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Presentation of the content

In the first article we present *Strategic plan for the structuring of a network of products and services for the development of Triunfo, B.C.S* by ROBLES-ARIAS, Isela Margarita, HERNÁNDEZ-ENRÍQUEZ, Héctor Arnulfo, VALDEZ-GUERRERO, Raquel and RÍOS-CALDERÓN, Graciela Guadalupe with adscription in the Instituto Tecnológico De La Paz, in the next article *Application of the Balanced Scorecard in the Veterinary company and Supplies Pa'lante S.P.R of R.L. of C.V* by BENITEZ-LOPEZ, Guillermo, CRUZ-CHÁVEZ, Margarita and VALDEZ-PEREZ, María de los Ángeles with adscription in the Instituto Tecnológico Superior de Naranjos, in the next article *Automation of registration and data collection processes for the diagnosis of University Social Responsibility of the Universidad Tecnológica de Jalisco* by MACÍAS-BRAMBILA, Hassem Rubén, LÓPEZ-LAGUNA, Ana Bertha, GONZÁLEZ-DEL CASTILLO, Edgardo Emmanuel and PEÑA-MONTES DE OCA, Adriana Isela with adscription in the Universidad de Guadalajara y Universidad Tecnológica de Jalisco in the next article *Strategies oh the marketing of the footwear industry in San Mateo Atenco Plaza Azul* by ZENTENO-BONOLA, Ana Luisa, AGUIRRE-BRITO, Dorian, CALDERÓN-RÍOS, Norma Otilia and ORDOÑEZ-HERNÁNDEZ, Lucía with adscription in the Universidad Tecnológica Metropolitana e Instituto Tecnológico de Toluca.

Content

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Strategic plan for the structuring of a network of products and services for the development of Triunfo, B.C.S

Plan estratégico para la estructuración de una red de productos y servicios para el desarrollo del Triunfo, B.C.S

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Abstract

A strategic plan is presented, where the characteristics of the structure of the infrastructure and the implementation of a network of products and services that allow the economic reactivation of the inhabitants of El Triunfo, Baja California Sur. For the development of this project, the documentary research is redirected and the field obtains data related to the economic activities, traditions and customs of its inhabitants. The definition of the project and establish the relevant commitments with them. Subsequently, zoning activities were carried out, inventory inventories and efforts in the area were carried out, the results of which were extremely important and a key piece for this investigation. The general objective has been fulfilled in its entirety and has resulted. The result has been achieved.

Planning, Networks, Services

Resumen

Se presenta un plan estratégico, donde cuyas estrategias facilitan la estructuración e implementación de una red de productos y servicios que permitan la reactivación económica de los habitantes del poblado El Triunfo, Baja California Sur. Para el desarrollo de este proyecto se utilizó la investigación documental y de campo obteniendo datos relacionados con las actividades económicas, tradiciones y costumbres de sus habitantes, Se acudió a la zona para tener una entrevista grupal con las autoridades y habitantes del lugar para llevar a cabo la definición del proyecto y establecer los compromisos pertinentes con ellos. Posteriormente se realizaron actividades de zonificación, levantamiento de inventarios de ordenamientos y atractivos de la zona, cuyos resultados fueron sumamente importantes y pieza clave para esta investigación. El objetivo general se cumplió en su totalidad dando como resultado el diseño de estrategias que de ser implementadas permitirán que esta población pueda convertirse en una de las atracciones turísticas preferidas por visitantes tanto nacionales como extranjeros, generando beneficios económicos importantes para sus habitantes.

Planeación, Redes, Servicios

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Introduction

The natural and cultural wealth that exists in rural areas of the country opens a range of possibilities for the inhabitants of these regions, who have the opportunity to develop companies that provide professional tourism services, aimed at raising their quality of life, through the sustainable use of natural resources. (Meza, 2018)

The need of small towns to reactivate their economy has been one of the main reasons for which this research intends to be carried out. The project is based on the State Development Plan 2015-2021, in which a competitive society and qualified human capital are sought, where the economic niches that guide the productive activity are fishing-aquaculture, agricultural, mining, commerce, services in General and tourism. In addition, the state government is focused on supporting the latter as one of its main axes for state economic development.

Most of the tourists that arrive in the state, mainly to the municipalities of La Paz and Los Cabos, return admired of the magnificent hotel facilities, very satisfied with the excellent restaurants and with a pleasant memory of the wonderful beaches with which they have . However, they leave without knowing the wealth of resources that abound in the region, whether historical, cultural or natural.

The communities of El Rosario, El Triunfo and San Antonio are some potential towns in the state that have these characteristics.

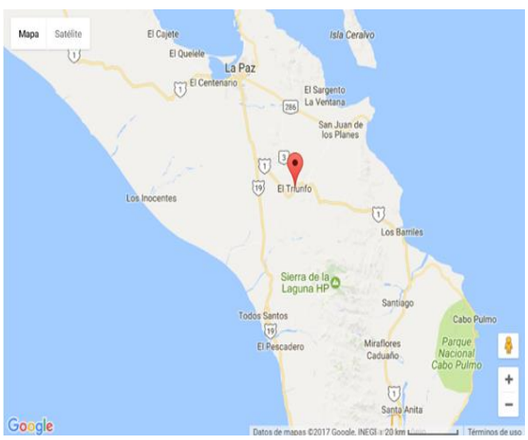

Figure 1 Geographic location of the town. El Triunfo B.C.S

El Triunfo is a beautiful mining town located 50 km south of the city of La Paz. Currently, this town is quiet and picturesque that protects important buildings, witnesses of its mining history, worthy of being visited by local and foreign tourists. In its surroundings, the town offers hills and streams where there are still several mines and ranches, framed by abundant vegetation, which can be accessed by vehicle or mountain bike.

However, El Triunfo is a population that lacks productive activities that allow maintaining a sustainable economic dynamic, its young population, begins to leave the town looking for better economic conditions in the more urbanized regions, first for reasons of studies and then for positions labor. Although these provide financial assistance to their families, it is not enough that traditions are detrimental (Morales Santos, 2017)

The mining activity in the region left as an inheritance an extensive treasure in historical monuments of mining activity, and social forms of life, legacies of music that includes its original instruments, constructions with unique styles, pantheons where the architecture and history of Chinese and Mexican English, representing the culture and urbanism imported from these countries respectively. (Meza, 2018)

That is why a strategic plan is presented, whose strategies facilitate the structuring and implementation of a network of products and services in the population of El Triunfo, B.C.S. for the economic recovery of its inhabitants. This project is an applied research, descriptive in scope, mixed focus data was obtained through field and documentary research. Various instruments were used to obtain information regarding population, economic activities, traditions and customs.

The area was visited to conduct a group interview with the sectional delegate and local inhabitants to carry out the definition of the project and establish the necessary commitments.

Subsequently, zoning activities, inventory surveys and attractions in the area were carried out, the results of which were extremely important and a key piece for this investigation.

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In the 2015-2021 regional development program, the strategic axis for its implementation is the concurrence and coordination of institutions in the three orders of government, for the solution of the diverse problem posed by economic and social development in the target towns and communities.

Equally important are multi-sector strategic projects with a high local, micro-regional and regional impact that can trigger productive processes or as a fundamental condition for the promotion of historical productive activities (Ministry of Economic Promotion and Development, 2015)

In response to the needs of the regional development plan, the Technological Institute of La Paz decided to enter the transversal axes, promoting some research projects such as "Alternative tourism through service networks for the development of the community of El Triunfo de la South Central micro region of the Municipality of La Paz".

The problem is that El Triunfo, despite its history and all these resources that characterize the population, there is a need to increase the living standards of its inhabitants since they lack productive activities that allow maintaining an economic dynamic. Even part of the population is looking for better opportunities outside their town.

Therefore, it will be necessary to identify individuals with entrepreneurial character who want to participate in it, in order to guide and / or guide them to the use of these resources.

However, are there the necessary conditions for the creation of a tourism services network in El Triunfo B.C.S.?

The scope of the investigation is based on the fact that it was limited to studying the surroundings of the historic town El Triunfo B.C.S. taking into account its historical environment, its inhabitants, tourists and development plans within the town.

The general objective of the research was to develop strategic actions for the operation of a network of tourism products and services in the community of El Triunfo Baja California Sur.

The hypothesis stated indicates that a strategic plan will facilitate the necessary elements for the formation and operation of a network of products and services promoting the promotion of tourism development and the economic recovery of El Triunfo B.C.S.

Development

In this work, the proposal of a strategic plan for the operation of a network of products and services for the inhabitants of this region, aimed at raising their quality of life, through the sustainable use of natural resources

This research is made up of three phases: An opportune diagnosis to determine the resources that are available and which of them can be exploited to obtain maximum benefit from them, such as the flora, endemic fauna of the region, tourist attractions, products and services that are feasible to offer.

In the second phase, a census survey was applied to the inhabitants to determine the following variables: (place of origin, time to live in the town, which is the typical dish of El Triunfo, if they know how to prepare it, activities that can be offered to visitors or tourists, and know the number of people interested in starting a business project to offer products or services),

In the third phase a strategic plan is presented integrated by a set of planned actions, which have been derived from the identification of needs ... to offer a network of products and services in order to encourage the participation of the inhabitants and therefore the reactivation of the locality

The conceptualization and practice of sustainable economic development must be approached from different approaches such as the type of community referred to, whether it is rural or urban, or whether it is private or public companies, as well as the individuals that make them up.

For this research project, the basic concepts of tourism, alternative tourism and its divisions, tourism services and network of services, among others, were developed since they are of paramount importance, so they are detailed below.

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Tourism

Tourism can be defined from different points of view. First, as an economic activity that is defined by its demand and the consumption of visitors. On the other hand, tourism refers to the goods and services produced to meet said demand. ” This sector is made up of a number of different activities, for example, transportation to and from destinations, accommodation, supply, purchases, travel agency services, inbound and outbound tourism operators, which makes it a very broad and difficult, but not impossible to define and quantify (Casal, 2002)

Alternative Tourism are several definitions, however, there is an aspect that is constant in all of them. Alternative tourism is a new segment of global tourism that is becoming increasingly important.

