Volume 5, Issue 9 - July - December - 2019

ECORFAN

Journal-Republic of Cameroon

ISSN-On line: 2414-4959

10th ANNIVERSARY ECORFAN Special Edition

ECORFAN Journal-Republic of Cameroon, Volume 5, Issue 9, July-December 2019, is a journal edited semestral by ECORFAN. S/C Zacharie kamaha, Street: Boulevard de la Liberté, Apartamente: Immeuble Kassap, Akwa-Douala. P.C.: 5963, Republic of Cameroon.WEB:www.ecorfan.org/republicofcameroon/, journal@ecorfan.org. Editor in Chief: CHIATCHOUA, Cesaire. PhD. ISSN-On line: 2414-4959. Responsible for the latest update of this number ECORFAN Computer Unit. ESCAMILLA-BOUCHÁN, Imelda, LUNA-SOTO, Vladimir, S/C Zacharie kamaha, Street: Boulevard de la Liberté, Apartamente: Immeuble Kassap, Akwa-Douala. P.C.: 5963, Republic of Cameroon, last updated December 31, 2019.

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Presentation of the Content

In the first article we present, *Strategies for increasing the terminal efficiency of an Educational Degree Program in a University*, by GONZÁLEZ-TIRADO, Blanca Delia, OLACHEA-PARRA, Luis Fernando, LIMÓN-ULLOA, Roberto and RUIZ-SALAS, Nidia Carolina, with ascription in the Instituto Tecnológico de Sonora, as following article we present, *Proposal of Thematic Axes for the Model of Certification of Social and Labor Responsible Companies in the state of Guanajuato*, Mexico, by NAVARRETE-REYNOSO, Ramón, RAMOS-ESTRADA, Cecilia, RODRIGUEZ-LARA, Ricardo and LIRA-TORRES, Guillermo, with ascription in the, Universidad de Guanajuato, as following article we present, *Strategies to boost economic and tourist development, under the scheme of Magical Towns in Xicotepec de Juárez, Puebla*, by VELÁZQUEZ-VARGAS, José Rubén, CRUZ-CABRERA, Clotilde, CARMONA-GONZÁLEZ, Juan Carlos and VAZQUEZ-ARROYO, Felipe, with ascription in the Universidad Tecnológica de Xicotepec de Juárez, as the last article we present, *Performance and Quality of Chiltepín (Capsicum annum L.) Produced Under Open Air Conditions in Xicotepec of Juarez, Puebla*, by GALLARDO-SANDOVAL, Araceli, MORALES- GUZMÁN, Víctor, MORALES-CALVA, Esteban and RIOS-TORRES, Ana María, with adscription at the, Universidad Tecnológica de Xicotepec de Juárez

Content

Article **ECORFAN Journal- Republic of Cameroon**
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Strategies for increasing the terminal efficiency of an Educational Degree Program in a University

Estrategias para el incremento de la eficiencia terminal de un Programa Educativo de Licenciatura en una Universidad

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DOI: 10.35429/EJRC.2019.9.5.1.5 Received July 20, 2019; Accepted December 15, 2019

Abstract

The design of strategies to increase the terminal efficiency of the Educational Program (EP) Bachelor of Administration of the Sonora Technological Institute (ITSON) Empalme Campus, in order to contribute to compliance with the indicators of the external accrediting body Council of Accreditation in Sciences Administrative, Accounting and Related (BAAARS), is the objective of this investigation. One of the main problems of this Bachelor, is the low terminal efficiency. To counteract this situation, it was decided to apply the methodology of Hernández (2011), who proposes four stages: set goals, define problems (gap) and define livelihoods, strategic ideas of modernization and their scenarios (awareness) and formulation of the strategy. The results obtained were differences of the data of the Comprehensive System of School Paths (SITE) of the ITSON with the data of the Educational Program (EP), a database was generated with specific information of the generational cohorts 2013-2017, 2014-2018 and 2015 - 2019, the relationship with the cultural, social services and school registration departments of the institution was strengthened, a report was made of the current situation of the students, the creation of an individual action plan, all of the above aimed to increase terminal efficiency.

Academic career, Graduate, Terminal Efficiency, Accreditation

Resumen

El diseño de estrategias para el incremento de la eficiencia terminal del Programa Educativo (EP) Licenciado en Administración del Instituto Tecnológico de Sonora (ITSON) Campus Empalme, con la finalidad de contribuir al cumplimiento de los indicadores del organismo acreditador externo Consejo de Acreditación en Ciencias Administrativas, Contables y Afines (BAAARS), es el objetivo de esta investigación. Uno de los principales problemas de esta Licenciatura, es la baja eficiencia terminal. Para contrarrestar esta situación, se decidió aplicar la metodología de Hernández (2011), quien plantea cuatro etapas: fijar objetivos, definición de problemas (brecha) y definir sustento de cambio, ideas estratégicas de modernización y sus escenarios (sensibilización) y formulación de la estrategia. Los resultados obtenidos fueron diferencias de los datos del Sistema Integral de Trayectorias Escolares (SITE) del ITSON con los datos del Programa Educativo (EP), se generó una base de datos con información específica de las cohortes generacionales 2013- 2017, 2014 – 2018 y 2015 – 2019, se fortaleció la vinculación con los departamentos de cultural, servicios social y registro escolar de la institución, se llevó a cabo un reporte de la situación actual de los estudiantes, la creación de un plan de acción individual, todo lo anterior encaminado a elevar la eficiencia terminal.

Trayectoria académica, Egresado, Eficiencia Terminal

Citation: GONZÁLEZ-TIRADO, Blanca Delia, OLACHEA-PARRA, Luis Fernando, LIMÓN-ULLOA, Roberto and RUIZ-SALAS, Nidia Carolina. Strategies for increasing the terminal efficiency of an Educational Degree Program in a University. ECORFAN Journal- Republic of Cameroon. 2019, 5-9: 1-5

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Introduction

The Higher Education Institutions (HEI), in their desire to ensure the educational quality of excellence, submit their educational programs to accreditation processes in order to know the strengths and areas of opportunity. In the case of the Educational Program (EP) under study, the Board of Accreditation in Administrative, Accounting and Related Sciences (BAAARS), is the body to which it is subject to evaluation. For BAAARS (2018), obtaining educational accreditation is a hallmark that ensures the quality of educational programs. To obtain this valuable badge, the Higher Education Institution must meet quality standards in different areas such as; the Curriculum, Integral Training, Services for learning, Infrastructure and equipment, among others.

In this EP, within its process of continuous improvement, is the fulfillment of the recommendations issued by the accrediting body, which highlights the category of Students. Therefore, this research is focused on increasing the indexes of terminal efficiency through strategies that allow compliance with the indicators of the accrediting body.

Justificaction

Since terminal efficiency is one of the indexes that has the greatest impact on the productivity of an educational program, it is important to determine the causes that prevent graduates from carrying out their degree process. For this reason, having strategies that help increase the indexes of terminal efficiency will allow the EP to obtain benefits, among others; to comply with the indicators of the external accrediting body, to have graduates who through their university degree can quickly position themselves in the workplace, have a quality educational program with a good image and also the recognition of prospects to enter this race. The above will serve to replicate at the institutional level the strategies implemented in this EP and which, in turn, allow the university to increase the indexes of terminal efficiency in all its educational programs.

Problem

For HEI, it is very important to have graduates, since this allows them to improve the terminal efficiency indicators and at the same time counteract the lag and dropout; however, in the national context there is evidence that for every 10 young people who enter the university, only five manage to obtain the professional degree, that is, that the other half only graduated as an intern from the institution or defected in some semester of the degree (Hernández, 2015). In the Technological Institute of Sonora (ITSON), educational programs live closely this reality, specifically in the EP of Administration of the Empalme Campus is a latent problem among its graduates, since according to an analysis made in the last three corresponding generations to the cohorts 2013-2017, 2014-2018 and 2015-2019, approximately 30% of the students who entered were entitled. For all of the above, the following question arises, does carrying out a study of the academic causes for which the students do not graduate, will allow the Educational Program of Graduate in Administration, establish the relevant strategies to increase the terminal efficiency of their graduates?

Hypothesis

An Educational Program has better results in an accreditation process, when strategies are generated to comply with the indicators.

Objective

Design strategies to increase the terminal efficiency of the ITSON Empalme Bachelor of Education Education Program, in order to contribute to the compliance of the indicators of the external accrediting body BAAARS.

Theoretical framework

The school trajectory is defined as the path followed by a student or the group of students of the same cohort in a certain time since their entry, permanence and discharge; that is to say, it is the monitoring that an institution carries out of the transit of its students with respect to their school performance, approval, reprobation, with the purpose of implementing the necessary actions that reduce the lag and dropout and thereby, improve terminal efficiency (ITSON, CDA, 2015).

ISSN-On line: 2414-4959

The generational cohort is the group of students who enroll in a career and remain in it until the end of their curriculum or abandonment (ITSON, CDA, 2015).

At graduation, students who covered the total subjects of their curriculum at the time it is observed are considered, even if they have not covered other degree requirements (ITSON, CDA, 2015).

For the SEP (2016), the graduate student is the student who is awarded a certificate of completion of studies, once an educational level is concluded. Meanwhile, in the description of the Graduate, the student is considered that, having approved all the subjects and established requirements of a study program during the immediate previous school year, the corresponding certificate of studies is granted (SEP, 2019).

Terminal efficiency is defined as the comparative relationship between the number of students who enroll for the first time in a professional career, starting from that moment in a certain generation (cohort) and who manage to graduate after having accredited all the subjects in the time stipulated by the study program (ITSON, CDA, 2015). The calculation of the terminal efficiency of a cohort of any educational level is used under the formula of the number of graduates of a cohort among the base number of the cohort (SEP, 2019).

