editorial corrections.

#### Availability of data and materials

Data are available for consultation and review.

#### Funding

Funding from the co-authors of this research is gratefully acknowledged.

#### Acknowledgements

Beatriz Martínez Pérez is grateful for the institutional support of the UPVM for the development of the Women as Mentors in Science and Technological Entrepreneurship Programme in the State of Mexico, as well as to all the participants as Mentors and *Mentees*.

#### Abbreviations

IFE: Institute for the Future of Education

MOOC: Massive Open Online Course.

RENIECYT: Registro Nacional de Instituciones y Empresas Científicas y Tecnológicas.

SPWM: Science Programs for Women Mentorship.

STEM: Science, Technology, Engineering and Mathematics.

UNESCO: United Nations Educational, Scientific and Cultural Organization.

UPVM: Polytechnic University of the Valley of Mexico.

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Culinary traditions, endemic resources, San Juan del Río, Querétaro

Tradiciones culinarias, recursos endémicos, San Juan del Río, Querétaro

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CONAHCYT classification:

Area: Humanities and behavioural sciences  
Field: Anthropology  
discipline: Cultural anthropology  
Sub-discipline: Traditions

 <https://doi.org/10.35429/JED.2024.11.31.6.1.7>

History of the article:

Received: September 29, 2024  
Accepted: December 11, 2024

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

Abstract

Local gastronomy is little known, and it's not highlighted despite its potential. This research addresses local gastronomy's lack of visibility, which has not been neither properly documented nor promoted. The aim: to get to know some of the culinary customs of San Juan del Río, Qro. Through the identification of representative dishes and contributing to their preservation and recognition. The research topics are theoretically analyzed, exploratory and descriptive research is used, with a qualitative approach, deductive hypothetic method, with tools of observation and directed interview. Findings: a great variety of dishes which could give an identity to the municipality do exist, which are elaborated with endemic products from the region and are consumed in accordance to their seasonal availability; other are produced for cultural, patronal or family festivities; even though the traditional ways of producing them have been lost, some are preserved and therefore made explicit, enriching this research.



La gastronomía local es poco conocida y no figura a pesar de su potencial. Esta investigación aborda la escasa visibilidad de la gastronomía local, que no ha sido adecuadamente documentada ni promocionada. El objetivo: conocer algunas de las tradiciones culinarias de San Juan del Río, Qro. mediante la identificación de platillos representativos y contribuir a su preservación y reconocimiento. Los temas de investigación se analizan teóricamente, se utiliza una investigación exploratoria y descriptiva, con un enfoque cualitativo, método hipotético deductivo con instrumentos de observación y entrevista dirigida. Hallazgos: existe una gran variedad de platillos que podrían dar identidad al municipio, los cuales se elaboran con productos endémicos de la región y se consumen de acuerdo con su disponibilidad estacional; otros se producen para festividades culturales, patronales o familiares; y aunque se han perdido las formas tradicionales de elaborarlos, algunos se conservan y así se hacen explícitos, enriqueciendo esta investigación.

CULINARY TRADITIONS, ENDEMIC RESOURCES OF SAN JUAN DEL RÍO, QUERÉTARO.

Objetivos	Methodology	Contributions
 <ul style="list-style-type: none"><li>*Culinary traditions of San Juan del Río, Qro.</li></ul>  <ul style="list-style-type: none"><li>* Endemic resources</li></ul>  <ul style="list-style-type: none"><li>* Relevant dishes</li></ul>  <ul style="list-style-type: none"><li>* Local identity</li></ul>	 <ul style="list-style-type: none"><li>*Theoretical tours</li></ul>  <ul style="list-style-type: none"><li>*field trips to communities</li></ul>  <ul style="list-style-type: none"><li>*endemic resources gathering</li></ul>  <ul style="list-style-type: none"><li>*elaboration of dishes</li></ul>	 <ul style="list-style-type: none"><li>*first dive into San Juan del Río communities, to get to know endemic resources.</li></ul>  <ul style="list-style-type: none"><li>* progress in culinary procedures and techniques of communities</li></ul>

TRADICIONES CULINARIAS, RECURSOS ENDEMICOS, SAN JUAN DEL RÍO, QUERÉTARO.