This tourism tries to organize your trip to unknown places, according to your needs and times; seeks to discover sites away from mass tourism in natural environments and that stimulate their personal development. Unlike mass tourism, alternative tourism is willing to pay high prices for the existence of unique attractions, whether natural or cultural (Ministry of promotion and economic development, 2015) there are other authors specialized in the subject such as (Casal, 2002)

A set of unique, unrepeatable, personal experiences and experiences that occur in a quality environment; This is understood as the quality in the free time of the tourist, in an environment of geographical and social quality, which allows the tourist to perceive their relationships in a different way with the geographical and cultural environment, with the other tourists and their hosts, within the parameters of sustainable human development that foresees economic development and growth, social equity and environmental sustainability.

Based on the aforementioned definitions, we can conclude that: alternative tourism means those activities that invite practitioners to enjoy and respect the sites visited, these being unique scenarios, which leads them to live a different experience in which not only they are spectators, but they are involved in it taking up what SECTUR maintains, dividing this type of tourism into three pillars, Ecotourism, Adventure Tourism and Rural Tourism

Nature tourism and its link with sustainability

Nature tourism as officially defined by SECTUR, corresponds to trips that are intended to carry out recreational activities in direct contact with nature and cultural expressions that involve you with an attitude and commitment to know, respect, enjoy and participate in the conservation of natural and cultural resources. This definition in turn has been divided into three large segments according to the interest of the tourist, which are: ecotourism, adventure tourism and rural tourism. According to data from the (SECTUR, 2012)

Rural areas and Protected Natural Areas (ANP). It is in these places where there is a great tourist demand for this type of tourism, being more than 50 ANP in Mexico those that develop nature tourism activities and 69 ANP with tourist vocation according to SECTUR, which have received tourists every time in a greater number. However, the advantage of the ANP is that, if there is a good management by the administration of the same, there will be benefits and few damages. Since by federal law each ANP should have a management program that does not only involve the document but a whole series of continuous effort such as surveillance, the monitoring, monitoring of actions in general. Therefore, if the objectives of the PNAs are guaranteed, it is also guaranteed that tourism within them will be durable and generate economic benefits to the inhabitants, this already implies responsibility for natural resources, since these are the reason for visiting a place, therefore they are the reason to keep them. According to (Lucia, 2013) it takes a lot of continuous effort, sufficient economic and personal resources, as well as, that the inhabitants are committed to collaborate.

Net

The generic term "network" refers to a set of entities (objects, people, etc.) connected to each other. Therefore, a network allows material or immaterial elements to circulate between these entities, according to well-defined rules. Network, is a concept that allows explaining the dynamics of local productive systems because it responds to a logic of regional development, to a territorial logic, which indicates interdependencies in the territory in which cooperation and exchange networks are developed.

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Tourist service

The Tourist Services are the set of achievements, facts and activities, aimed at producing personal benefits that meet the needs of the tourist and contribute to the achievement of facilitation, approach, use and enjoyment of tourist goods.

Tourist Services include its production, distribution, marketing, sale and provision and refer to the goods and services offered by tourism market companies, which meet the needs of tourists in the organization of the trip and through the enjoyment thereof through of intermediary companies of transport, accommodation, organizers of events and recreational activities, etc. (https://sites.google.com/site/serviciostur/conceptos-st, s.f.)

Tourist Services Network

The tourist service is a service composed of several different types of services, which, combined with each other, make up what is called a basic service package or network of services. (Meza, 2018)

The different types of services that make up the basic service package of a tourism service provider are the following:

a) Basic or essential service. It is the one for which the company that provides them is right. Therefore, the basic service of the hotel is accommodation; that of the airline, transport, and that of tour operators, excursions.
b) Facilitating services they are those that make possible the use of the basic service. Among the facilitating services necessary to provide the basic hotel service are, among others, reservation, reception, concierge services, to name a few.
c) Supporting services. These are services that do not facilitate the use of the basic service but are provided in addition to the facilitating services to increase the "added value" to the basic package, or to "differentiate" the service offered by the company, in relation to the service offered by the competition. Some examples in the hotel service are valet parking, room service and facilities for internet connection in the room.

In the case of airlines, there can be the pre-allocation of seats, the boarding pass, the executive lounges to wait for boarding and the gifts given on board to passengers in order to make the trip more comfortable and enjoyable (sleeping glasses, slippers, etc.). (Acerenza, 2006)

Methodology to develop

Determination of opportunities for the provision of alterative tourism services.

A group interview was carried out with the ejido delegate and the inhabitants of the place, the project was presented and the commitments with the interested parties were established in order to start the collection of the information and determine the tourist attractions such as endemic flora and fauna of the area, products and services that are feasible to offer in the region, for which identification cards were used, taking into consideration aspects such as:

Title
Photography
Description
Bibliography or consultation
Observations
Data of who registered

Table 1 Identification card format

Achieving the following results:

1. Matrix identification of various activities to offer.
2. Inventory of flora and fauna.
3. Architectural inventory with title, photograph, description and location.
4. Gastronomic inventory with title, photography, description.
5. Mining inventory with title, photograph, description and location.

This investigation was carried out in the town of El Triunfo, which is located in the Municipality of La Paz of the State of Baja California Sur Mexico and is located in the GPS coordinates: Longitude (dec): -110.106111, Latitude (dec): 23.803889, the locality It is at a medium height of 500 meters above sea level and the population is 276 people, of which 148 are male and 128 female who are divided by ages into 77 minors and 199 adults, of which 35 are over 60 years.

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To carry out the data collection, a survey was applied and the data were concentrated by category considering the highest percentage.

It is originally from the place. 89% were born locally. The typical dish of the town according to the results was found that 39% crush, 13% chorizo and other dishes. 79% of the inhabitants know how to prepare it

The activities that can be offered for the formation of the network are: 48% of the population says that what can be seen most in the destination is the activities of coexistence and interaction with the community among these activities are the tours of the heritage historical, trade of local products, camping in natural areas. Own source

Those interested in participating is 100%. 72% are interested in receiving training to carry out the financing support management.

Analysis

The data processing was done with Excel and to determine opportunities the SWOT Matrix (Steiner, 1998) was used to detect opportunities for improvement, and the generation of strategies.

Strengths

- Potential development related to nature and sustainable development
- Historical and artistic monuments (Piano Museum and concert hall) and mythical for the practice of a good description.
- Tourism focused on the acquisition of experiences
- Inhabitants Open and hospitable character
- Optimal geographical situation 48 km from the state capital.
- Development and sale of regional products (handicrafts, gastronomy)
- Orography of the destination with possibilities for alternative tourism.
- Safe and attractive destination
- Diversity of resources to make products and services
- Potential entrepreneurs willing to participate
- An annual gastronomic festival is held.
- Craft Event in the locality.

Weaknesses

- Little management in the coordination of destinations.
- Regional products little known to tourists
- Lack of identifiable signaling of the area.
- Little connection between tourist agents
- Poor communication routes (roads, schools, telephones, bathrooms.)
- Poor internet service generating that payments cannot be made with a bank card
- Unidentified degree of user satisfaction
- Little communication of the tourist offer
- Missing formalized tourist information modules.
- Low production of regional products.
- Low qualification of staff in tourist service
- Low qualification in technicality in English.
- Low budget allocation of the Department of Tourism and state government.
- The inhabitants have few economic resources
- Lack of tourist promotion.
- Lack of a local website of the place where tourists have access to express their experience.

Threats

- Other more identifiable and attractive destinations
- Other more "excellent" destinations according to tourist perception
- Destination Brands better positioned
- Routes with better access and view.
- Destinations of very direct competition with larger budgets dedicated to their tourism strategies.

Opportunities

- Manage coordination between private and public agents.
- Form a group of instructors specialized in various topics to provide training in various areas.
- Design and implement a training plan and development of skills for production, attention and customer service, aimed at the inhabitants of the place in order to enable the formation of the network of services and products.

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- Design the business units that integrate the network.
- Use of technology
- Manage necessary permits for commissioning in dependencies that apply.
- Offer basic English language courses.

Once the SWOT matrix is analyzed, 3 strategies that make up the Plan are located, determining:

1. Integrate and structure the networks of products and services.
2. Strengthen the profile of the entrepreneur interested in participating in the operation of the networks of products and services.
3. Design marketing and communication processes between networks.

Resultados

1. Integrate and structure the networks of products and services

Strategy: Form a special working committee with those interested in participating in the provision of tourism services.

Objective: Identify interested persons to integrate and structure the networks of products and services.

Strategic action: Next, the proposed tasks to be performed are listed:

- Formally bring together those interested in providing tourist services.
- Select the services you are willing to launch.
- Appoint managers for each of the services that are planned to work.
- Form work teams for each of the proposed tourist services.
- Search for instructors specialized in tourism services or assign and train those responsible for training work teams.
- Define needs and requirements for each of the proposed tourist services to be carried out (Material, accessories, people, equipment, infrastructure, etc.).
- Structure the network.

2. Strengthen the profile of the entrepreneur interested in participating in the operation of the networks of products and services.

Strategy: Design a training program so that stakeholders know how to finance their project.

Objective: Provide advice and training to stakeholders on viable supports or financing for the networks of products and services.

Strategic action: Next, the proposed tasks to be performed are listed:

- Include as a theme: What financial supports exist and how can I get it?
- Include as a theme: What is a business plan and how to prepare them?
- Structure a base business plan model for stakeholders.
- Link and / or agree with those interested in the Business Incubation and Innovation Center of the Technological Institute of La Paz.

Strategy: Design a training program for stakeholders to integrate controls and / or procedures that allow them to provide quality services and / or products.

Objective: Provide advice and training to those interested in quality, controls and procedures, useful for the operation and operation of the networks of products and services.

Strategic action: Next, the proposed tasks to be performed are listed:

- Include as topics: Quality, Internal Control and Customer Service.
- Design of processes and controls for the production of products and services, under a quality scheme.