The efficiency indicator is the number of students who graduate from a certain educational level in a school year, for every one hundred students of the initial cohort of the same level (SEP, 2019).

It is important to highlight that of the indicators that determine the way in which an educational system is operating, the terminal efficiency will undoubtedly be the first to reflect the state of things to talk about the quality of the teaching-learning process, plans and programs, Evaluations of both educational and diagnostic achievement of teachers, educational infrastructure, among others (SEP, 2019).

The terminal efficiency by cohort is represented by the cohort students who graduated in the maximum time established in their curriculum (SITE, ITSON, 2018). While the terminal efficiency to date, it is the students of the cohort who have graduated to the date of information extraction (SITE, ITSON, 2018).

The terminal efficiency by cohort at the first year, are the students of the cohort who graduated up to one year after the time indicated in their curriculum (SITE, ITSON, 2018). And the efficiency of qualification by cohort for the second year, is represented by the students of the cohort who graduated up to two years after the time indicated in their curriculum (SITE, ITSON, 2018).

Accreditation is a process through which a Higher Education Institution (HEI) submits its academic programs to an evaluation in order to obtain recognition by a recognized and endorsed non-governmental organization that its academic offer meets standards quality. Therefore, it constitutes a reliable source of credibility and trust (BAAARS, 2018).

Among the benefits granted by BAAARS are: access to institutional support programs that contribute to the integral improvement of its human capital, equipment and infrastructure; public recognition as a prestigious institution; exchange of best practices and expansion of institutional alliances and the satisfaction of demand and expectations of society with quality educational services. The accreditation process benefits; to the academic program, to the Institution, to students and teachers, to future employers and to education in Mexico (BAAARS, 2018).

Research Methodology

Participants

For the purposes of this research, the members of the last three generational cohorts, 2013-2017, 2014-2018 and 2015-2019, which comprise a total of 44 students, were considered participants.

ISSN-On line: 2414-4959

Instruments

Two institutional inputs were used to obtain and analyze the data; the platform of the Comprehensive System of School Paths (SITE), which includes the list of the students belonging to the generational cohorts, the history of the students referring to dropout rates, disapproval by course, losses, advancement of English, dropout and averages per course.

The second input consists of a sheet with data of the students of the generations under study, which includes ID, name, program, curriculum, cell phone number, email, average, real cohort cycle, apparent cohort cycle, date of admission to the cohort, discharge date, failure rate, degree date, degree option, last status in the curriculum, plan subjects, tuition due, indicator of school documents and library debit.

Process

In order to design the strategies, the methodology of Strategic Planning of Hernández (2011) was taken as a basis, which proposes four stages: setting objectives, defining problems (gap) and defining change support, strategic ideas of modernization and their scenarios (awareness) and strategy formulation.

Results

The implementation of the four stages of Hernández (2011), yielded significant results for the design of the strategies, as described below:

Stage 1. Set objectives. A diagnosis of the situation of the generational cohorts (2013-2017, 2014-2018 and 2015-2019) was carried out. The analysis allowed identifying the elements proposed by the SITE, as a first objective, making a comparison through a sheet with real data of the members of the cohorts of the EP of the ITSON Empalme LA, establishing strategies and raising the terminal efficiency index.

Stage 2. Definition of problems (gap) and define change support. Based on what was observed in the trajectories of the generational cohorts (2013-2017, 2014-2018 and 2015-2019), the need was found to have indispensable information for the real and objective study of the situation of the Graduate Educational Program in Administration, with respect to the school trajectory, specifically with regard to qualification in order to comply with raising the terminal efficiency index.

3. Strategic ideas of modernization and its scenarios (awareness). Once the problems or areas of opportunity were detected, the possible strategies were listed. one). Identification of the students that make up the three generational cohorts under study. two). Actual academic situation of each of the students that make up the three generational cohorts. 3). Evaluation of compliance with the requirements established in the ITSON titling regulations and 4). Report on the current and individual situation of the cohort members.

4. Strategy formulation. Regarding the identification of the students that make up the three generational cohorts under study, the strategy consisted of requesting information from the school registration area, which redirects to consult the platform of Comprehensive Systems of School Paths (SITE), in the which some differences with the data were detected as well as the need to have specific information of the students of the EP of the ITSON Empalme LA.

Regarding the real academic situation of each of the students that make up the three generational cohorts, it was found that the SITE did not provide data such as cultural hours, hours of social service, tuition fees, library collections, lack of school documents as well as the compliance status of university English subjects.

Representing the above, critical and indispensable information to identify which students are in the capacity of graduates, who meet the qualification requirements, and that impact on terminal efficiency is achieved.

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In the strategy that corresponds to the evaluation of the fulfillment of the requirements established in the ITSON titling regulations, the link between the Educational Program of Bachelor of Administration with the institutional departments was achieved; cultural, social service and school registration, which allowed obtaining information for a database that included these student indicators.

And, finally, the report of the current and individual situation of the members of the cohort, allowed the student to become aware and know their school situation to design in coordination with the EP of LA an action plan that allows him to strategically obtain his job title.

Acknowledgments

We thank the Sonora Institute of Technology, which, through the Program for the Promotion and Support of Research Projects (PROFAPI), financed the present research.

Conclusions

The increase in the terminal efficiency of the ITSON Empalme Administration Graduate Educational Program was the objective of this research, and was accomplished through the design of specific strategies, based on the particular context of this career. The foregoing arises as part of the accreditation process of this program, in 2016, by the BAAARS organization.

The initial database gives a parameter of the current school situation of the students, however, it requires adding a greater number of indicators to identify the academic, non-academic, economic and even personal factors that affect the student's trajectory.

This study requires future research to help counteract the problems related to terminal efficiency, such as, low, dropouts, lag, disapproval, low school performance that negatively impact the accreditation of university educational programs.

The increase in the terminal efficiency indices will depend on the implementation of the strategies defined exprofeso for this research..

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ISSN-On line: 2414-4959

Article **ECORFAN Journal-Republic of Cameroon**
December 2019 Vol.5 No.9 6-16

Proposal of Thematic Axes for the Model of Certification of Social and Labor Responsible Companies in the state of Guanajuato, Mexico

Propuesta de Ejes Temáticos para el Modelo de Certificación de Empresas Sociolaboralmente Responsables del Estado de Guanajuato, México

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DOI: 10.35429/EJRC.2019.9.5.6.16 Received July 27, 2019; Accepted December 20, 2019

Abstract

Introduction: This article presents a literature review for the proposal of the dimensions of the certification model known as "Company with Social and Labor Responsibility", in the State of Guanajuato, Mexico. Method: Various national and international literature sources were analyzed on best practice in companies in labor and social matters, as well as other forms of certification for compa-nies in this field, in order to outline the body of knowledge of the investigation. Additionally, the concepts of Social Responsibility, Companies Social Responsibility (CSR), Environ-mental Responsibility, among others, they have been developed by various sources. Results: With this frame of reference of the investigation and taking into account the needs of the Subsecretaría del Trabajo y Previsión Social; There were generated nine axles for the certification model "Company with Socio-Labor Responsibility", which respond to the cur-rent needs in matter of socio responsibility of the companies and the society of the State of Guanajuato, Mexico. Discussion or Conclusion: The nine guiding principles relate to the functional areas of the company, the staff working on it and the contact there of with the community in which it operates.

Corporate Responsibility, Labor Responsibility, Certification Model

Resumen

Introducción: En este artículo se realiza una revisión de la literatura para la propuesta de las dimensiones del modelo de certificación "Empresa con Responsabilidad Socio-Laboral", del estado de Guanajuato, México. Método: Se analizaron distintas fuentes nacionales e internacionales en la literatura acerca de las mejores prácticas en las empresas en materia laboral y social, así como, otros modelos de certificación de las empresas en este ámbito, con objeto de esquematizar el cuerpo de conocimientos de la investigación. De manera adicional se revisaron los conceptos de Responsabilidad Social, Responsabilidad Social Empresarial (RSE), Responsabilidad con el medio ambiente, entre otros, mismos que se han desarrollado por diversas fuentes. Resultados: Con este marco referencial de la investigación y teniendo en cuenta las necesidades de la Subsecretaria del Trabajo y Previsión Social; se generaron nueve ejes para el modelo de certificación "Empresa con Responsabilidad Socio-Laboral", que dan respuesta a las necesidades actuales en materia de responsabilidad sociolaboral para las empresas y la sociedad del Estado de Guanajuato, México. Discusión o Conclusión: Los nueve ejes rectores se relacionan con las áreas funcionales de la empresa, el personal que labora en ella y el contacto de la misma con la comunidad en la que se desenvuelve.

Responsabilidad Social Empresarial, Responsabilidad Laboral, Modelo de Certificación

Citation: NAVARRETE-REYNOSO, Ramón, RAMOS-ESTRADA, Cecilia, RODRIGUEZ-LARA, Ricardo and LIRA-TORRES, Guillermo. Proposal of Thematic Axes for the Model of Certification of Social and Labor Responsible Companies in the state of Guanajuato, Mexico. ECORFAN Journal-Republic of Cameroon. 2019, 5-9: 6-16

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Introduction

In the 1980s, the idea that the contribution to well-being and quality of life should be the goal of all organizations began to be defended; be they government, civil society or private companies. Concepts such as sustainable development emerged, from fundamental issues such as the environment, social development, economic development and energy (UN, 1987).

Currently, the company does not perceive the company solely from a financial perspective, it is observed in its relationship with the social changes that occur in its environment, the greater globalization of the markets, its contribution to the wealth of the communities in which it operates and its awareness of the environmental impact.

Thus, the need to incorporate good governance practices or the opportunity of investing in a socially responsible manner has led organizations to rethink their management strategies, incorporating the implementation of socially and labor-responsible practices (Herrera et al., 2016).