Objetivos	Metodología	Contribuciones
 <ul style="list-style-type: none"><li>*Tradiciones culinarias San Juan del Río, Qro.</li></ul>  <ul style="list-style-type: none"><li>* Recursos endémicos</li></ul>  <ul style="list-style-type: none"><li>* Platillos relevantes</li></ul>  <ul style="list-style-type: none"><li>* Identidad local</li></ul>	 <ul style="list-style-type: none"><li>*Recorridos teóricos</li></ul>  <ul style="list-style-type: none"><li>*Visitas de campo a localidades</li></ul>  <ul style="list-style-type: none"><li>*Recolección de recursos endémicos</li></ul>  <ul style="list-style-type: none"><li>*Elaboración de platillos</li></ul>	 <ul style="list-style-type: none"><li>*Primera inmersión en comunidades de San Juan del Río, para conocer tradiciones culinarias y recursos endémicos.</li></ul>  <ul style="list-style-type: none"><li>* Avances en procedimientos y técnicas culinarias de comunidades</li></ul>

Culinary traditions, endemic resources, identity, San Juan del Río, Querétaro

Tradiciones culinarias, recursos endémicos, identidad, San Juan del Río, Querétaro

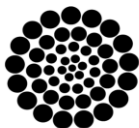
Resumen

**Citation:** Pérez-Bravo, Julia. Culinary traditions, endemic resources, San Juan del Río, Querétaro. Journal Economic Development. 11[31]-1-7: e61131107.



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## Introduction

In recent years, Mexican food has gained great relevance because, according to the official website of UNESCO (2015), 'traditional Mexican cuisine is a complete cultural model that includes agricultural activities, practices, rituals, ancestral knowledge, culinary techniques and customs, as well as ancestral modes of community behaviour.

The author Paz Álvarez (2023), via the El País website, stresses that 'There are only four cuisines in the world declared Intangible Cultural Heritage of Humanity. Mexican cuisine is not only one of them, but it was the first to obtain this distinction from Unesco'. Likewise, on 20 June 2023, the gala The World's 50 Best Restaurants 2023 was held in Valencia, Spain, where Mexico stood out for its culinary art, obtaining three places on the list of the world's 50 best restaurants, Paz Álvarez, (2023) points out, this has led each state to be concerned about extolling its local gastronomy; however, it is known that as far as the municipality of San Juan del Río, Querétaro, is concerned, the local gastronomy is little known; local gastronomy is little known, with the exception of the barbacoa de borrego (cooked in a hole in the ground with maguey stalks) Animal Gourmet (2024); since according to various gastronomic rankings carried out at the national level, Querétaro does not appear in any of them, however, the Royal Ibero-American Academy of Gastronomy named Querétaro as 'The Ibero-American Capital of Gastronomy' in the previous year,

### 1. Objective

The objective of this research was to know part of the culinary traditions of San Juan del Río, Querétaro, in order to find some relevant or identifiable dishes that are customary, elaborated with endemic resources and that can give identity to the municipality.

## 2. Theoretical framing

### 2.1 Culinary traditions

According to the Royal Spanish Academy (RAE) a tradition is anything that is transmitted from generation to generation, a story, a legend, a doctrine, a rite, a game, and among them is the elaboration of food.

A culinary tradition can be said to be a replicated behaviour related to food that has been passed down through time and generations. That is to say that a certain food was selected by social groups in a community and its preparation was accepted to such a degree that it was replicated in the same groups by new generations until it became a tradition.

This can be seen in the statements of Harris (1989) quoted by J. Hernández Ramírez (2018) that food is not only what can be consumed, but also what each culture selects from a wide range of possible products as a result of complete historical processes that give rise to specific culinary traditions.