3. Design marketing and communication processes between networks.

Strategy: Design a tourism campaign to offer, advertise and inform the products and services of the network in order to persuade, stimulate or motivate your purchase.

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Objective: Select and use the advertising media that allow promotion of the products and services offered on the networks.

Strategic action: Next, the proposed tasks to be performed are listed:

– Place a tourist campaign on national and international channels to sell the destination.
– Gather the stakeholders or participants for the conformation of the tourism campaign.
– Publish the content as an event.
– Launch the campaign in agencies.
– Campaign through digital media.

Strategy: Design a communication channel or channels for product and service networks. Objective: To structure a diversified communication system that is effective to consolidate the productivity and competitiveness of product and service networks. Strategic action: Next, the proposed tasks to be performed are listed:

– Design communication channels
– Join the communication channels.

Strategic Plan for the formation of a network of products and services

Strategic plan 1. Integrar y estructurar las redes de productos y servicios.					
Strategies	Objetives	Improvement actions	Deadline for execution and Responsible assigned	Unit of measurement	Assigned Responsible
Form a special working committee with those interested in participating in the provision of tourism services	Identify interested people to integrate and structure product and service networks.	Formally bring together those interested in providing tourist services. Select the services you are willing to launch. Appoint managers for each of the services that are planned to work. Form work teams for each of the proposed tourist services. Search for instructors specialized in tourism services or assign and train those responsible for training work teams. Define needs and requirements for each of the proposed tourist services to be carried out (Material, accessories, people, equipment, infrastructure, etc.).	From 2 to 6 months / El Triunfo Delegation, B.C.S./ ITLP Postgraduate Division	Number Number Number Service Total work teams Number List of needs	Delegation of San Antonio, B.C.S./ Postgraduate Division of ITLP ITLP Graduate Division / Interested ITLP Graduate Division / Interested ITLP Graduate Division / Interested Delegation of San Antonio, B.C.S./ Postgraduate Division of ITLP Interested

Table 2 Strategic Plan for the formation of networks of products and services for El Triunfo B.C.S

Strategic plan 3 Strengthen the profile of the entrepreneur interested in participating in the operation of the networks of products and services					
Strategies	Objetives	Improvement actions	Deadline for execution and Responsible assigned	Unit of measurement	Assigned Responsible
Design a training program so that stakeholders know how to finance your project.	Provide advice and training to stakeholders on viable supports or financing for product and service networks	Include as a theme: What financial supports exist and how can I get it? Include as a topic: What is a business plan and how to prepare them? Structure a base business plan model for those interested. Link and / or agree to those interested with the Center for Incubation and Business Innovation of the Tecno Institute	2 to 4 months Delegation of El Triunfo, B.C.S./ Postgraduate Division of ITLP / ITLP Incubation Center /	Number of participants Number of participants Base model	ITLP Postgraduate Division
Design a training program for stakeholders to integrate controls and / or procedures that allow them to provide quality services and / or products	Provide advice and training to stakeholders on quality, controls and procedures, useful for the operation and operation of product and service networks	Include as theme: Quality. Include as theme: Internal Control. Include as theme: Customer service. Design of the processes and controls for the elaboration of product and services, under a quality scheme of La Paz	From 2 to 4 months Delegation of El Triunfo, B.C.S./ ITLP Postgraduate Division / ITLP Incubation Center	Number of participants Number of participants Number of participants Number of stakeholders	ITLP Postgraduate Division ITLP Postgraduate Division

Table 3 Strategic Plan for the formation of networks of products and services for El Triunfo B.C.S

Strategic plan 3. Design marketing and communication processes between networks					
Strategies	Objetives	Improvement actions	Deadline for execution and Responsible assigned	Unit of measurement	Assigned Responsible
Design a tourism campaign to offer, advertise and inform the products and services of the network in order to persuade, stimulate or motivate your purchase	Select and use the advertising media that allow the promotion of products and services offered on the networks.	Place a tourism campaign on national channels and International to sell the destination.	From 2 to 6 months / Delegation of El Triunfo B.C.S./ ITLP Postgraduate Division	Number of possible channels	Delegation of San Antonio, B.C.S./ Postgraduate Division of ITLP
Design a channel or communication channels for product and service networks	Structure a diversified communication system that is effective to consolidate the productivity and competitiveness of product and service networks.	Bring together interested parties or participants for the conformation of the tourism campaign. Publish the content as an event Launch the campaign in agencies. Campaign through digital media Design communication channels Unify the communication channels.	2 to 6 months 2 to 6 months 2 to 6 months 2 to 6 months	Number of participants Number of Attendees Number of agencies Number of views Number of possible channels Number of possible channels	Delegation of San Antonio, B.C.S./ ITLP Postgraduate Division / Participants Delegation of San Antonio, B.C.S./ Postgraduate Division of ITLP Delegation of San Antonio, B.C.S./ Postgraduate Division of ITLP Delegation of San Antonio, B.C.S./Division ITLP Postgraduate Postgraduate Division of ITLP / Participants Postgraduate Division of ITLP / Participants

Table 4 Strategic Plan for the formation of networks of products and services for El Triunfo B.C.S

1. Activities and number of interested in participating.

– Mountaineering
– Ride

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– Mountain biking
– Hike
– Rural photography
– Gastronomic workshop
– Craft Workshops
– There are 30 people interested in participating

2. Training Program Design: Support and Financing in the state of Baja California Sur

Chores. Different federal and state agencies were consulted to obtain information on the different programs they offer to help increase productivity in MSMEs through financial support and incentives. These programs are many and varied. Some of the units such as the Ministry of Social Development (SEDESOL), Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA), and Ministry of Economy (SE).

The training plan was designed integrating all its elements: descriptive letter, budget, Formats, (List of needs, checklist, attendance list. Teaching materials, Course evaluation, among others).

3. A Business Plan Model was developed.
4. Financial simulator

Acknowledgement

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Conclusions

Based on the analysis carried out and the results obtained, the hypothesis proposed is verified, since the proposed strategic plan facilitates the necessary elements for the formation and operation of a network of tourism products and services in the community of El Triunfo, B.C.S.

Similarly, objectives were set, and it was within the proposed strategic plan where strategic actions were developed for the formation and operation of a network of tourism products and services in the community of San Antonio, BCS, so that the objectives are considered initially established were achieved.

Through the development of this research, it was possible to know one of the populations with great potential to become a tourist destination frequented by national and foreign visitors in the state.

As you can see through the information obtained, the small town of El Triunfo has a great variety of resources that could facilitate the realization of activities that can attract a large number of tourists without any problem. In addition, the inhabitants showed real interest in participating in the economic development of their community. The inventories showed that there is a great variety of flora and fauna in the surroundings, as well as gastronomic products, and of course, old structures, buildings or ruins that reflect the important history that supports this population. With this, it has been confirmed that there are the necessary conditions to be able to implement activities and / or services through alternative tourism, which will be fundamental for the economic uprising of its inhabitants

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Application of the Balanced Scorecard in the Veterinary company and Supplies Pa'lante S.P.R of R.L. of C.V

Aplicación del Balanced Scorecard en la Veterinaria e Insumos Pa´lante S.P.R de R.L. de C.V

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Abstract

The objective of the application of the Balanced Scorecard methodology in the Veterinary and supplies PA`LANTE S.P.R. OF R.L. DE C.V. In the area of production and repair of trailers is to identify exactly what should be monitored to introduce a reliable measurement strategy that provide information on performance and understand why they are giving certain results, the methodology is to align the companies towards the achievement of business strategies, through tangible objectives and indicators as it converts the vision of companies into action through a coherent set of indicators grouped into four business perspectives that are: Financial, Clients, Internal Processes and Training and Growth since this methodology suggests that these perspectives cover all the processes necessary for the proper functioning of a company. The contribution of the methodology is to determine what factors are influencing the area of production and repair of trailer that are affecting the production times considering the last three quarters of the year 2018.

Balanced Scorecard, Indicators, Perspectives

Resumen

El objetivo de la aplicación de la metodología Balanced Scorecard en la Veterinaria e insumos PA`LANTE S.P.R. DE R.L. DE C.V. en el área de producción y reparación de remolques es de identificar exactamente lo que se debe de monitorearse para introducir una estrategia de medición confiables que brinden información sobre el desempeño y entender por qué están dándose ciertos resultados, la metodología consiste en alinear a las empresas hacia la consecución de las estrategias del negocio, a través de objetivos e indicadores tangibles ya que convierte la visión de las empresas en acción mediante un conjunto coherente de indicadores agrupados en cuatro perspectivas de negocio que son: Financieras, Clientes, Procesos Internos y Formación y Crecimiento ya que esta metodología sugiere que estas perspectivas abarcan todos los procesos necesarios para el correcto funcionamiento de una empresa. La contribución de la metodología es de determinar qué factores están influyendo en el área de producción y reparación de remolque que estén afectando los tiempos de producción considerando los últimos tres trimestres del año 2018.

Balanced Scorecard, Indicadores, Perspectivas

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Introduction

The objective of the application of the Balanced Scorecard methodology in the Veterinary and inputs PA`LANTE S.P.R. OF R.L. OF C.V.

In the area of trailer production and repair, it is to identify exactly what should be monitored to introduce a reliable measurement strategy that provides information on performance and understand why these results are taking place, the methodology consists in aligning companies towards the achievement of business strategies, through tangible objectives and indicators as it converts the vision of companies into action through a coherent set of indicators grouped into four business categories that are: Financial, Clients, Internal Processes and Training and Growth since this methodology suggests that these perspectives cover all the processes necessary for the proper functioning of a company.

What is intended to solve is to eliminate the downtime of manufacturing and / or repair of trailers because the company does not have defined its procedures or has a planning of its processes varying the service offered to customers and the central hypothesis is to know if Applying the Balances Scorecard methodology to the production area will reduce production and repair time by integrating the strategies to the company's general objectives through the application of balanced indicators.