The concept of responsibility comes from the Latin word “responsum”. Despite the breadth of the concept, the term can be summed up in the act of carrying out an action intentionally, assuming the consequences that these can entail.

Labor Responsibility (RL), traditionally refers to the obligation to comply with economic and social security benefits, in general normative or legal through which workers are protected from contingencies that may be caused by cause or on the occasion of work and which may be due to an accident at work or occupational disease, which arises from the employment relationship.

However, the RL in a broader sense, includes the issue of dignification of employment and implies having a "decent job" that according to the International Labor Organization (ILO), is a productive work for men and women in conditions of freedom, equity, security and human dignity.

It implies opportunities for productive work with a fair income, provides security in the workplace and social protection for workers and their families, offers better perspectives for personal development, the freedom to express their opinions, organize and participate in making of decisions that affect their lives and guarantee equal opportunities and treatment for everyone (Ghai, 2003).

It is unavoidable to comment that many jobs that claim to qualify as socially "decent" do not provide the salary that is needed, which does not allow them to live with "dignity" or have access to social security. Many of these jobs do not meet the fundamental principles and rights at work, nor do they give the opportunity to grow and improve, and in some others they are not allowed to express opinions, and even more, women are not given the same opportunities than men.

These jobs that do not meet the requirements presented above cannot be considered decent jobs. Being clear about the meaning of decent work is the starting point in the struggle for the dignity of work. Aspects such as equity, avoiding forced labor and child labor are extremely important within this concept (Aragón et al., 2011; Anker et al., 2003). But they are not the only ones, there are other important aspects to be developed in the internal sphere of the company, such as communication, collaboration and the development of skills, aspects that support the good working environment and the development of people.

Communication in a company, known as organizational communication, is a determining factor in its success; since good communication is synonymous with efficiency, organization and coordination, while bad communication can be grounds for inefficiency, disorder and internal conflicts (Hussey, 2013). On the other hand, the collaboration can be intra-business (within the company) or inter-company (between companies). It is about allowing both employees and partners to share knowledge and help each other in the context of a business process to execute it more efficiently (Haskins & Shaffer, 2013).

ISSN-On line: 2414-4959

Meanwhile, the development of skills is recognized internationally as a central role for companies that influences the processes of economic growth and international competitiveness of the countries (Choo & Bowley, 2007), allowing the personal growth of their employees and the organization itself.

However, the responsibility mentioned in this article not only implies that the employer must ensure through the management of the aspects found in the internal context of the company, but the responsibility that permeates abroad , in its economic, social and environmental dimensions. That is to say, it is talking about an integral responsible action, where there is a growing concern about the role that organizations play in the development of the people who make them up, and the communities in which they operate, as well as the impact they have and externalities that provoke in their social and environmental context.

In this way, we come to the concept of Corporate Social Responsibility (CSR), which has aroused a growing interest, not only from the academic level but also from a social dimension. It is a concept that seeks to fulfill the purpose of the company in its economic, social and environmental dimensions in its internal and external contexts, so it could be considered that CSR would also cover the RL. It is important to note that CSR, is comparable to the so-called Corporate Social Responsibility (CSR), in reality they have as main difference, that the first refers to companies in a literal sense, that is to say those for profit, and the second covers all organizations in general.

Thus, Corporate Social Responsibility is a process through which companies assume responsibility for the consequences of their actions through their products and in the complete chain in the economic, social and environmental fields, rendering accounts and exercising a dialogue with stakeholders. (Pradini and Sanchez, 2007) and according to the International Labor Organization, CSR refers to "the way in which companies take into account the repercussions that their activities have on society and in which they affirm the principles and values by those who are governed, both in their own internal methods and processes and in their relationship with other stakeholders (ILO), 2009.

In this article, different sources are reviewed in the literature about best practices in companies regarding labor and social responsibility, as well as other models of certification of companies in these areas, in order to outline the body of knowledge that serve to define the thematic axes of the socio-labor model of the state of Guanajuato, Mexico.

Methodology to be developed

For the realization of the theoretical framework and to define the thematic axes of the model, the methodology was partially applied based on the model for the scientific research of the management supported by the heuristic instruction, which allows decision making, prediction, explanation and understanding of the phenomena (González, 2002).

The study methodology is based on the problem statement, which recognizes the need to specify the thematic axes that define the socio-labor responsibility in the state of Guanajuato raised by the Undersecretary of Labor and Social Welfare of the State of Guanajuato, and that together with the review bibliographic gives rise to the conceptual theoretical framework and the state of the art. Based on the approaches, the scientific-methodological bases are determined to study the best practices in companies in labor and social matters, as well as other models of certification of companies in this field; for the solution of the problem posed, within the scope of the Guanajuato business sector. The theoretical foundations are selected for the development of a socio-labor-responsible business model that includes concepts that can be used to solve the problem posed.

The objective of the research is to propose a thematic axes proposal for a socio-professionally responsible business model applicable to the business sector of the state of Guanajuato, based on the redesign of the Certification Model of Companies with Socio-labor Responsibility, of the Undersecretary of Labor and Welfare Social, prepared in 2008.

The results obtained allow the deduction of conclusions that are used to validate the performance of the thematic axes for the proposed model, review the implications of the theory, as well as identify the limitations and future lines of research.

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Figure 1 shows the development of the methodological framework described above.

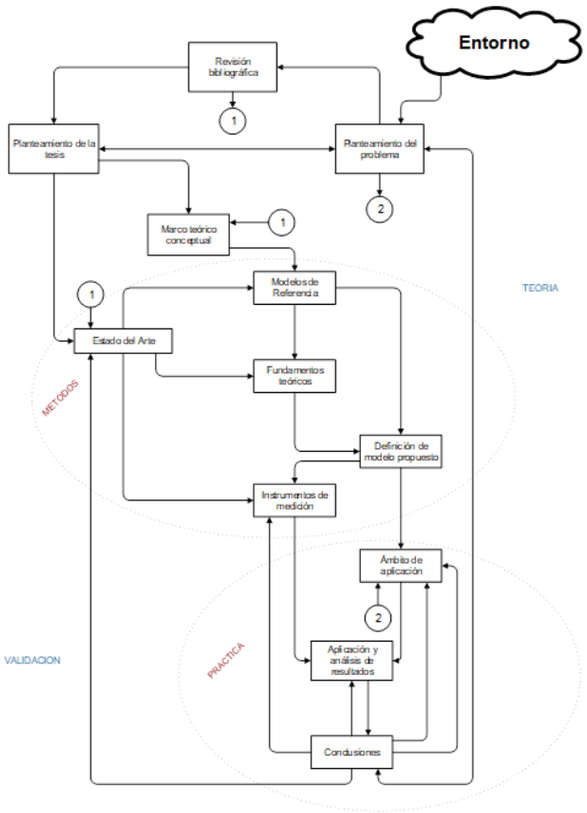

Figure 1 Methodological framework for the development of research. Adapted from González., 2002

Theoretical framework

Below is a brief review of the literature reviewed on best practices in companies in labor and social matters, as well as other models of certification of companies in this area. The review evaluated the concepts and information available to have as wide a view as possible of the research context.

Starting from the analysis of the "Certification Model of Companies with Socio-Labor Responsibility", of the Undersecretary of Labor and Social Welfare of Guanajuato, prepared in 2008; The evaluation and redesign of the dimensions that are managed in the 2008 model were carried out, which are: central ideology, contract, empowerment / leadership, decent work, organizational commitment, human development, communication, profitability-competitiveness and sustainable development.

Thus, in 2015, a correction, improvement and update proposal to the thematic axes of the model was made, reviewing the most updated national and international bibliographic references within the Latin American context. The basic literature that derives in the best practices in socio-labor matters was also analyzed.

With the idea described, the Mexican standard NMX-R-025-SCFI-2015 for labor equality between women and men was revised (CANCEL A NMX-R-025-SCFI-2012) that establishes guidelines for the certification of public organizations and private committed to equal opportunities at work and the professional and human development of its staff, recognizing their contribution to the development of the country, as a motivating factor and driver of a better positioning before society, strengthening the labor market and of the increase in the quality of the products or services offered by organizations. Which includes the following axes: equality and non-discrimination, social security, work environment, accessibility / ergonomics, and freedom of association (NM, 2015).

The ESR (Socially Responsible Company) badge in Mexico accredits the company to its public relations for voluntarily and publicly assuming the commitment to implement socially responsible management and continuous improvement, as part of its culture and business strategy (Cemefi , 2019). In order to evaluate and grant the badge, the company participates in an online self-diagnosis process, documented in four themes of social responsibility, which is verified by the Mexican Center for Philanthropy A.C. (Cemefi), through a self-diagnosis that allows the company to implement, document, compare and carry out a process of continuous improvement of its social responsibility management.

The ESR® Distinctive is not a certification, since it does not include audit procedures or direct inspection by the promoters. The topics cover the following elements: quality of life in the company, business ethics, linking the company with the community and, care and preservation of the environment (Cemefi, 2019). There are two other important distinctions by the Ministry of Labor and Social Welfare that were extensively reviewed.

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One of them is the "distinctive family-responsible company" of the Ministry of Labor and Social Welfare (STPS, 2019a). This is an instrument of diagnosis of the labor reality integrated by three groups of labor practices: work-family conciliation; equal opportunities or gender equity and combating workplace violence and sexual harassment.

For its part, the distinctive inclusive company "Gilberto Rincón Gallardo" recognizes companies with good labor practices in equal opportunities, inclusion, development and without discrimination of persons in vulnerable situations (STPS, 2019b).