This is also affirmed when it is said that gastronomy refers to the study and practice of the preparation, presentation and appreciation of food and drink. It includes cultural, historical and social aspects related to food, as well as culinary techniques and the creation of dishes. It is considered a form of cultural and artistic expression that varies throughout the world.

From a culinary perspective, gastronomy is defined as the art and science of food preparation, involving the selection of ingredients, cooking techniques and the creation of dishes that satisfy both sensory and nutritional aspects. It involves creativity and innovation in cooking.

From an anthropological perspective, gastronomy is considered a fundamental component of human culture, encompassing the production, distribution, preparation and consumption of food, including rituals, traditions and symbolism related to food, and plays an important role in the cultural identity of societies.

### 2.2 Characteristics of gastronomy

Gastronomy, at its core, is characterised as a field that fosters culinary creativity, where chefs and cooks experiment with ingredients, flavours and culinary techniques to bring unique and delicious dishes to life. It also reflects cultural diversity worldwide, as each region and culture has its own culinary traditions, ingredients and distinctive dishes.

The aesthetics and presentation of the dishes are fundamental, being considered a true gastronomic art that includes the arrangement on the plate and the choice of the vase. Gastronomy also requires a high level of technical skill, as chefs must master a wide variety of culinary techniques, cuts of ingredients and methods of preparation. Finally, it is a constantly evolving field, where innovation and the search for new ways of combining ingredients and techniques are a constant.

### 2.3 Background of gastronomy

The background of gastronomy dates back to ancient civilisations, where the preparation and consumption of food plays a crucial role in survival and culture. According to Echeverría (2006), Egyptian gastronomy used aromatic herbs and spices in its dishes while ancient Chinese cuisine had more balance of flavours. He also points out that ancient Rome had advanced cooking techniques and valued ostentation in their banquets. It is considered that there is a long history of the evolution of gastronomy over the centuries and its diversification in the different cultures of the world.

### 2.4 Endemic resources

Endemic resources are considered to be those that are naturally available in the environment in which the community is established, defined by Gómez Peralta (2005) as territorial space, demarcated and defined by possession; although this availability could also be induced through its immersion in the environment and its adaptability to the environment, citing the example provided by the Federal Consumer Protection Agency in Mexico (PFC) (2024), which mentions Aloe Vera, originally from the Arabian Peninsula and widely used in Mexico for various purposes.

This is so true that Good and Corona (2011) and Mintz (2003) cited by J. Hernández (2018) affirm that what is consumed is not only related to availability in the ecological environment, but is also the result of complex historical, cultural and social processes that end up deciding culinary traditions.

For example, the Nopal cactus, which according to the Mexican Ministry of Agriculture and Rural Development (2024) is native to Mexico, has become part of gastronomic and cultural traditions that enrich us. It is considered endemic to Mexico, specifically to the central and northern zone, and although it can be cultivated in various parts of the world, it is not considered or used as human food in all parts of the world, as it is put to various uses, such as raw material for medicine, chinchilla or tunas, or simply relegated to being cattle pasture. However, in Mexico it has been traditionally used and exploited since pre-Hispanic times in gastronomy.

Endemic resources of Querétaro, Mexico used in gastronomy or culinary traditions. It should be clarified that not all the natural resources used in the gastronomy of the State are really endemic, but their adaptation to the region makes them widely available and used in local gastronomy, so we can find resources of plant and animal origin. Only a few are mentioned here for reasons of space and for their probable use in the elaboration of pro-local-identity dishes.

#### Box 1

Table 1

Plant and animal resources used in the locality

Vegetales	Animales o insectos
Nopal	Chapulín
Jitomate	Xamues
Quelite	Ganado vacuno
Verdolaga	Ganado bovino
Maíz	Aves de corral
Calabaza criolla	Conejo
Camote morado	Gusanos de maguey
Chile	Escamoles
tuna	Jumiles
Pitaya	Hormigas chicanas
biznaga	Liebre

Source: Own Elaboration

### 2.5 Identity

A community is a geographical place with defined boundaries, but it is also a group of people who share a common history, values, goals and a shared identity.