The article is divided into five sections, the first is where the description of the Balance Card Scorecard model is made, in the second section it is shown how the model was implemented in the areas within the company, in the third part it shows the results that are they obtained inside the company and finally the thanks and conclusions.

Description of the method

Balanced Scorecard Model

The Balanced Scorecard is an excellent tool for measuring performance, as a route for linking what happens in a corporation with its long-term strategy and direction, facilitating its communication, implementation, monitoring and control (Logicalis Analytics Blog, 2016).

According to Alveiro Montoya (2011) The Balanced Scorecard is a management system that requires the commitment and participation of all servers to achieve the expected success and benefits in the organization.

In reference to the concepts of the two authors above, it is interpreted that the balanced scorecard tool will benefit from having a good organization and control that will help to adequately measure each established indicator in order to determine if they are meeting their expectations and detect what is failing, to thus to be able to look for strategies that help correct and perform better their processes.

"It is more practical to consider the different management systems, within a planning model that allows aligning the different interests of the organization" Soler González R. H & Guerrero Aguilar M. (2013).

According to Kaplan & Norton (2016), The Balanced Scorecard is a management system that can motivate innovative improvements in such crucial areas as product development, processes, customers and markets.

Matrix of the Balanced Scorecard

The objective of this is to show in an integral way to the company's management the results that are being achieved period by period, in each of the perspectives identifying each of the objectives, indicators, periodicity of the measurement, responsible, etc.

So also the generation of a "traffic light" that given certain parameters in each of the indicators of each perspective, will show when entering the results of the period:

- Green: Everything is being fulfilled in order.
- Yellow: Precautionary zone, the strategy must be modified, adapted or changed.
- Red: Severe alarm, shows that the strategy is definitely not working.

This aims to show in a "Balanced Scorecard" all the information of the company in said period and make decisions based on results (Manzano, 2013, p.71).

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The four perspectives of the Balanced Scorecard

The BSC is a management tool that converts the company's vision into concrete actions through a set of indicators divided into 4 business categories, which are the following:

- Financial: This category within the objectives of the Balanced Scorecard aims to meet the expectations of shareholders, its main focus is to create value for them through performance indicators that reflect the operational behavior, growth and sustainability of the company.

- Focus on the client: In this section of the dashboard it is important to focus on what the company needs to accomplish to ensure customer retention and the acquisition of future customers to provide profitability to the organization.

- Internal processes: In this category, the strategic objectives that are directly related to the key processes of the organization on which it depends on meeting the expectations of both shareholders and customers must be identified.

- Learning and growth: Through this it is that the question is answered: "What can we do to learn and improve as a company?" It is in this area that the company must pay special attention to obtain long-term results.

It is considered that in the 4 items all the processes that the company requires for proper operation are included and must be taken into account to define the key indicators of the company.

The balance between these categories is important since it is what gives the balance between internal processes that have to do with collaborators, innovation, training, etc., as well as external ones that are related to shareholders and customers (Oscar Pérez, 2015).

(Ramírez, 2013) Represents the Balanced Scorecard for a period according to the following table 1.

	Financial	
	Sales growth	
	Overseas Sales	
	Sales other sectors	
	Cost effectiveness	
Client		**Internal**
Delivery Fulfillment		Defect removal effectiveness
Customer errors		Productivity
Timely solution		Profile Compliance
Customer satisfaction		Average costs
New explorations		
	Innovation and Learning	
	Innovation Index	
	Period Certifications	
	Employee Satisfaction	
	Total personal rotation	

Table 1 Balanced Scorecard representation for a period
Source: Ramírez, 2013

This view allows to know the behavior of all the indicators of the 4 perspectives for a specific period.

What is the Balanced Scorecard for?

Gómez J. (2016). He says that in the field of decisions called the Balanced Scorecard or Integral Scorecard seeks to monitor the performance of the organization as a whole through key indicators that summarize whether the company is on track or not.

Its success lies in several aspects. In the first place, the BSC helps not to get lost in an infinity of indicators that do not help to make good decisions. Secondly, the BSC shows a good photograph of the company in such decisive fields as financial and commercial performance; also, in critical issues for the future performance of the company such as employee leadership or the development of information systems.

Third, the BSC allows managers to track the results of strategic planning. Finally, the main attribute of the BSC is that it allows a clear communication of the objectives and decisions of senior management with the rest of the organization.

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Methodology to develop

Implementation of the Balanced Scorecard Model stages

The following table 2 shows the stages of the Balanced Scorecard model that were determined as the factors that should be monitored and measured in the Veterinaria e Insumos Pa´lante S.P.R de R.L. from C.V. since they are influencing the production and repair times of trailers. With the implementation of these four perspectives, the Veterinary helped to have indicators that provide reliable and quantifiable information on the performance in the area of trailer production and repair, knowing and understanding the factors that are affecting its productivity; in order to make corrections and relevant strategies so that it does not affect the profitability of the veterinary.

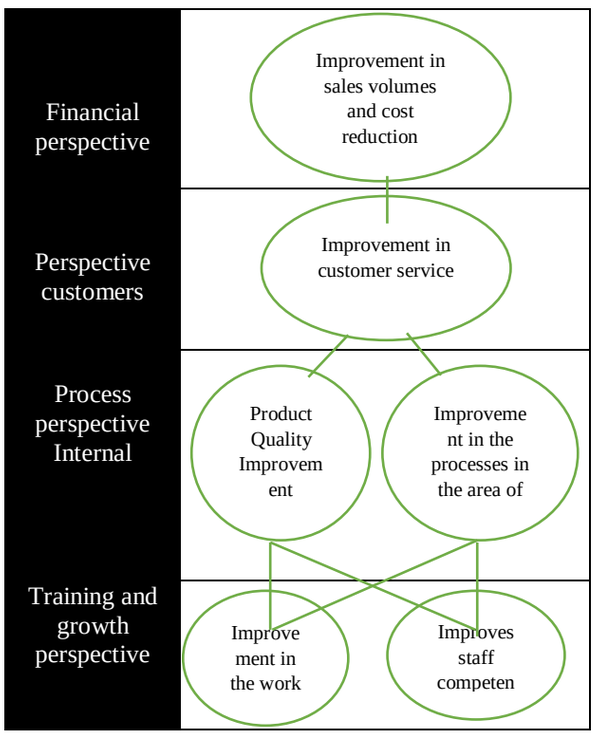

Table 2 Strategic plan applied to the trailer area

Balance Scorecard Control Board

The following table 3 shows the control dashboard or Balance Scorecard showing the four perspectives that must be contemplated for the implementation of the methodology, the strategic objectives that were determined with their respective indicator for the measurement of each of they and the percentage that is contemplated based on the results of each indicator, to determine the corresponding color based on the results obtained.

Prospects	Strategic objective	Indicators	Traffic light		
			Red	Yellow	Green
Financial	Increase sales volumes and cost reduction	Performance			
Customers	Improve customer service.	Give on time			
Internal process	Improve product quality.	Product quality			
	Improve processes in the area of trailers.				
Learning and growth	Improve staff competence	Incentives to motivate the employees of the organization			

Traffic light			
Color	Red	Yellow	Green
% Of compliance	0 - 69	70 - 84	85 - 100

Tabla 3 Control board

Results

Application of Performance Indicators

In this final stage was the application of the Balanced ScoreCard methodology, taking into account three quarters of the year 2018 that were the months from July to September, which are the months where the company has more requests for trailer orders. The following table 4 shows the customer delivery compliance indicator.

$$Customer\ delivery\ fulfillment: \frac{deliveries\ completed}{total\ deliveries\ period} = \frac{9}{9} = 100\%$$

Indicator Name	Customer delivery fulfilment	
Formula	EC/TEP*100	EC: Deliveries completed PET: Total deliveries period
Unity	Percentage	
Periodicity	3 Quarter	
Goal	OK: IND >=80% ALERT:60%<= IND< 80% UNACCEPTABLE:IND < 60%	

Table 4 Customer delivery compliance indicator
Source: Own Elaboration

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As can be seen in the previous table of the indicator of compliance of deliveries to the client, to measure the customers perspective the result that I throw is acceptable since it complies with the percentage range which resulted in 100%, this means that it reached the goal of said KPI's fulfillment of deliveries to the trailer customer, resulting in the green color of the Balanced Scorecard (BSC) traffic light or integral control panel (CMI).

Table 5 shows the indicator that was developed in the area of trailers using the time of actual hours worked in the processing (HP) of the trailer in days between the total hours for the preparation and completion of the trailer (HPOT).

As shown, the result is based on the alert percentage due to the fact that 49 hours were allocated for the preparation of the trailer and the rest was time invested in other activities.

Indicator Name	Productivity of the trailer area	
Formula	HP/ HPOT *100	HP: Hours produced HPOT: Potential hours of productive capacity according to available resources
Unity	Percentage	
Periodicity	Days	
Goal	OK: 85%>= 100% ALERT:70%<= IND< 84% INACCEPTABLE:IND < 69%	

Table 5 Trailer Area Productivity Indicator
Source: Own Elaboration

$$\text{Area productivity } \frac{\text{Hp in a trailer}}{\text{hpot}} * 100 = \frac{49\text{HR}}{60\text{HR}} * 100 = 82\%$$

In the following table 6 this indicator was used to measure the financial perspective in this area of trailers taking into account the current quarterly sales of the months July - August 2018 and the quarterly sales of previous months which resulted in a 10% result that means which is unacceptable because current trailer sales fell compared to the previous quarter.