In Latin America, there are certifications of good labor practices similar to those provided in Mexico. Some of those consulted were: the "Certification in good labor practices in MSMEs", of the Labor Directorate in Chile (DT, 2019). The certification seeks the fulfillment of the following requirements: to have a union, not to have sanctions to the regulations, to not have pending control processes and to make a commitment act. In Colombia, there is the "Certification of Good Labor Practices (BPL)", granted by private organizations Godoy Córdoba - INCONTEC. This certification evaluates the conformity of the organization's practices regarding: national labor standards for social security and occupational health and safety, good practices in the field of gender equity and good corporate social responsibility practices (ICONTEC, 2019).

In Brazil, there is the initiative of the Ethos Institute of Business and Social Responsibility to present the Ethos Indicators of Corporate Social Responsibility. They are a tool that has greatly helped companies in the sense of allowing them to incorporate in their management the concepts and their commitments to sustainable development. They are tools that in addition to enabling the unification of the concepts of corporate social responsibility, they also offer a list of aspects that can be evaluated by companies when making a self-diagnosis of their practices (IEERS, 2007).

Internationally and outside of Latin America, very important sources of labor and social responsibility were reviewed, among the fundamental ones is the Universal Declaration of Human Rights (UN, 1948).

Likewise, the conventions established by the International Labor Organization (ILO) after the world wars have laid the foundations for modern regulations and regulations within the context of the RL and CSR, as can be reviewed in ILO (1930, 1948, 1949, 1951, 1957, 1958, 1973 and 1981).

As part of these international sources, the documents prepared by the Global Reporting Initiative were reviewed, which is an independent institution that created the first global standard of guidelines for the elaboration of sustainability reports of those companies that wish to evaluate their economic, environmental and social performance. Within the scope of an organization, a sustainability report is a report that exposes information about its economic, environmental, social and governance performance.

The GRI has the active participation of representatives of human rights, labor rights, research, environmental, corporations, investors and accounting organizations. Its objective is a sustainable global economy where organizations responsibly manage their performance and economic, environmental and social impacts, and develop memories in a transparent way, in addition to making sustainability reports a common practice by providing guidance and support to organizations. The reports are based on the following economic, environmental and social performance indicators (GRI, 2013).

In the United States, the SA8000 is a standard for voluntary certification, which was created by an American organization called International Social Responsibility (SAI), with the purpose of promoting better working conditions. The SA8000 certification is based on international agreements on working conditions, which include issues such as social justice, workers' rights, etc. Some of the largest agricultural companies exporting bananas, pineapple, tobacco, wine, canned fruits and processed coffee, have this SA8000 certification (SAI, 2019).

In Spain, the SGE 21 standard exists in the year 2000 and is developed by Forética, Association of Companies and Professionals of Corporate Social Responsibility, whose purpose is to promote this area of management among organizations (AEPRSE, 2019).

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UNE 165010 EX also develops a social responsibility management system of the company, born from the interest shown by organizations in responding to the existing social demand in relation to the impacts generated by their activities in society and the environment. It was developed by AENOR (Spanish Association for Standardization) in 2009 (AENOR, 2009).

Also, the International Organization for ISO Standardization by its acronym in English 26000: 2010 of voluntary application emphasizes that the performance of an organization with in society and its possible impacts with the environment will be a critical part when measuring its integral performance and its ability to operate effectively. Providing guidance on the "Fundamental Principles and Subjects of Social Responsibility" that help integrate socially responsible behavior in any private, public and nonprofit organization, regardless of whether they are large, medium or small and operate in developed countries or in developing countries.

The seven principles specified in this rule are: accountability, transparency, ethical behavior, respect for the interests of interested parties, respect for the principle of legality, respect for the international norm of behavior and respect for human rights. On the other hand, it defines the scope of the social responsibility of an Organization, pointing out that the relevant issues must be identified and their priorities established, considering the following "Fundamental Matters of Social Responsibility": the governance of the organization, human rights, labor practices, the environment, fair operating practices, consumer affairs and active participation in community development (ISO, 2010).

For its part, the declaration of the International Labor Organization (ILO) concerning fundamental principles and rights at work, adopted in 1998, expresses the commitment of governments and employers 'and workers' organizations to respect and defend fundamental human values. The Declaration covers 4 areas: freedom of association and freedom of association and the right to collective bargaining; the elimination of forced or compulsory labor; the abolition of child labor, and the elimination of discrimination in respect of employment and occupation (ILO, 1998).

The Global Compact of the United Nations (UN Global Compact in English), is a voluntary initiative, in which companies commit to align their strategies and operations with ten universally accepted principles in four thematic areas: human rights, labor standards, medium environment and anti-corruption. Due to its number of participants, 12,000 in more than 145 countries, the Global Compact is the largest corporate citizenship initiative in the world. The Pact is a framework for action aimed at building the social legitimacy of corporations and markets.

Those companies that adhere to the Global Compact share the conviction that business practices based on universal principles contribute to the construction of a more stable, equitable and inclusive global market that fosters more prosperous societies. Responsible business actions build trust and social capital, while contributing to sustainable development and markets (UN, 2000). Currently, the United Nations Organization (UN) includes within its eight millennium development goals to guarantee the sustainability of the environment and foster a global alliance for development, objectives in which all companies in the world must be added (UN, 2019).

Of the 51 indicators in which Mexico committed efforts for 2015, total compliance was reported in 37 of them. However, it is also recognized that despite the progress made, there are challenges that we still have to face in order to achieve the prosperous, inclusive country with quality education that Mexico aspires to, work that will be completed within the framework of the 2030 Agenda (UN, 2019).

We can also find the guidelines of the Organization for Economic Cooperation and Development (OECD). The OECD groups 34 member countries and its mission is to promote policies that improve the economic and social well-being of people around the world. These guidelines are recommendations directed by governments to multinational companies that operate in OECD member countries or that are based in them. These are aimed at promoting the positive contribution of companies to economic, environmental and social progress worldwide (OECD, 2011).

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Development of the methodology and proposal

For the redesign of the model, the theoretical review was carried out in which it was sought to reach the frontier of knowledge, reviewing the bibliographic references on national and international models of social responsibility and labor responsibility to achieve an updated model. Subsequently, the written model defining the thematic axes was generated through working groups with the research group "Organization and Quality Management" of the University of Guanajuato and the Undersecretariat of Labor and Social Welfare of the State Government.

As a result of the bibliographic review of the conceptual framework, the nine thematic axes for the "Company with Socio-Labor Responsibility" certification model were proposed, which respond to the current needs regarding socio-labor responsibility for companies and society of the State of Guanajuato, Mexico.

The thematic axes are the following.

1. Central ideology
2. Working conditions and social security
3. Skills Development
4. Communication and cooperation
5. Belonging and satisfaction
6. Employment Dignification
7. Work harassment
8. Participation with the community
9. Linking with the environment

The proposed axes serve as a guide in the elaboration of the measurement instruments, which were carried out within the research group and subsequently piloted with the support of the Undersecretariat of Labor and Social Welfare of the State Government with the purpose of carrying out the relevant statistical tests which allowed to give reliability and validity to the items of these instruments used.

Se ha aplicado exitosamente el modelo developed in the evaluation of the companies that register for the "Company with Socio-Labor Responsibility" certification of the state of Guanajuato, Mexico; During the years 2015, 2016, 2017, 2018 and 2019.

Derived from these exercises, extremely valuable data have been generated about the socio-labor behavior of the participating companies of the state of Guanajuato, which can represent a good sample of the general situation in this area of the status that can be used for decision making in companies and the application of government public policies.

Four instruments specially designed to measure the application axes of the model were applied:

– Questionnaire for middle managers and company managers (47 items)
– Questionnaire to those who carry out the operation of the organization, call them operative or administrative (49 items)
– Verification instrument and evidence of security on site, that is, the participating company (20 items)
– A self-diagnosis, prerequisite to participate in the certification.

In addition, it should be noted that the different percentage weighting was performed for each instrument depending on the size of the company and the corresponding sector of the same. In the end, the company participating in the certification process receives a rating based on a level shown in table 1. The basic level 1 is at a minimum level of failing certification, below 3.5 the certification is not approved. The intermediate level of certification is between 4.0 - 4.4. Finally, the upper level 3 called "established for improvement" is between 4.5-5.0.

Primero	Básico	3.5 a 3.9
Segundo	En gestión	4.0 a 4.4
Tercero	Establecido para la mejora	4.5 a 5.0

Table 1 Certification Levels
Source: Self Made

In addition, each participating company receives an evaluation report of their rating broken down for each of the axes of the model and a feedback that allows them to have a guide for continuous improvement in each of them. In the following section, some of the general results and examples of the information provided to each of the companies are shown in their evaluation report, taken from the exercise carried out in 2015.

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Conclusions

In 2015, the evaluation of 123 companies registered for the "Company with Social and Labor Responsibility" certification of the Undersecretary of Labor and Social Welfare of the State of Guanajuato of the State of Guanajuato was carried out. Of which they had a share according to the following distribution (see table 2 and table 3):

Tipo	Participación porcentual
INDUSTRIAL	46.16%
COMERCIAL	18.18%
SERVICIOS	33.66%
	100%

Table 2 Percentage participation by sector in 2015
Source: Own Elaboration

Tamaño	Participación porcentual
GRANDE	23.64%
MEDIANA	22.73%
PEQUEÑA	40.91%
MICRO	12.72%
	100%

Table 3 Percentage share by size in 2015
Source: Own Elaboration

For that year of 2015, if the size-sector participation is compared (figure 2), the results allow us to observe that large-sized commercial enterprises participate little, while the micro and small services sector shows more interest in participating.

Figure 2 Participation size-sector
Source: Self Made

The participants in the certification were a total of 5074 people, which as seen in table 3; mostly from the industrial sector, this is because the majority of large participating companies were from this sector.