In a community, members interact regularly and engage in joint activities that meet their individual and collective needs' McMillan & Chavis, (1986). Thus a community is not only a physical place with boundaries, but also a group of individuals who share a common history and common goals, and engage in activities that strengthen the collective identity by satisfying their individual and group needs.

This identity is shaped by particular characteristics that distinguish a group from others, a sense of belonging that fosters cohesion and attachment among its members. Identity, according to the RAE, is the set of traits of an individual or a group that characterise them in relation to others. In this sense, identity can manifest itself in various fields, including gastronomy.

When talking about a gastronomic identity, Acosta, (2016), proposes it as a relationship of correspondence and correlation between the personality of the subject under study and the personality of elements of gastronomy (food and beverages).

Dish identity is, then, that dish that is related to or identifies a specific locality. And it becomes a gastronomic emblem that identifies that locality in relation to others. Gastronomy, in this sense, functions as an element that reinforces the sense of belonging and allows a community to recognise and value its own culture through its flavours, ingredients and preparation methods.

And as stated in various national media, the state of Querétaro, specifically San Juan del Río, does not have a dish that provides that common identity among the inhabitants of the locality, which is why it is known that various events have been deployed in search of those dishes that could lead to identify the community, among these events is the field research by various groups and with different objectives and means of dissemination, and that is the reason why it is known that the state of Querétaro, specifically San Juan del Río, does not have a dish that provides that common identity among the inhabitants of the locality, which is why it is known that various events have been deployed in search of those dishes that could lead to identify the community objectives and means of dissemination.

However, in the current year 2024, chef Soriano in Animal Gourmet affirms that there is a culinary tradition in Querétaro, but that these have been lost due to various factors, highlighting the arrival of people from different states and new gastronomic attractions for purely tourist purposes such as cheese and wine.

However, the rescue of gastronomic identity is still an ongoing effort and the inhabitants of Querétaro, together with chefs and researchers, continue to explore and rediscover those dishes that could represent the essence of the region. This search for a culinary identity involves not only the rescue of recipes, but also the vindication of a sense of belonging and the consolidation of a gastronomic culture that, despite changes and external influences, continues to be a reflection of the character of its community. This, following the idea of Melendez and Cañez (2010), can result in the transfer of the preparation of traditional foods found in the domestic sphere to the commercial sphere as a means of improving the economy of families or the locality.

### 3. Methodology

Mixed documentary and field research is used; exploratory and descriptive; qualitative approach, hypothetical deductive method with observation and guided interview tools.

We went to the communities, making direct contact with the housewives and regional cooks so that they could share their traditional recipes, with their consent and the support and accompaniment of the representative of the association of restaurateurs of Querétaro AC.

### 4. Results

The research is very ambitious and wide-ranging, it is still in its early stages, for the time being it has been possible to record culinary procedures and techniques in three communities of San Juan del Río, Querétaro, that is, recipes for dishes that are traditionally prepared with endemic or available resources, obtained through direct surveys, mainly of housewives, and also through observation of the preparation and, of course, tasting of these dishes.



In other words, the reality was studied in its natural context, interpreting and explaining culinary techniques and procedures with the people actually involved in the preparation of traditional dishes.

It was learned that the people in various communities in San Juan del Río, Querétaro, consume their own resources that they themselves care for, sow, harvest, feed in the case of animals. They still continue with traditions that were created previously due to the existence of a need, and that in spite of having more food resources and equipment that facilitates the preparation, they give preference to their own customs that result in an exquisite seasoning.

It was possible to learn about various traditional and representative dishes from the communities of San Juan del Río, Querétaro, although only the three most representative dishes were prepared and with the most commonly used culinary technique, since it was also learned that a single dish can be prepared in various ways and according to the resources available to each family.

It was possible to learn about the efficiency in the use of the different resources available to each participant in the research and their use in their daily diet, and that these are really representative and traditional in the community, as they are consumed regularly. The participants in the research kindly shared their culinary techniques and their endemic or available resources, as well as part of their learning history, making it clear that necessity forced them to make the best use of the resources to be able to feed or economically support their families and occasionally other members of the community.