Indicator Name	Sales growth	
Formula	100*(VP- VPA)/VPA	VP: Sales Period VPA: Sales previous period
Unity	Percentage	
Periodicity	Quarter	
Goal	OK: IND >=40% ALERT:20%<= IND< 40% INACcEPTABLE:IND < 20%	

Table 6 Sales Growth Indicator
Source: Own Elaboration

$$\text{C. From towing sales} = 100 * (\text{VP} - \text{VPA})/\text{VPA} = 100 * (9 - 10)/10 = 10$$

Table 7 shows the indicator for the measurement of the learning and growth strategy for the trailer area which consists of how many employees are satisfied divided by the total employees in this case only those of the trailer area were considered which I throw as a result 66.7% this is interpreted as unacceptable to the goal set.

$$\text{Satisfaction of employees} \frac{\text{ES}}{\text{TE}} * 100 = \frac{2}{3} * 100 = 66.7\%$$

Indicator Name	Employee satisfaction trailer area	
Formula	ES/ TE *100	EN: Satisfied employees TE: Total employees
Unity	Percentage	
Periodicity	Trimester	
Goal	OK: 85% >=100% ALERT:70%<= IND< 84% INACCEPTABLE:IND < 69%	

Table 7 Indicator of employee satisfaction in the area of trailers

Acknowledgement

We thank the veterinary company and supplies PA`LANTE S.P.R.L DE R.L DE C.V. for the support for the realization of the research project and the Higher Technological Institute of Naranjos.

Conclusions

The project carried out to the company Veterinaria e Insumos PA`LANTE S.P.R. from R.L. of CV, was carried out with the objective of applying the methodology of the Balanced Scorecard model in the production area in order that the veterinarian would have indicators that help him measure and quantify productivity and thus be able to integrate the strategies to the general objectives of the company. The process analysis can lead to redesign actions to increase efficiency, reduce costs, improve quality and shorten times by reducing production and delivery of the product or service. Based on the results obtained in this study, it was possible to identify the factors that are influencing and affecting the production time.

Recommendations

Management is recommended to assign specific tasks to its workers, in order to eliminate downtime in the production area since they are not only dedicated to the repair of trailers but are assigned to other activities within the organization. It is also recommended to apply monthly the logistic management indicators (KPIs) proposed to measure efficiency and finally apply the methodology in all areas of the company as it would help to measure the performance and performance of the organization as well as to develop strategies competitive.

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Automation of registration and data collection processes for the diagnosis of University Social Responsibility of the Universidad Tecnológica de Jalisco

Automatización de los procesos de registro y levantamiento de datos para el diagnóstico de Responsabilidad Social Universitaria de la Universidad Tecnológica de Jalisco

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Abstract

This article describes the process of analysis, design, development and implementation of the modules of registration, validation and data collection on the RESSUDI Web Site for the development of the initial diagnosis of University Social Responsibility at the Universidad Tecnológica de Jalisco. This technological development meets the need to implement actions and strategies in the integral formation of the University Community that transcend the Institution's interior and exterior, for which the Research Group (RG) UTJAL-CA-2 Social Responsibility, Sustainability and Integral Development for SMEs developed through its Innovative Lines of Applied Research and Technological Development (ILARTD) this implementation through the agile SCRUM methodology, derived from its periodicity characteristics and its high flexibility to changes. The data collection module includes different questionnaires for each of the actors that make up the University Community, such as academics, administrative staff and students, which will be later analyzed through the specialized statistical software SPSS for the development of an Intervention Program Institutional.

Web application, Web development, University Social Responsibility

Resumen

El presente artículo describe el proceso de análisis, diseño, desarrollo e implementación de los módulos de registro, validación y levantamiento de datos en el Sitio Web RESSUDI para la elaboración del diagnóstico inicial de Responsabilidad Social Universitaria en la Universidad Tecnológica de Jalisco. Este desarrollo tecnológico tiene el objetivo de brindar un diganóstico para implementar acciones y estrategias en la formación integral de la Comunidad Universitaria que trasciendan al interior y exterior de la Institución, por lo que el Cuerpo Académico Consolidado (CAC) UTJAL-CA-2 Responsabilidad Social, Sustentabilidad y Desarrollo Integral para PyMES desarrolló a través de sus Líneas Innovadoras de Investigación Aplicada y Desarrollo Tecnológico (LLIADT) esta implementación a través de la metodología ágil SCRUM, derivado de sus características de periodicidad y su alta flexibilidad a los cambios. El módulo de levantamiento de datos contempla distintos cuestionarios para cada uno de los actores que conforman la Comunidad Universitaria, tales como los académicos, administrativos y estudiantes, los que serán posteriormente analizados a través del software estadístico especializado SPSS para el desarrollo de un Programa de Intervención Institucional.

Aplicación web, Desarrollo web, responsabilidad social universitaria

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Introduction

At the end of 2017, the General Coordination of Technological and Polytechnic Universities (CGUTyP) presented the National Tutorial Model of the UUTT Subsystem, which defines the operating policies of the Institutional Tutoring Program, the profile of the tutor, activities and responsibilities of the actors involved, as well as a proposal of indicators that allows to determine the existence, sufficiency, efficiency, effectiveness and results of the program.

Thus, in January 2018, the Technological University of Jalisco (UTJ) begins with the analysis and design of strategies for the implementation of the Institutional Tutoring Program (PIT). The Rectory and Academic Secretariat, through the Institutional Tutoring Academy, make up the Institutional Tutoring Committee, which as a Collegiate Body in the Institution established a work plan and a line of action for the tasks and activities to be carried out.

In this scenario and with the imperative of carrying out actions that contribute to the integral formation of students, with a special emphasis on inclusion, gender equity and with a Social Responsibility approach, it is that it is integrated into the Consolidated Academic Body (CAC) Social Responsibility, Sustainability and Integral Development for SMEs, which from its Innovative Lines of Applied Research and Technological Development (LIIADT) developed a proposal to strengthen the PIT of the UTJ. This proposal initially contemplates the realization of a diagnosis in which the whole community can participate, making evident the actions, tasks and activities that are carried out in the Institution and outside it, with the objective of potentializing and consolidating them, as well as for the implementation of new intentional actions.

With this objective and being consistent with the Integral Quality and Environmental Management System, we opted for the development of a module for data collection through a web application, to subsequently perform the data analysis, using the Software: Statistical Package for the Social Sciences (SPSS), and thus determine a characterization of Social Responsibility at the Technological University of Jalisco.

This technological implementation was integrated into the UTJAL-CA-2 Integral Information System which is stored and managed from the UTJ servers and is accessible from: http://ressudi.utj.edu.mx.

This implementation of the data collection module was designed to impact more than 4,000 people who make up the university community, categorized as students, professors and administrators, in the latter are also considered management positions.

Prior to the technological development, the design of the data collection instruments was carried out, tropicalizing the questions to the activities, impact and responsibilities of each of the mentioned categories and relating them in such a way that it is possible to cross the reagents in each category of community.

Methodology

The technological project was developed in a four-month period between January and April 2018, in which Scrum was determined as the development methodology for the application, since it allows managing projects based on partial deliveries and which also includes on a regular basis and constant partial deliveries and thus ensures the development of the project more quickly. This methodology establishes three main roles: Project owner (project owner) that defines the objectives and verifies that everything is done correctly, Master Scrum (expert in Scrum) that solves the problems that arise in the team and the Scrum team (Scrum team) which is the development team.

This methodology is described by Laínez (2015) as ideal for incremental development in complex scenarios where the requirements have to change frequently. In the implementation of this methodology we worked in phases, such as: analysis, design, development and testing.

Analysis

This phase of the project began with the development of the product stack (Product Backlog), which is a document in which all the relevant information is collected, as well as the tasks that are intended to be performed, the requirements with which you must have the application and all the functionalities and features that the project needs.

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The start of data collection required the consultation of frames and proposals of University Social Responsibility, as well as resources derived from various collaborations in the meetings of the University Social Responsibility Union Latin America (URSULA) and the Model of University Social Responsibility for the Association National University and Higher Education Institutions (ANUIES) Central West Region, through the Committee for Integral Development and Social Responsibility, as well as the National Tutoring Model of the CGUTyP and the LIIADT of the UTJAL-CA-2.

Likewise; Continuous interviews with experts and leaders in Social Responsibility were included, such as the Expo Guadalajara Regional ally Foundation of the Mexican Center for Philanthropy (CEMEFI), the Chamber of the Jalisco Construction Industry promoting the Global Compact of the United Nations Organization (UN) and the Tutoring Coordinations of the Technological Universities of León and Aguascalientes for the National Tutoring Model, this set of face-to-face interviews and videoconferences allowed defining the scope, focus, objectives, impact and operation of the application, as well as its subsequent communication with the SPSS.

After having the information classified and categorized by functionalities, it began with the preparation of the Software Requirements Specification (ERS) document for which the template offered by the IEEE Std 830-1998 of the Institute of Electrical and Electronics Engineers was used (IEEE, 1998), this document specified the roles of the participants, the characteristics of the users, the scope of the software, as well as the functional and non-functional requirements.

Below is the description of some specific ERS requirements:

Requirement number	R7.14		
Requirement name	Create personnel category		
Type	1 Requirement	0 Restriction	
Source of the requirement	Interview 01/25/2019, record 10		
Requirement Priority	1 High / Essential	0 Average / Desired	0 Low

Requirement number	R8.02		
Requirement name	Export survey results to Microsoft Excel		
Type	1 Requirement	0 Restriction	
Source of the requirement	Interview 01/12/2019, record 05		
Requirement Priority	1 High / Essential	0 Average / Desired	0 Low

Requirement number	R8.03		
Requirement name	Export survey results to PDF		
Type	1 Requirement	0 Restriction	
Source of the requirement	Interview 01/12/2019, record 06		
Requirement Priority	1 High / Essential	0 Average / Desired	0 Low

Requirement number	R8.04		
Requirement name	Export survey results in CSV		
Type	1 Requirement	0 Restriction	
Source of the requirement	Interview 01/12/2019, registration 07		
Requirement Priority	1 High / Essential	0 Average / Desired	0 Low

Requirement number	R1.11		
Requirement name	Create Account		
Type	1 Requirement	0 Restriction	
Source of the requirement	Interview 01/12/2019, record 05		
Requirement Priority	1 High / Essential	0 Average / Desired	0 Low

Requirement number	R1.12		
Requirement name	Confirm account registration		
Type	1 Requirement	0 Restriction	
Source of the requirement	Interview 01/12/2019, record 06		
Requirement Priority	1 High / Essential	0 Average / Desired	0 Low

Requirement number	R1.13		
Requirement name	Send confirmation email		
Type	1 Requirement	0 Restriction	
Source of the requirement	Interview 01/12/2019, record 06		
Requirement Priority	1 High / Essential	0 Average / Desired	0 Low

Table 1 Specification of requirements

The second stage is the definition of the list of tasks (Sprint Backlog), a document in which the tasks to be performed are defined and assigned to the person in charge of developing them, in addition to the period in which each task should be performed one of the activities, for this task a Gantt chart and a Pert chart were made, which also allowed to control the programming of the tasks.