SECTOR	DIRECTIVOS	OPERARIOS	TOTAL	% general
INDUSTRIAL	122	3383	3505	69%
COMERCIAL	37	521	558	11%
SERVICIOS	57	954	1011	20%
TOTALES	216	4858	5074	100%

Table 3 Certification participants in 2015
Source: Own Elaboration

The results for the year 2015 (figure 3), show that of the participating companies only 13% have a level 3, have control over their current processes, their employees are satisfied and are able to establish improvement mechanisms that will allow them to stay in the market and grow.

	Total de empresas participantes	INDUSTRIAL	COMERCIAL	SERVICIOS
1. Básico	32	11	8	13
2. En Gestión	64	34	11	19
3. Establecido para la mejora	16	9	4	3
No aprobado	11	5	0	6
Participación total	123	59	23	41
Participación porcentual	100%	47.97%	18.70%	33.33%

Figure 3 Categories of the certifications granted in 2015
Source: Own Elaboration

Finally, some interesting graphs are presented that are provided to each company in its evaluation report, which can be used for continuous improvement in each of the axes of the certification model. In the first one (figure 4), the results of the operator questionnaires and the manager questionnaires are compared, where the performance of each axis can be observed with a spider web chart. In the second (figure 5), you can see the performance of each axis of the company evaluated versus the performance of each axis within the sector in which this same company participates; result this very valuable information for the continuous improvement of the company.

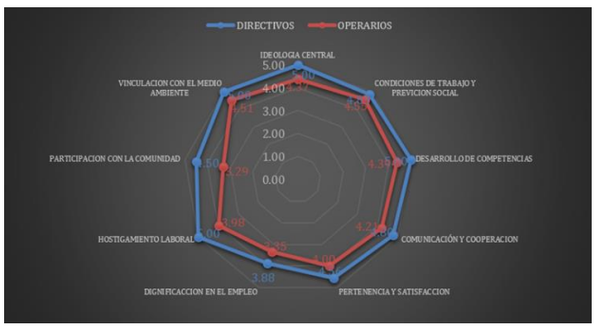

Figure 4 Comparison between manager questionnaire and operator questionnaire
Source: Self Made

Figure 5 Comparison between the results of each axis of the company and its sector
Source: Self Made

This article aims to present only the approach of these axes of the certification model and some of the results generated by the participating companies in 2015, without carrying out an extensive and statistical analysis of the data collected so far in subsequent years. In subsequent articles, the definitions of the thematic axes will be deepened and a statistical analysis of all the data collected over time will be carried out; as well as, the detailed evaluation of the designed model.

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ISSN-On line: 2414-4959

Article **ECORFAN Journal-Republic of Cameroon**
December 2019 Vol.5 No.9 17-23

Strategies to boost economic and tourist development, under the scheme of Magical Towns in Xicotepec de Juárez, Puebla

Estrategias para impulsar el Desarrollo Económico y Turístico bajo el esquema de Pueblos Mágicos en Xicotepec de Juárez, Puebla

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DOI: 10.35429/EJRC.2019.9.5.17.23 Received July 27, 2019; Accepted December 20, 2019

Resumen

Las condiciones cambiantes de la economía en nuestro País, aunadas a un riguroso entorno global; demandan alternativas que permitan lograr una administración eficiente de la producción de bienes y servicios para alcanzar las condiciones favorables que generen los medios materiales de bienestar para conservar el mismo nivel de vida en cualquiera de las entidades que lo conforman. Resulta prioritario conocer actualmente en el Municipio de Xicotepec de Juárez, Pue. su valor cultural para generar estrategias que fortalezcan su economía y contribuyan a la preservación de las raíces culturales y afianzar la sustentabilidad turística. Para tal efecto, se realizó un estudio empírico cuantitativo mediante un instrumento de investigación de campo para identificar las acciones de sustentabilidad emprendidas, análisis de mercado gestión de ventas, producción, operación, capacidad instalada, finanzas y uso de la tecnología en las Micro y pequeñas empresas (MYPES) de la localidad. Obteniendo diversos resultados que hacen notoria la carencia de una cultura empresarial que permita el adecuado desarrollo de la economía local. Por lo que se aspira contribuir con el diseño de estrategias que permitan lograr una sustentabilidad turistica y mejorar las condiciones económicas sociales y ambientales además de preservar tradiciones y raices culturales en Xicotepec de Juárez, Pue.

Sustentabilidad, Desarrollo, Estrategias

Abstract

The changing conditions of the economy in our country, coupled with a rigorous global environment; they demand alternatives that allow to achieve an efficient administration of the production of goods and services to reach the favorable conditions that generate the material means of well-being to preserve the same standard of living in any of the entities that comprise it. It is a priority to know currently in the Municipality of Xicotepec de Juárez, Pue. its cultural value to generate strategies that strengthen its economy and contribute to the preservation of cultural roots and strengthen tourism sustainability. For this purpose, a quantitative empirical study was carried out through a field research instrument to identify the sustainability actions undertaken, market analysis, sales management, production, operation, installed capacity, finance and use of technology in Micro and small local businesses (MYPES). Obtaining various results that makes evident the lack of a business culture that allows the proper development of the local economy. Therefore, we hope to contribute to the design of strategies that allow achieving tourist sustainability and improving social and environmental economic conditions as well as preserving traditions and cultural roots in Xicotepec de Juárez, Pue.

Sustainability, Development, Strategies

Citation: VELÁZQUEZ-VARGAS, José Rubén, CRUZ-CABRERA, Clotilde, CARMONA-GONZÁLEZ, Juan Carlos and VAZQUEZ-ARROYO, Felipe. Strategies to boost economic and tourist development, under the scheme of Magical Towns in Xicotepec de Juárez, Puebla. ECORFAN Journal-Republic of Cameroon. 2019, 5-9: 17-23

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Introduction

In the current globalizing global context, it is a priority to preserve the territorial identity roots that each region possesses since local economies are distinguished by certain natural and cultural heritage. Nature and culture have a high symbolic value, to the extent that the same community recognizes it as a value (Nieto Mejía, A., 2013).

Disseminating the values that various localities possess is achieved through activities that promote cultural, emotional and recreational experiences, which are carried out through tourism since the geographical space that contains various worldviews can be disseminated as a cultural identity. The territory as a cultural framework is not only a generator of values, but of memory and identification (Galimberti, C., 2013)

Identify those particularities that distinguish Xicotepec de Juárez, make a difference in what is produced and offered to visitors. The article aims to identify cultural wealth to develop proposals that strengthen the economy and contribute to the preservation of cultural roots and the strengthening of tourism sustainability and thus contribute to the design of strategies and incentives that allow improving social and environmental economic conditions.

Tourism in the Region

One of the main economic activities that generate foreign exchange is tourism; According to the World Tourism Organization (UNWTO), Mexico is one of the main tourist destinations in the world despite the decline from sixth to seventh place in the world ranking of countries that are visited by international tourists.

International tourist arrivals 2018			
Country	**2017**	**2018**	**Millions of arrivals 2018**
France	1	1	91.8
Spain	2	2	82.8
Mexico	**6**	**7**	**41.4**
Thailand	10	9	38.3
United Kingdom	7	10	36.3

Table 1 Ranking tourist activity
Source: own elaboration with data from the World Tourism Organization (UNWTO)

In addition, the cultural and gastronomic natural riches it offers, become competitive advantages that are attractive to attract visitors, so in the National Development Plan (PND, 2019-2024) one of the objectives is to position Mexico as part of the main tourist destinations through the sustainable use of national tourism heritage and natural resources. The state of Puebla occupies the sixth place in activities to provide lodging services.

Total tourist arrivals to lodging establishments		
Position	**Turistic center**	**January-April 2019**
1	Mexico City	3´418,250
2	Cancun	2´943,012
6	**Puebla**	**1´003,366**
9	Monterrey	772,617
10	Veracruz-Boca del Río	604,675

Table 2 Total tourist arrivals to lodging establishments
Source own elaboration with data from the National Tourist Business Council and Datatur of the Tourism Secretariat of the Federal Government

Xicotepec de Juárez, is a Municipality located in the Sierra Norte of the State of Puebla, hosted by the Sierra Madre Oriental, enjoys a mild climate. It rains during most of the year, with annual rainfall of 2,800 mm. It has an area of 312.30 square kilometers that place it in place 34 with respect to the other municipalities of the state. According to INEGI data until 2015, its population was composed of a total of 81,455 inhabitants, 38,757 women and 42,698 are men. With a total of 3,631 people who speak indigenous language (Náhualt, Totonaca and Otomí).

The distribution of the population by condition of economic activity is as follows: The Economically Active Population is 28,505 of which 27,324 is employed and 1,181 unemployed and 26,761 is made up of the non-economically active population (Students, Retired, home or with some limitation physical). It is a priority for the Municipality of Xicotepec de Juárez, Puebla; properly use the natural, cultural and gastronomic resources that it possesses, in order to attract tourists to this region and take advantage of the preference that travelers have for the state of Puebla and thus strengthen their economy, contribute to the preservation of cultural roots and strengthen sustainability tour.

ISSN-On line: 2414-4959

It also has the recognition of the Magic Town as it has symbols, legends and history being the scene of transcendental events for our country, during the pre-Hispanic and contemporary times, it also contributes to strengthening the national identity.

Currently tourism has positioned itself as one of the most prominent economic activities worldwide; Therefore, it is necessary to create tourist products that diversify the offer of attractions in the destinations and, thus, meet the needs of tourists. Ramírez Hernández (2019), since it has a diversity of attractions, the creation of sustainable tourism is evident and in order to achieve sustainable tourism it is also essential to have a sustainable education and consider reciprocity in the relations of education in the tourism. Maludin Medina (2018).

So the University is the catalyst that allows establishing the achievement of education with sustainability. According to Montalvo & Castillo (2018), it is necessary to facilitate the search for balances between social and environmental economic development in the localities and take advantage of their particularities through their characterization by identifying their degree of fragility, ordering them by areas of exploitation and conservation for the benefit of the local inhabitants, conserving the endemic natural resources and by specificities in a sustainable way creating self-sustainable tourism products that generate benefits to the local population.