## 5. Conclusions

This paper addresses the preservation and promotion of the culinary traditions of San Juan del Río, Querétaro, as part of its cultural identity. It is mentioned that Mexican cuisine is recognised as Intangible Cultural Heritage of Humanity and is recognised in international rankings, underlining its relevance in haute cuisine.

However, this work highlights that many local cuisines, such as that of San Juan del Río, remain invisible, which represents a challenge and an opportunity for the research and promotion of these traditions. It is established that dishes made with endemic resources are a central element in the traditions of the locality and are closely linked to the ecology and local history, as well as being passed down from generation to generation, reflecting the identity of the communities of San Juan del Río.

It should also be noted that traditional ways of preparing food are disappearing due to modernisation and external influences. Although the State of Querétaro has culinary traditions, these have been diluted by the arrival of new gastronomic and tourist trends. To address this problem, a collaborative approach involving local communities, researchers and chefs in the rescue and documentation of traditional recipes is necessary to contribute as an element of cultural identity. In general, the connection between gastronomy, endemic resources and community identity is an issue that deserves greater attention in research and cultural policy, not only in Querétaro, but throughout the Mexican Republic.

The results found coincide with the work of Ruiz Olivares, V.E. (2017) who studied the traditional cuisine of Villa Progreso, Querétaro, concluding that it is fundamental to cultural identity and depends on the use of local ingredients obtained through harvesting, likewise, it highlights the generational transmission of culinary knowledge and the importance of endemic resources in everyday food practices [11][31][1-7]. Similarly, the research by Camarena Gómez, D. M. J. (2015). on gastronomy in Sonora also coincides in highlighting how culinary knowledge and practices reflect cultural identity, being essential to connect the past and the present through local cuisine.

On the contrary, it differs with the study by Duhart (2004) cited by Meléndez and Cañes (2010) who stated that globalisation has negatively affected culinary traditions in many regions, while the results from San Juan del Río show a continuity in the use of traditional techniques despite external influences, which may be linked to gender and social class differences.

The research work in San Juan del Río was carried out in communities far from the municipal capital and with economic disadvantages, an aspect that was not considered as an indicator or study variable, which is considered by Montecino (2006, October 11) who mentioned that gastronomy is intrinsically linked to gender and social class differences.

Research with other perspectives on gastronomy or cuisine can be found, such as that of Ruiz Olivares, V.E. (2017) who studied the traditional cuisine of Villa Progreso, Querétaro, with a focus on food sovereignty, an approach that could be integrated into future research in San Juan del Río to enrich the understanding of the ecological and social impact of these traditions.

### Conflict of interest

The authors declare no interest conflict. They have no known competing financial interests or personal relationships that could have appeared to influence the article reported in this article.

### Authors' Contribution

The contribution of each researcher in each of the points developed in this research, was defined based on:

*Pérez-Bravo, Julia*: elaborated the project idea, research method and technique, state of the art, the design of the field instrument and application, carried out the data analysis and results systematization and carried out the writing of the paper.

### Funding

The research did not receive any funding.

### Abbreviations

PFC Procuraduría Federal del Consumidor  
RAE Real academia Española

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#### Background

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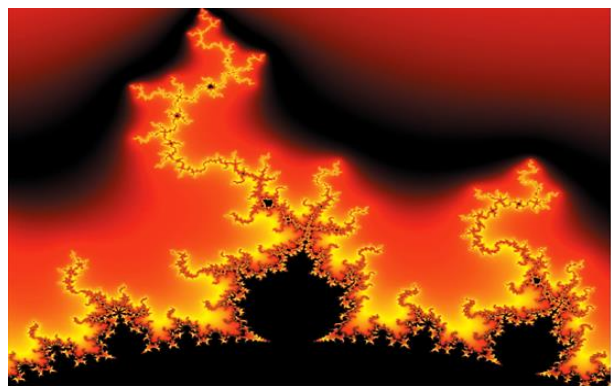


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