It is called Sprint at a certain period of time in which a set of tasks or actions must be performed, which were described in the Sprint Backlog document, the objective of these partial deliveries is the possibility of implementing rapid tests on the components and thus evaluate functionality performance or detect unwanted features in the product.

This phase includes meetings every day in the development of the project, these activities do not exceed a duration of more than 15 minutes, and the objective is to communicate progress or problems with all team members, these activities are called Daily Scrum (daily meeting).

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Design

The first task in the architectural design was the development of the block diagram, which allowed to have an outline of the modules or fragments of the functionality and / or models of the application. This, in turn, allowed the development of a class dictionary and the Class-Responsibility-Collaboration (CRC) cards, which allowed to clearly establish the relationships between the software instances, as well as their dependencies and the justification of each one of them. Below is the CRC card of the Indicator entity:

Indicator **Superclase: Category**	
Attributes	**Methods**
-code: integer (4) - name: varchar (40) - category: varchar (40)	+ Link (): void + setName (varchar []): void + getName (): varchar [] + setCategory (varchar []): void + getCategory (): varchar []
Responsibilities	**Collaborations**
Category Linking	Categories
Classification of responses by type of user	User
Classification of responses by indicator	NA

Table 2 CRC Card of the Indicator entity

Through the Unified Modeling Language (UML) modeling of the static and dynamic aspects of the system was performed. The class diagram offered a greater level of detail, as well as determined all the auxiliary fragments necessary for operation. Showing the classes that make up the system describing their relevant attributes, methods and relationships.

From this diagram the Object was detached, which allowed the identification of the behavior of the instances with respect to the established relationships and the state they keep.

In the same way, the use case diagrams were made to model the scenarios in which the actors interact with the system, which allowed us to understand how they access the different functionalities, as well as see the relationships that exist between the cases of raised uses.

Below is the diagram of cases of use of the general functions of the system:

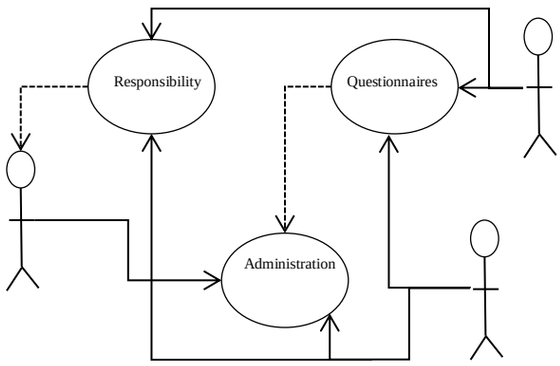

Figure 1 Diagram of cases of use of general functions

Likewise; The development of these models allowed the elaboration of documents such as the definition of use cases, determining the operation and sequence of the actions of the actor, the system and the conditions or alternatives that could occur, as well as the identification of entities in which CRUD processes (Create, Read, Update and Delete) were defined for the entities of the system and the identification of actors, where the inputs and outputs of the system were defined. Below is the detail of the process area in the definition of the use case of adding coordinator:

#	Actor activity	System activity [Description / Calculation]	[Condition] Alternative
1	Click on the coordinator menu.	Display coordinator options menu.	This activity can only be performed by a coordinator.
2	Click on the name option: "Add new coordinator".	The system will redirect the coordinator to another page, which will contain the form to be filled in with the necessary data for the creation of the new coordinator.	This activity can only be performed by a coordinator.
3	Filling out the form with the necessary data for the creation of a new coordinator account	Store the captured data in a text box waiting to be sent for verification.	N/A
4	Click on the "Create" button.	Check that the fields are filled correctly and generate logging.	In case the form has the correct data, the new coordinator account will be created, otherwise the form will be returned with the pertinent comments informing about the incorrect filling contained in said form.

Table 3 Process area of the use case definition of adding coordinator

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The semantic data design allowed the definition of metadata repositories, their relationship and the restrictions of functionality and integrity, which ensure according to Date (2001) the coherence and meaning of the data that is stored.

These restrictions can be by their type, attribute, varrel or from the same database. Likewise; The conceptual and implementation models of the Database were developed through the Relationship Entity diagram and the Relational Model.

Below is a metadata repository of the questionnaire entity:

Questionnaire						
First name	**Description**	**Type**	**Size**	**Domain**	**PK**	**FK**
Id	Question_id	Integer	4	0-9	Yes	No
Description	Questionnaire Name	Varchar	40	A-Z,a-z,0-9	No	No
Period	Quarter	Varchar	20	A-Z,a-z,0-9	No	No
Objective	Objective questionnaire	Varchar	120	A-Z,a-z,0-9	No	No
Results	Results questionnaire	Varchar	200	A-Z,a-z,0-9	No	No

Table 4 Repository of metadata of the questionnaire entity

Developing

The application development phase was carried out with the collaboration and direction of stay projects in which students of the Higher University Technician Educational Program (PE) in Information and Communication Technologies (ICT) Systems area participated Computers, where Sublime Text was used, which defines Ferrer (2015) as a text and source code editor.

This process included the implementation of the internal design through the Model-View-Controller (MVC) pattern, which according to Lieutenant (2003), contemplates the correct administration of the interactions that will be developed with the user, as well as the presentation of the data for its interpretation and the correct communication flow with the domain layer, in which Zend 1.12 was used with version 5.6 of the Hypertext Preprocessor (PHP), defined by Cobo (2205) as a server-side programming language , in which it was necessary to combine with version 2.1 of Jquery, which according to Flanagan (2011) allows to simplify common tasks and hide the differences between versions and browsers.

In the same way, in the Zend Framework development framework, which Padilla (2009) defines as a collection of professional packages for web development, in an object-oriented model with a broad spectrum of benefits.

The alignment of the requirements established by the MVC forced to download the application skeleton from the provider's web portal, which was configured with the characteristics of the local server, which allowed the developers to use the manuals, components and libraries of the web development model. Below is the CAC Integral System interface, which is accessible from http://ressudi.utj.edu.mx:

Figure 2 CAC Integral Web System interface

Through the authentication of the users, and with respect to their level of permissions, all the modules developed can be accessed, the project management interface is shown below:

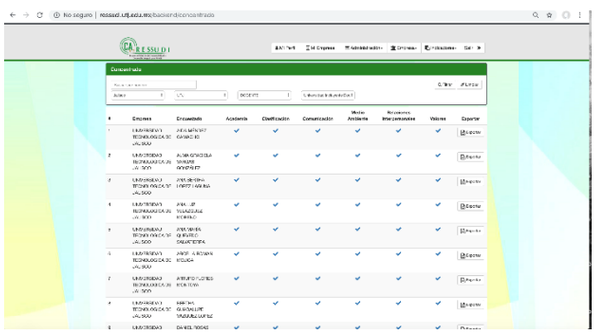

Figure 3 CAC Integral Web System interface

Likewise; You can view the questionnaires, the progress and the accounts created for each category. The administrative user interface is shown below:

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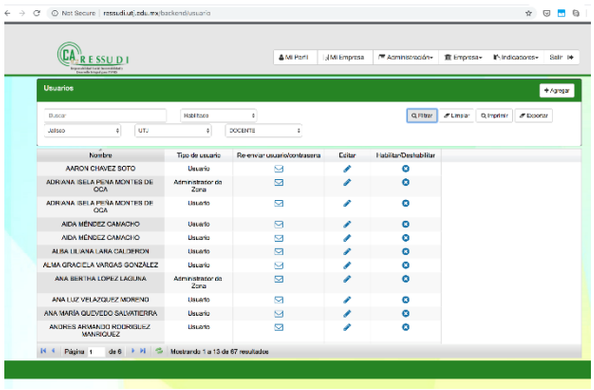

Figure 4 CAC Integral Web System interface

Tests

In this phase, a test plan was designed and implemented for the integration of the module of University Social Responsibility questionnaires into the UTJAL-CA-2 Integral Information System.

This test plan includes general project information, as well as a version history and definition of the scope of the tests, which included:

– Evidence items
– Functionalities to test
– Regression tests
– Functionalities not to try
– Test strategy

Further; With the objective of determining an approximate performance of the execution of the Use Cases, the criteria of acceptance and rejection of the tests were defined through binary behavior. As well as the determination of deliverables, resources, planning and organization for the execution of the test plan.

Results

It was determined to continue with a centralized data storage system for its administration because the estimate made according to the operational capacity of a data collection day of the six divisions of the University concurrently and with a connected computer laboratory at the same time by division, it contemplates a simultaneous connectivity of approximately 150 people, so that customer requests, data storage management and operations processing do not justify the cost of a distributed database.

Regarding the determination of the development, installation and configuration environment of the server, no restriction was contemplated except for the acquisition of licenses, so it was decided to implement free technologies, which favors the adaptation of technologies to its processes by not representing licensing costs and which in turn was consistent with the rest of the modules that make up the existing system.

Cases that contemplated aspects of connectivity, performance, interface and functionality were carried out through the test plan; for which the simultaneous connection of 165 users and their respective requests as customers, as well as the outputs of the processes, which through descriptive statistics allowed to determine the coincidence in 98.20% with the expected results in the cases of proof. The rest of the exits that did not meet the acceptance criteria were documented and reprocessed.