Methodology

For this purpose, a quantitative empirical study was carried out by means of a field research instrument consisting of 62 items to try to understand and interpret reality, from the experience and perception of natural persons who develop activities in the Micro and Small Businesses sector. (MYPES) interviewed. To identify the following items: Operation, Use of Technology, Sustainability Actions, Production, Installed Capacity, Sales Management and Finance; which are applied in the Micro and Small companies located in Xicotepec de Juárez, Pue., and currently know in this Municipality, their cultural value to generate strategies that strengthen their economy contribute to the preservation of cultural roots and strengthen tourism sustainability.

Results

To determine the population, only those economic units that carry out activities in the following sectors were taken into consideration: Cultural and sports recreation services, and other recreational services were considered 44 Micro and Small Businesses (Mypes). 608 Mypes were chosen from the temporary accommodation and food and beverage preparation services sector. Adding a total of 652 companies representing the total population.

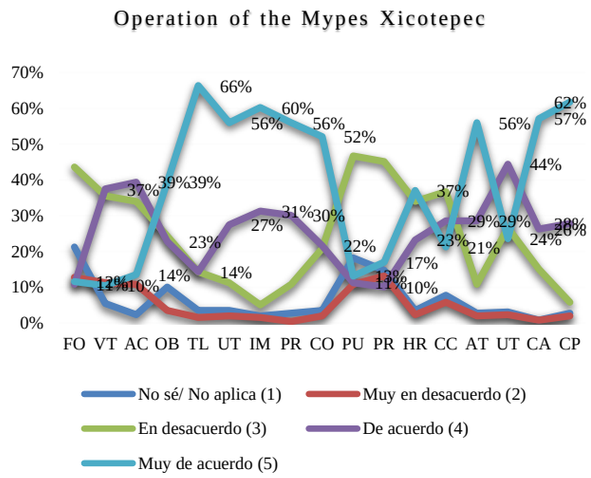
Companies of Xicotepec de Juárez, Puebla; excluding Educational and Government Institutions	
Exercise	(21197) Xicotepec
(11) Agriculture, animal husbandry and exploitation, logging, fishing and hunting	4
(21) Mining	5
(22) Generation, transmission and distribution of electrical energy, water and gas supply through pipelines to the final consumer.	6
(23) Construction	24
(31 - 33) Manufacturing industries	630
(43) Wholesale trade	89
(46) Retail trade	1808
(48 - 49) Transportation, mail and storage	30
(51) Information in mass media	21
(52) Financial and insurance services	33
(53) Real estate and rental services of movable and intangible assets	37
(54) Professional, scientific and technical services	69
(55) Corporate	0
(56) Business support services and waste management and remediation services	101
(71) Cultural and sports recreation services, and other recreational services	44
(72) Temporary accommodation and food and beverage preparation services	608
TOTAL	3509
Population of Companies under study 44 + 608 = 652	

Table 3 Population choice
Source: own elaboration with INEGI data

Subsequently, the sample size was determined with a margin of error of 5% based on the population size of 652 Micro and Small companies in Xicotepec, with a 95% confidence level

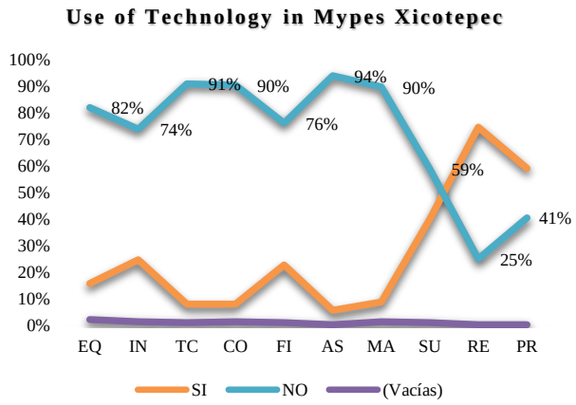
$$\frac{N*(a_c*0.5)^2}{1+(e^2*(N-1))}$$ Sample size = 242

In the field research, a total of 242 research instruments were applied to the aforementioned sectors.



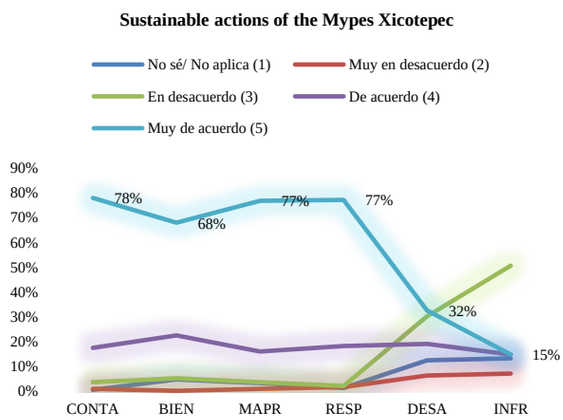
Graphic 1 Operation of the Mypes Xicotepec
Source Own Elaboration

Regarding the operation of the business, 66% of microentrepreneurs know the legal procedures to operate, 56% have knowledge to calculate the profit margin, have a corporate image in their businesses and affirm that the products are similar to those of In the same way, 56% do not know their SWOT, 58% do not advertise their business, 58% do not promote and 36% do not publish their customer service hours, 42% do not have control and registration of its customers, 57% are also interested in training, 62% compare the products of their suppliers.



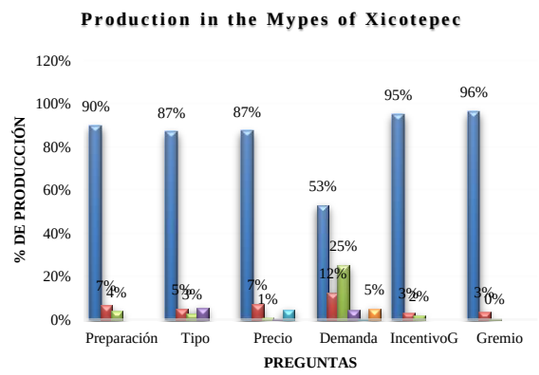
Graphic 2 Use of Mypes Technology Xicotepec
Source Own Elaboration

It is perceived that 82% do not use computer equipment, 74% do not have internet in their business, 91% do not use terminals for credit card collection, 90% do not have an automated switch or answering machine, 76% do not have a signature electronic, 90% do not have operating manuals, but 75% have customer records, 59% have policies and procedures.



Graphic 3 Sustainable actions in the Mypes Xicotepec
Source Own Elaboration

Regarding sustainability and pollution prevention, it was determined that 78% prevent pollution, 68% promote actions that generate well-being for their staff, 77% avoid bad practices such as bribes and corruption, 77% their behavior is ethical with Your clients.

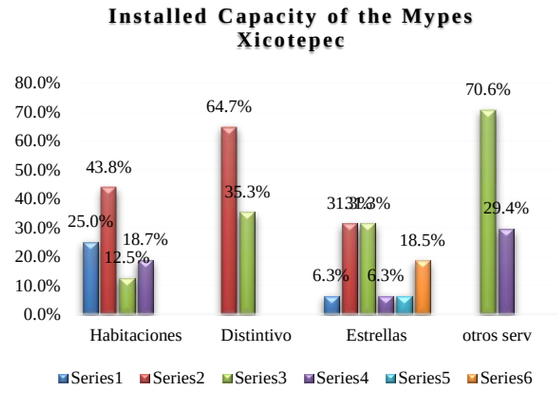


Graphic 4 Production in the Mypes Xicotepec
Source Own Elaboration

The Production of Mypes in Xicotepec is focused on producing food by hand in 90% of its businesses, 7% use technology devices and traditional regional food is best selling with 87%, prices are very accessible.

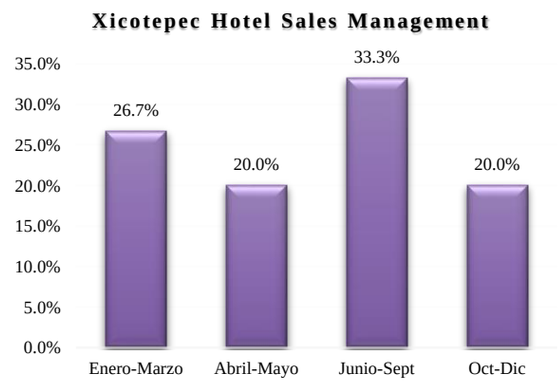
ISSN-On line: 2414-4959

From $ 50 pesos to $ 200, 87% of businesses offer a menu of 50 to 100 pesos, 7% of businesses have a menu of $ 100 to $ 150 pesos and 1% has a menu of 150 to 200 pesos, demand of the Mexican dishes is the highest percentage with 53%, fast food with 25% and 12% are occupied by restaurants with a la carte food, only 4% make international food; more than 95% do not receive any incentive and do not belong to any business association.



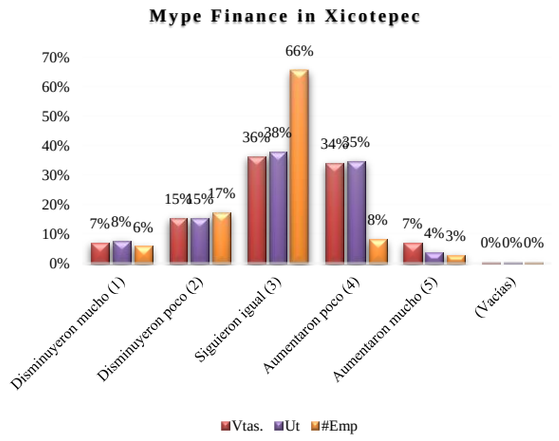
Graphic 5 Capacity installed in the Mypes Xicotepec
Source Own Elaboration

Hotels that have between 5 and 10 rooms are 25%, most hotels have between 10 and 20 rooms with 43.8%, the rest 12.5% and 18.7% are for hotels with more than 30 rooms. It should be noted that 64.7% of the hotels have badges (corporate image) and 35.3 do not have them, as for the stars 6.3% have the 5 stars, 31.3 are 4-star hotels and 31.3 are 3 stars, and 6.3% are occupied by hotels 2 and 1 star, and 18.8% responded that they do not apply that degree of evaluation to their facilities.