Conclusions

The implementation of the module for the automation of the processes of registration and data collection, is a fundamental tool for the process of preparing the diagnosis of University Social Responsibility, since it provides a massive systematized means for data collection in the University , which can certainly be applied to other projects, which in the future require the collection of data in a massive way.

Likewise; This project is congruent with the Integral Quality and Environmental System of the Institution, which is made up of ISO 9001: 2015 and ISO 14001: 2004, since no paper was used in this process.

In the same way, the connectivity of this module with the SPSS allows rapid data manipulation to determine the characterization of the RSU in the UTJ. This project is only the first phase of the implementation of the National Tutoring Model with a vision of inclusion, gender equity and Social Responsibility, since with the characterization obtained, strategies aimed at strengthening and consolidating the policies of the Institution, and of course to contribute to the integral formation of the students and workers of the Technological University of Jalisco, all this from a Social Responsibility perspective.

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Strategies oh the marketing of the footwear industry in San Mateo Atenco Plaza Azul

Estrategias de la Mezcla de Mercadotecnia de la Industria del Calzado en San Mateo Atenco Plaza Azul

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Abstract

The manufacture of Mexican footwear is a very prestigious and well-known commercial activity, since it has a history of more than 400 years. The state of Mexico represents 5% of the national value of production. The most representative municipality of this state is San Mateo Atenco. At present, its sales fell between 50 and 60%, according to the producers; this represents a serious situation since ca. 70% of the inhabitants are devoted to this activity. So, this work is focused to identify some elements of marketing used by the footwear industry of San Mateo Atenco and to propose new strategies to positively impact its sales. The research is of an exploratory type, the footwear producers of the Plaza Azul were considered, and a random probabilistic sampling was applied. Some of variables considered were: innovation, quality, guarantee, own brand, credit plan, exhibition, advertising. It was found that: physical location of the Plaza Azul, product quality, accessible and competitive price were some of the strengths. On the other hand, some of the recommendations for this sector are: innovation in design, online sales, diversification of payment methods and to generate customer service standards.

Footwear, Marketing, Strategies

Resumen

La fabricación de calzado mexicano es una actividad comercial de renombre y prestigio, ya que tiene una historia de más de 400 años: el estado de México representa el 5% del valor nacional de la producción. El municipio más representativo de esa entidad es San Mateo Atenco. En la actualidad las ventas cayeron entre un 50% y un 60%, de acuerdo con los productores; situación grave ya que alrededor del 70% de los habitantes se dedica a esta actividad. Por lo que esta investigación identificó los elementos de la mezcla de mercadotecnia utilizados por la industria de calzado de San Mateo Atenco y se propusieron estrategias para impactar positivamente en las ventas. La investigación fue de tipo exploratoria, se consideraron a los productores de calzado de la Plaza Azul y se aplicó el muestreo de forma probabilística aleatoria. Entre las variables consideradas estuvieron: innovación, calidad, garantía, marca propia, plan de crédito, exhibición, publicidad, entre otras. Las fortalezas encontradas fueron: ubicación física de la plaza, calidad del producto, precio accesible y competitivo. Por otro lado, entre las recomendaciones para este sector se encuentran: innovación en el diseño, venta online, diversificación del pago y establecimiento de estándares en atención al cliente.

Calzado, Mercadotecnia, Estrategias

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Introduction

The manufacture of footwear in Mexico has a history of more than 400 years, according to data published by the Ministry of Economy, and has been perfected to become an industrial chain in leather-footwear-renowned and prestigious nationally and international. The main states where production is concentrated are Guanajuato, with 78%, Jalisco 12%, 3.5% in the State of Mexico and Mexico City, with 2.4%. However, and according to the figures of the National Institute of Statistics and Geography (INEGI), in 2017 the total productivity of the factors and contribution to the economic growth of Mexico in this sector had a rate of -0.33% annual growth and In January 2019, based on the Monthly Survey of the Manufacturing Industry (EMIM), the percentages of personnel employed in the production of footwear were -1.5 and 0.5 referring to the plant capacity used. Alarming situation that highlights the crisis facing this economic activity.

That is why it is necessary to generate a market analysis that allows defining the most viable strategies to positively impact the sales of these industries, specifically those located in the municipality of San Mateo Atenco, State of Mexico having Keep in mind that most of them are classified as micro, small and medium enterprises (MSMEs). The variables of the marketing mix are considered: product, price, place and promotion.

The sections of which this research is composed are: frame of reference, where the antecedents, problems, theoretical foundations and an approximation of the general characteristics of the object of study are approached, later the methodology used is described, the results and the conclusions are presented..

Framework

The first antecedents that are had regarding the manufacture of footwear in Mexico correspond to the 17th century. In the state of Guanajuato, the oldest data recorded by the Municipal Historical Archive regarding the manufacture of footwear in the Villa de León is from the year 1645. And Andrés González Cabildo is the name of the oldest shoemaker artisan, according to the information from the archive of the Chamber of the Footwear Industry of the State of Guanajuato (CICEG).

It is important to retake the history and evolution of the footwear industry in Mexico. Some facts from the CIGEC file will be highlighted. In the year of 1719, the first census of the Villa de León, where the existence of 36 houses in which shoe was made, both by Spaniards, as by Indians and mulattos, is built. Subsequently, in 1869, 50 “shoe stores” were found, that is, workshop houses in which families formed artisanal production units. The first formal shoe factory that is registered began work in 1872. By 1900, 17% of Mexico's economically active population worked in the footwear industry, becoming, together with the textile industry, the most important economic activity of León.

Small-scale manufacturing establishments were the pivot to develop footwear manufacturing in Mexico between 1920 and 1930. Production workshops begin to be created vertiginously due to demand, where local capitals act as the main responsible for thereafter those spaces becoming the main regions of the national footwear industry.

On May 24, 1926, the Union of Footwear Manufacturers of León was constituted, whose founding president was Mr. José Padilla Moreno and the first secretary Mr. Ignacio L. Hernández.

“It should be remembered that the propagation of small domestic establishments does not necessarily follow the logic of reproduction, where only the consumption needs of the domestic unit are taken into account, but in many cases, it is also reconstructed from of the situation that the storekeeper himself handles in the market.

The proximity between productive units that produce footwear and productive units or people who make up certain processes support the emergence and reproduction of productive units without a technological base. ”Iglesias (1998)

The consolidation of the footwear industry in Guanajuato came with World War II, because the United States was one of its main consumers.

By 1941, 47.39% of the economically active population was engaged in this activity and the city of León had 1,315 establishments occupying a total of 19,940 people.

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In the 50's the mechanization of the production process begins and the technical principles brought from abroad are integrated. Footwear manufacturers individually promoted their products.

At the end of the decade, the directors of the National Chamber of the Footwear Industry began to organize a sample of the product, following the example of the North American model of trade fairs. The first national exhibition was held in Mexico City in the year 1956.

In 1966, when it was necessary to reactivate the sale of footwear, the X National Exhibition of Footwear was held in León, already known as the Exhibition of the Mexican Footwear Industry, an event that the local press announced as the one that would show "all its potential industrial in the most ambitious exhibition realized until then".

The event, the result of the efforts of several visionaries, ceased to take place due to differences between the representatives of the different Chambers. However, the model was so successful, that the Leon producers decided to continue it.

The manufacturers of the Chamber of the Footwear of the State of Jalisco began in 1977 their "National Spring Exhibition", being the city of Guadalajara, Jalisco. Five years after SAPICA opened its doors in León, ANPIC was born in 1979, the first international exhibition of suppliers.

Thanks to this road and the structure that was established over the years, the Chamber of the Footwear Industry of the State of Guanajuato planned and scheduled the implementation of a special department that would serve as support for the activities that the committee in turn will determine to perform.

Based on this programming, in 1980 the first steps were taken to incorporate human and material resources, which would constitute the department in charge of the exhibition.

That was how, from the 8th. Hall of Leather and Footwear (SAPICA), the Chamber already had the foundations to achieve the objective set. It is in 1982 that SAPICA is called the National Footwear Fair.

The acceptance of this product in the national market is such that the National Chamber of the Footwear Industry (CNIC) reaches its maximum historical level of production when 317 million pairs of footwear are made, of which 7.5% were exported to US market However, the crisis at national level that occurs in the eighties, inevitably affects this sector and says Zarur (1993) "While in 1980 per capita consumption was estimated at 5.6 pairs; in 1989, at the end of the decade it was 2.5 pairs of shoes, which resulted from the loss of the purchasing power of consumers while footwear prices rose markedly, given the increases in production costs. " In 1999, at the age of 25, SAPICA expected 10,000 buyers with the visit of 25 countries around the world, and signed an agreement with CUOROMODA, then the first fair in Latin America, in order to publicize the two fairs in the neighboring countries and on their own.

According to INEGI figures, at the end of the 1990s, 70 million pairs were produced per year and there were 73,439 workers in that direct job, and to get the sector to position itself as a globally recognized producer, actions had to be taken to boost it, which they tried to carry out businessmen, cameras, research centers and government. Due to this and being an article of basic consumption and an important source of employment in the country, the footwear industry occupied a priority place within the National Industrial Development Plan of the Federal Government 2000-2006, during the period of President Vicente Fox Quezada.

The economic censuses of 2009 (INEGI) captured 7,398 economic units dedicated to the manufacture of footwear, representing 1.7% of the total manufacturing industries. They employed 112,727 people, contributing 2.4% of total manufacturing sector employment. The micro establishments in this sector accounted for 78.5%, employing 19% of total staff and generated 6.2% of total gross production. Compared to large companies, which represented only 1%, they employed three out of ten people employed and generated almost 40% of production. As for the total footwear production, 87% was destined for private consumption and the rest was for intermediate demand (national or foreign) regarding trade, freight transport, fabric manufacturing, the manufacture of footwear itself, manufacture of paint, coatings, adhesives and sealants, among others.

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Compared to the years 2013, 2014 and 2015, the footwear industry only generated revenues in the amounts of $ 17, 436, $ 17, 462 and $ 18,013 (millions of pesos) and in terms of employed personnel, the figures were 93, 291; 92,877 and 94, 601, respectively. Noting a decrease in its contribution to GDP, since on average in those years it was 0.6%. According to data provided by the federal government.