Graphic 6 Xicotepec Hotel Sales Management
Source Own Elaboration

The hotels declare that the period in which they receive lower income is 33.3% in June-September, with the same trend January-March with 26.7% and the remaining 3 quarters remain with 20%, identifying the best periods for services Lodging are: April-May and October December.



Graphic 7 Finance of the MSe's in Xicotepec
Source Own Elaboration

It can be seen that the bars with the highest percentage are focused on indicating that Mypes finances continued without change in the last 3 years, 36% affirm that their sales remain the same, 38% state that their profits remain the same, and 66% recognizes that the number of employees has increased. In terms of growth these increased little in sales with 34%, those that increased their profits with 35% and those that increased little personal only 8%.

Results

Xicotepec de Juárez is one of the 217 municipalities that make up the State of Puebla recognized by the Ministry of Tourism of Mexico as a magical town, because of its geographical location it is an intermediate point between Mexico City and the port of Veracruz is a strategic place to offer tourist and gastronomic services, however, the favorable initial condition has decreased for Xicotepec de Juárez, due to the culmination of the Mexico-Tuxpan highway, as this causes not all tourists traveling to both destinations in the mentioned cities to stop in Xicotepec de Juárez, situation that gives rise to the present research focused on diagnosing the business assets of companies in terms of business and tourism culture to present strategies that contribute to the business development of the Mypes of Xicotepec de Juárez.

ISSN-On line: 2414-4959

It is to be recognized that, like the Mypes of the majority of Municipalities that make up the country, in Xicotepec they suffer from the same problems as: administrative problems, lack of liquidity, absence of advertising strategies, lack of organization manuals, policies and procedures; also sales levels mostly without growth and lack of technology either to communicate their products and services or as tools to control their finances; For this reason, when analyzing the statistical data, the following strategies were formulated, which could later become the object of study to identify the impact that they could have on the benefit of economic development in the aforementioned Municipality. For this purpose the following is suggested:

Establish training projects in a simplified way because entrepreneurs do not have much time for theory, teaching business control methods and procedures applied to the daily practice of the activities they perform.

Promote the culture of management and use of information technologies both for the control of its customers and to broaden its growth horizon.

Make agreements with the Municipal and Higher Education authorities and also with the business associations so that in a tripartite way there will be intervention of the universities, creating and adapting better business models, by the areas of university research and teaching, supported by the periods in which that the students give back to society what they have learned through the social service and stay, in coordination with the support of the Municipality to grant facilities in the training processes for the benefit of the Mypes, all articulated with the business associations.

Rescue the base of the gastronomic menu as heritage of the region to strengthen the local identity itself, consequently its culture and customs that laid the foundations to acquire the denomination of magical town, to adequately promote its cultural wealth to visitors who integrate national tourism and international visiting the region.

To increase sales in the Mypes, training on the use of social networks and advertising media of lower cost should be provided, derived from the low budget with which this sector operates.

Acknowledgments

We appreciate the unconditional support granted by the highest authorities of our M.B.A. Gerardo Vargas Ortíz, Rector; to Mtra. Altagracia Carrillo Parra, Academic Secretary and M.I. Juan Carlos Carmona González, Manager of the Administrative Economic Division of the Technological University of Xicotepec de Juárez to achieve the presentation of this research work.

Conclusions

The project supplies from the tourism angle associated with gastronomy since these sectors are strengthened as a magical town, generating a large part of the economy, which sustains the region to identify, however many of which have been missing, culture as their way of production and preparation of food for this reason when carrying out this project is to determine the sectors that most benefit the magical people to implement strategies that help to improve.

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ISSN-On line: 2414-4959

Article **ECORFAN Journal-Republic of Cameroon**
December 2019 Vol.5 No.9 24-28

Performance and Quality of Chiltepín (*Capsicum annum* L.) Produced Under Open Air Conditions in Xicotepec of Juarez, Puebla

Calidad pre y postcosecha de Chiltepín (*Capsicum annum* L.) Producido Bajo Condiciones de Cielo Abierto en Xicotepec de Juárez, Puebla

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DOI: 10.35429/EJRC.2019.9.5.24.28 Received July 27, 2019; Accepted December 20, 2019

Abstract

The Capsicum plant develops naturally and comprises the majority of domesticated chile in Mexico. The fruit presents gastronomic, cosmetic and pharmaceutical uses. The economic and commercial value of the Piquín pepper is due to the nutritional contribution and content of carotenoids, vitamin C and tocopherols. The study was conducted at the Technological University of Xicotepec de Juárez, Puebla, Mexico. Pests and / or diseases in culture were identified using 50 random plants, Capsaicin content (HPLC), fresh weight (AOAC), and color (Hunter Lab®) in fruit. The pests and diseases found were: spider (Tetranichus urticae), white mosquito (Trialeurodes vaporariorum), chicharita (Empoasca spp), aphid (Bactericera cockerelli Sulc.), Cricket (Acheta assimilis) and blight (Xanthomonas campestris) with incidence rate of: 4 %, 6%, 4%, 4%, 58% and 6%, respectively. The fresh weight of the fruit was 0.13 g, the values for color L: 14.42; a: 12.37 b: 6.47 indicate opacity, tending to dark red, stem growth was 4 to 18 cm, capsaicin content of 168 µg / mL. Piquín pepper has a high content of carotenes related to chronic degenerative diseases, oxidative stress, cancer, etc. The plant during its low incidence of diseases that do not affect the development of the fruit.

***Capsicum*, Capsaicin, Pests, Diseases**

Resumen

La planta del género *Capsicum* se desarrolla de manera natural y comprende la mayoría de los chiles domesticados en México. El fruto presenta usos gastronómico, cosmético y farmacéutico. El valor económico y comercial del chile piquín se debe al aporte nutrimental y contenido de carotenoides, vitamina C y tocoferoles. El estudio se realizó en la Universidad Tecnológica de Xicotepec de Juárez, Puebla, México. Se identificaron plagas y/o enfermedades en cultivo usando 50 plantas al azar, contenido de Capsaicina (HPLC), peso fresco (AOAC), y color (Hunter Lab®) en fruto. Las plagas y enfermedades encontradas fueron: araña *(Tetranichus urticae*), mosquita blanca (*Trialeurodes vaporariorum*), chicharita (*Empoasca spp*), pulgón (*Bactericera cockerelli Sulc*.), grillo (*Acheta assimilis*) y tizón (*Xanthomonas campestris*) con porcentaje de incidencia de: 4%, 6%, 4%, 4%, 58% y 6%, respectivamente. El peso fresco del fruto fue 0.13 g, los valores para color L: 14.42; a: 12.37 y b:6.47 indican opacidad, tendiente al rojo oscuro,el crecimiento de tallo fue de 4 a 18 cm, el contenido de capsaicina de 168 µg/mL. El chile piquín tiene alto contenido de carotenos relacionados con enfermedades crónico degenerativas, estrés oxidativo, cáncer, etc. La planta durante su presenta baja incidencia de enfermedades que no afectan en el desarrollo del fruto.

***Capsicum*, Capsaicina, Plagas, Enfermedades**

Citation: GALLARDO-SANDOVAL, Araceli, MORALES- GUZMÁN, Víctor, MORALES-CALVA, Esteban & RIOS-TORRES, Ana María. Performance and Quality of Chiltepín (*Capsicum annum* L.) Produced Under Open Air Conditions in Xicotepec of Juarez, Puebla. ECORFAN Journal-Republic of Cameroon. 2019, 5-9: 24-28

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Introduction

Since years ago, Mexico has been listed as a highly consumer country in spicy products, such as chili (Capsicum), a crop that is widely distributed from the north of the country to South America, from which various species are derived, depending on the region and the type of vegetation, one of them is the Chiltepin (Capsicum annum L.); fruit considered as a significant element for cultures in the preparation of traditional dishes and medicine (Coronado et. al., 2013; Bañuelos et.al, 2008; Medina et al., 2010).

In Mexico, the cultivation of chili continues to be an agricultural practice based on customs and traditions. In the region of the Sierra Norte of the State of Puebla, chiltepin is produced wildly and sometimes in orchards in combination with coffee plants, where it has low yield and variability in fruit quality (Morales et al. 2018).

The objective of this work was to identify the main pests and diseases in Chiltepin culture and determine the quality of the fruit under open field conditions in Xicotepec de Juárez, Puebla, Mexico.

Theoretical framework

Chiltepin or chile piquín (Capsicum annum L.) is one of the more than 20 varieties in Mexico, with physiological differences in flower, plant, fruit and seed viability; considering wild varieties, improved, even genetically modified (Luna, 2012). The common name and how this species has been classified by different authors; The most common names are: chiltepin, chile de monte and chile piquín. The synonymous scientific names are: Capsicum aviculare L., C. frutescens L., C. baccatum L. and Capsicum annuum L (Martínez, 1979; Molina et al., 2009)

The chiltepin is characterized by being a perennial shrub 1.5 to 2m tall, has a dense crown, thin and flexible branches. The leaves are flat, simple and oviodes-lanceolate 2 to 6 cm long and 1-3 cm wide. Stem 20 to 50 cm long and has a fibrous root. The flowers are white and perfect, forming in the armpits of the branches. The petals and sepals formed by 5 pieces, the peduncle is straight and thin 1.5 to 3 cm long.

The reproductive maturity of the plant is between 6 and 10 months (Cortés and Valdez, 2001; Molina et al., 2009). The fruit is oval and slightly conical, green when immature, red when ripe and almost always sepia red when dried, 1 to 2 cm long and half a centimeter or less wide.

The production of dried chili worldwide has increased due to the uses of the fruit, such that FAO reports that by 2013 world production was 3.4 million tons, with India being the main producer with 1.4 million tons; Mexico participating with almost 60 thousand tons (FAO / STADISTICS, 2016).

In Mexico, there is a range of chili peppers grown under various management conditions, with habanero, serrano, poblano, tree, jalapeño and apple trees being the green species with the highest production and in the case of pasilla, guajillo and chiltepin dried chiles; Even the varieties are regionalized (Luna, 2012).

Chiltepin is a fruit that is highly appreciated and quoted for its flavor, spicyness and degree of pungency, reaching a cost in the direct consumer market of $ 500.00 to $ 1000.00 pesos per kilogram of dried fruit that comes mostly from wild plant collections (Parra et to ;; 2006)

Chiltepin is used for nutritional purposes as a spice because it contains vitamins such as C, Riboflavin, Niacin, proteins, minerals, fiber and carotenes, but also contains the compound capsicin known for its antioxidant, expectorant and natural decongestant properties (Reboledo, 2004; Lambert and Sum, 2006)

Materials and methods

The variety of chiltepin used (Capsicum annum L.) was grown under open sky conditions, in the town of Xicotepec de Juárez, Puebla, Mexico that is 1050 meters above sea level, has a climate of (A) Cb (fm) (e) gw ”semi-warm humid with rains throughout the year, the average temperature is 30ºC, Relative Humidity ranges between 50 and 70%. The crop is in the experimentation garden of the Agroindustrial-Food area of the Technological University of Xicotepec de Juárez, located at Av. Universidad Tecnológica No. 1000, Col. Tierra Negra. Samples to determine fruit quality were analyzed in the Chemistry and Food Analysis laboratories.

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50 random fresh fruits were collected and weighed on a portable digital scale (OHAUS® TA501, TravelerTM Series) to determine the weight in grams. Fruit color was determined using the HunterLab technique and previously dried fruits.

Samples of Piquín pepper (Capsicum annum L.) were obtained from the harvest in the UTXJ and from the market of the community of Xicotepec de Juárez. For the extraction, the pericarp and placenta of 50 nuts were obtained, subsequently mixed and pulverized. Of the powder obtained, 500 mg was weighed on an electro analytical balance (Mettler Balance HR 160) and 5 mL of HPLC grade acetonitrile (ACN) were added. Then he took a water bath at 60 ° C for 5 hours, stirring every 30 minutes. The supernatant was filtered (2mL) by acrodisk (CHROMAFIL ® Xtra PFPL-45/25 0.45 µm) and deposited in an amber vial.

For the quantification of Capsaicin a column was used: Hypersil ODS, the measured wavelength was 202 nm and 246 nm. The injection volume of 20 µL. 65% ACN and 35% monobasic potassium phosphate solutions were used. The temperature was 28 ° C, the flow of 1.7 mL. Stem growth was determined by germination in a tray to later transfer the seedling to the final soil. 100 plants were analyzed to determine the percentage of incidence of pests and diseases.

Results and discussions

The fruit quality parameters determined in the study (Table 1) show that the fresh weight is 0.13 g, being one of the smallest peppers in Mexico. It is a fruit of dry consumption, the concentration of the red-orange colors are presented with greater intensity due to the carotenes that provide these colors, in addition to being highly demanded for the health benefit (Rodríguez et al .; 2015; Montoya 2009).

Muestra	Color			Capsaicina (µg/100mL)	Peso fresco (g)
	L	a	b		
M1	14,5 ± 0,4	14,5 ± 0,4	6,478 ± 0,3	168 ± 4	0,13 ± 0,01
M2	14,8 ± 0,2	12,4 ± 1	5,8 ± 0,8	178 ± 2	--

Table 1 Physicochemical and nutritional properties of Chiltepin: color (HunterLab scale), fresh weight (g) and Capsaicin content (µg / 100mL)

Stem growth (Figure 1) showed significant variability with an average of 8.95 cm, a factor that derives from moisture, amount of water in soil, temperature and soil nutrients. The crop presented suitable growth characteristics without showing alteration in the plant, behavior that can be used to establish the crop under open sky and / agroforestry condition (Molina et al., 2009), presenting market opportunities and fruit transformation (Montoya, 2009).

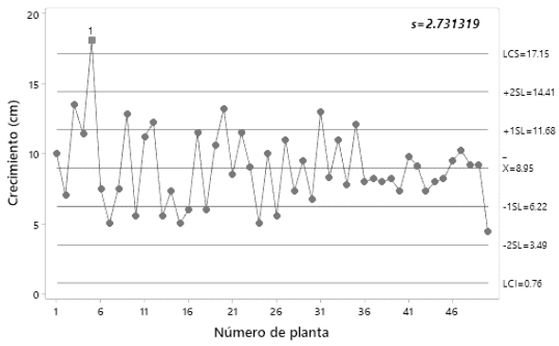

Figure 1 Stem growth (cm) in chiltepin plant for 15 days (measurements every 8 days)

The main identified pests were spider (Tetranichus urticae), white mosquito (Trialeurodes vaporariorum), chicharita (Empoasca spp), jumping aphid (Bactericera cockerelli Sulc.) And cricket (Acheta assimilis), the incidence rate was 4%, 6% , 4%, 4% and 58%, respectively (Figure 3).

The diseases that appeared were blight (Xanthomonas campestris) and Alternaria (Alternaria solani), the incidence rate was 6 and 1%, respectively (Figure 3), however the genus Capsicum in intensive open-field systems has presented Phytophthora capsici , Fusarium spp and Rhizoctonia solani, showing symptoms such as wilting in plant and fruit, yellowing and rot (Chew et al. 2008; González et al., 2002)

In general, the Piquín pepper has a low incidence in pests and diseases as long as they are preventive methods in their cultivation and sporadically they present insects that damage the foliage, observing that it increases its incidence in intensive crops (Mena, 2004; Rodríguez et al, 2003).

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Figure 2 Plague: a) white mosquito (Trialeurodes vaporariorum); b) cricket damage (Acheta assimilis)

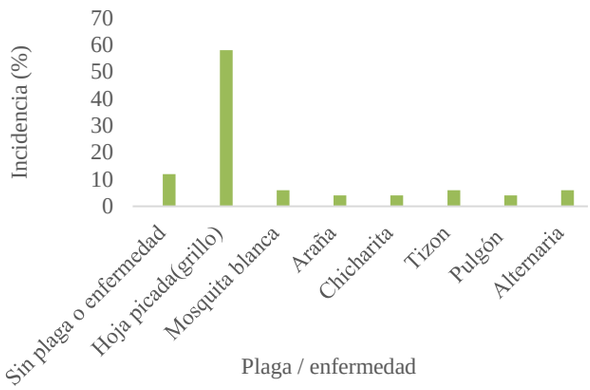

Figure 3 Incidence (%) of pests and diseases in Chiltepin culture

Capsaicinoids (Table 1), in addition to participating in the itching of the fruit, are compounds that present different biological activities with beneficial effects for human health, among which the stimulation of the cardiovascular system (Govindarajan and Sathyanarayana, 1991), the capacity anti-inflammatory (Anogianaki et al., 2006), and anticancer effect (Choi et al., 2006). In addition, it is the active ingredient for safety weapons such as tear gas (Busker and van Helden, 1998). Also, carotenoids have antimicrobial activity, Massod et al (1994) established that the antifungal activity shown by Capsicum anuum was due to capsantin and capsaicin.

Conclusions

Chiltepin is a wild crop in the Sierra Norte of the State of Puebla, has adequate average growth characteristics of 8.8 cm per week, monitoring the cultivation with foliar fertilization (N), irrigation, pH and organic matter content in soil.

The pests that appeared in chiltepin were spider (Tetranichus urticae), white mosquito (Trialeurodes vaporariorum), chicharita (Empoasca spp), aphid (Bactericera cockerelli Sulc.) And cricket (Acheta assimilis), although with low incidence <7%, a Except for the cricket (Acheta assimilis) that occurred in more than 50% of the cultivated plants, however the fruit production was not affected.

The content of Capsaicinoids in fruits such as chiltepin, are highly referred to health, since they are related to uses in gastrointestinal diseases, cancer and antioxidant effect.

Acknowledgments

The Technological University of Xicotepec de Juárez Puebla for supporting this research.

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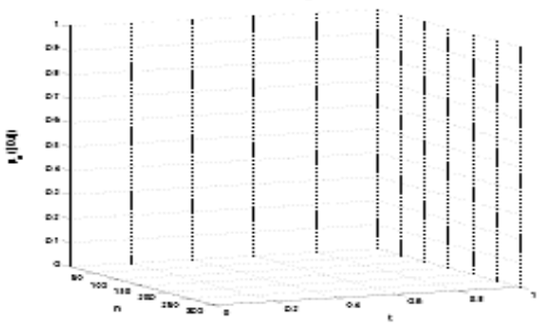

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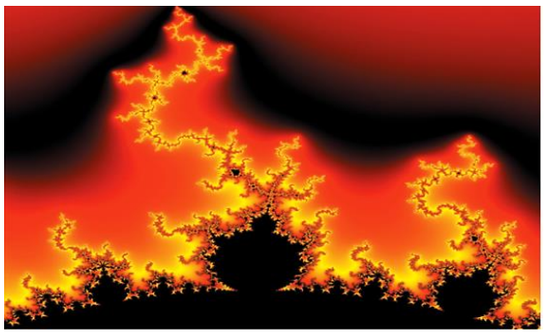

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