The slowdown in the economic figures generated by the footwear industry is evident, and some situations that have contributed to this can be observed. The first important fact is the entry of the country of China into the World Trade Organization (WTO), at the end of 2001 and the other, the entry of Mexico to the Trans-Pacific Economic Cooperation Agreement on February 4, 2016, called the Comprehensive Treaty and Progressive Transpacific Association (TPP).

Referring to China and its incursion in the WTO, this country has managed to enter and maintain important advantages in sectors such as footwear, textiles, electronics, toys, information technologies, among others.

The strategy generated by this country according to Kerber (2002) "[…] in cases of labor-intensive industries, many times focused on learning modus operandi to replace external producers with domestic producers in the medium term and displace them after the markets they dominate.

This is the case of the footwear industry where Chinese brands have been progressively incorporated." Other data highlighted are set forth below.

Esquivel (2015) "China is the world's largest footwear producer, manufactures 5,500 million pairs of footwear and exports 3,100 million pairs annually. In order of importance, China occupies the first place, in sales abroad, it is followed by India with 682 million, Brazil with 520 million, Italy with 425 million, Indonesia with 318 million, Turkey with 270 million and Mexico occupies seventh place with 170 million.

Ten years ago Mexico imported only 3.0% of its consumption of internal footwear, now that consumption has increased to 20% of the total. "

Olvera (2018) "The commercial exchange between Mexico and the United States fell from 81 percent in the 90s to 63 percent in 2016, one year after Republican President Trump issued a protectionist speech since the campaign. In contrast, Mexico's trade with China rose from -1 percent to 10 percent in 2016, according to the China-Mexico Studies Center of the National Autonomous University of Mexico that has investigated the US-China trilateral relationship -Mexico." And he adds that in 2017 while China sold us 67 thousand 741 million dollars (computer products and communication technologies, clothing, footwear, electrical appliances), Mexico only exported 6 thousand 61 million dollars (computer, electronic, communication and auto parts products).

It is important to mention the Asia-Pacific Economic Cooperation Forum (APEC) and whose member countries adopted the Bogor objectives, and the commitment is that by 2020, the economies of the region must have carried out public policies aimed at to the total liberation of the markets to aim at free and open trade. Mexico, like China, are members of APEC. As for the TPP, the member countries are: Australia, Brunei, Canada, Chile, United States, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. Which represented around 40% of world GDP and 25% of international trade and intended to create a new economic bloc in the Pacific by reducing approximately 18,000 customs tariffs. The objective: to change the rules on the exchange of goods and services. However, at the end of January 2017, the United States withdraws. What causes a rearrangement of the treaty and on March 8, 2018, is signed again, but with the name of Integral and Progressive Treaty of Transpacific Association (CPTPP), with the eleven remaining countries.

In an interview with the Expansion Magazine in February 2018, Mr. Alejandro Gómez, executive president of the Chamber of Industry of the State of Guanajuato, commented "We are more concerned about the CPTPP, because as it is written it will allow Vietnam produce footwear using inputs from China (which are up to 50% cheaper than those obtained in Mexico), and export them to the Mexican market duty free. In addition, in Vietnam salaries are up to 50% lower than those paid in the sector. We are not going to be able to compete with this mix with cheap inputs and low salaries."

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And it is highlighted in the published article that Vietnam is the second largest footwear manufacturer in the world, after China. And the bulk of its production is for export. Until now, Vietnamese footwear pays a fee to enter Mexico, which allows balancing low costs. But once the CPTPP is signed, Vietnamese footwear will enter a phase of tariff relief. This concerns Mexican manufacturers, as the Asian product could displace the 235 million pairs sold in Mexico.

Given this panorama, Ernesto Acevedo Fernández, Undersecretary of Industry and Commerce of Mexico, said at a conference (February 25, 2019) that the following actions were immediately proposed in the face of the adverse situation facing the economic activity of footwear : the signing of two Presidential Decrees that temporarily establish a tariff of 25 percent or 30 percent on footwear imports. Which was published in the Official Gazette of the Federation on April 10, 2019.

After this report of background and facts that have impacted the footwear industry, we proceed to describe the object of study that is composed of 366 manufacturers and merchants of footwear established in the Blue Square, which is located in the Municipality of San Mateo Atenco, State of Mexico.

The State of Mexico is divided into 125 municipalities, of which only 6 are in the economic sector of footwear and house 81% of the establishments and 80% of employment. These municipalities are Cuautitlán, Cuautitlán Izcalli, Naucalpan, Tlalnepantla, San Mateo Atenco and Toluca, among others, being the most important of them by the number of companies and by the level of employment it generates: San Mateo Atenco.

87% of the companies in the footwear industry in the State of Mexico are classified as microenterprises, almost 7% as small businesses, 4.55% are medium-sized and 1% are large. Most are located in San Mateo Atenco, which houses just over 40%.

This municipality has an approximate population of 73,000 inhabitants and 75% of the families are dedicated to the manufacture of shoes, both handmade and industrial. Regarding the history of the shoe in this jurisdiction, it is divided into three periods:

- 1900-1912, the processing was generated manually.
- 1913-1931, mechanical machines are used: the first, to sew the cut, the second, to sew the sole and the third, a pedal machine.
- 1932-1959, electric machines are used and the first shoe factories are established.

At present, San Mateo Atenco has also suffered from the events described above concerning China and treaties with other countries. The impact is visualized in the serious decrease of sales. The president of the group of Footwear Producers of San Mateo Atenco (Procasma), Mr. Luis Gonzaga González Tapia, at the end of June 2019 has told the media that the footwear industry in this municipality is at risk due to the floods in the area and to the sale of pirate footwear from China, which has resulted in the closure of 20% of shoe shops.

"It has been very difficult to shield a border so that it does not enter the shoe in a clandestine way because, with the tariff measures, if it entered legally, prices would rise, but it is contraband and it is unfair competition, because we fight with the payment of taxes, insurance affiliations and other obligations as taxpayers, "said the representative of Procasma.

Given this scenario, it is proposed with this research, to analyze the relationship of the elements of the marketing mix (product, price, place and promotion) with the sales index of the footwear companies to determine the strategies that positively influence them, generating its growth and development. Some studies concerning the subject are presented below.

Sánchez (2015) in his study, within the marketing strategies variable, he identified product characteristics, identification of the market segment, measurement of the level of customer satisfaction, systematic promotion, distribution strategy, among others; and determined that they are factors that turn out to be a latent opportunity for this type of footwear companies.

Since micro, small and medium enterprises are the weakest link in the Mexican economy, in many cases it is difficult to implement these types of strategies, due to their limited resources.

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Huamán (2014) in his thesis concludes that among the factors that the consumer takes into account when purchasing footwear are the model, brand and quality; These are the most relevant points that you consider before making your purchase.

It is necessary to give importance to the points of distribution of the product considering the responses of the respondents that the point of commercialization is frequented in order to reach the target audience and reinforce the application of strategies that strengthen the image of the Association, with a brand that generates confidence in the market and excellent service that allows customer loyalty with the company.

Hijar (2017) a marketing plan for any type of company regardless of its size is of the utmost importance, since it will allow you to have a clear overview of your environment and achieve your proposed objectives. Corporate clients will be the first to perceive the changes if the proposed plan is implemented. Managers, to implement the proposal, at first (first two months) may not perceive the benefits of having a marketing plan, but then they will see the difference reflected in the increase in sales.

Álvarez (2010) concludes that, by implementing a strategic marketing plan, an advertising program, boosting new product lines, potentiating distribution channels and maintaining the prices and variety of footwear products that are made results in an increase in sales and profitability levels.

Sahui and Patron (2016) conclude in the analysis of the XYZ shoe company, the problem of not carrying out environmental monitoring is exacerbated in the case of SMEs, since they do not have the resources in time, money and / or personnel to carry out this analysis, which leads them to end up reacting simply to the changes that are presented, forgetting with this the need to assume in their business practice a proactive attitude.

As for the marketing mix, it can be said that it represents the combination and management of the four basic elements: product, price, place and promotion to meet the customer's need. Some other definitions to consider are:

Stanton et al (2007) "An effective marketing mix meets the needs of the consumer since they are the main reason for the survival and proper functioning of any company, creates a competitive advantage, adjusts to the company's resources, as well as it offers a combined good."

Kotler and Armstrong (2016) "The set of controllable tactical marketing tools that the company combines to produce a desired response in the target market. The marketing mix includes everything the company can do to influence the demand for its product."

Ferrel and Hartline (2006) "The marketing mix offers a means through which the variables of product, price, promotion and place can be assembled to meet the needs of the channel. The marketing mix is a set of tools that can be used to meet the needs and wishes of customers."

Münch (2005) "It is the set of controllable attributes (product, price, distribution and promotion) that the company uses to exert an influence on the market that it has as its object."

Arellano (2002) "The idea that underlies the design of a suitable marketing mix lies in the search for a harmonious relationship between all the elements, so that not only do not exist contradictions between the various aspects, but also each of them support the best functioning of others and the whole (synergistic effect)."

However, it is important to retake the elements of the marketing mix established in 1960 by E. Jerome McCarthy and which are still in force. The classification based on Kotler and Armstrong (2016) is:

– Product. It is the set of tangible or intangible attributes that the company offers to the target market. Its variables are: variety, quality, design, characteristics, brand, packaging, services and guarantees.

– Price. Amount of money that customers have to pay for a particular product or service. Its variables are: list price, discounts, supplements, payment period and credit conditions.

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– Square. Those activities of the company that make the product available to the target market. Its variables are: distribution channels, coverage, assortment, locations, inventory, transport and logistics.

– Promotion. Activities whose objective is to inform, persuade and remember the characteristics, advantages and benefits of the product or service to the target market. Its variables are: advertising, personal sale, sales promotion, public relations, telemarketing and propaganda.

Problem Statement

Although the development of the optimal marketing mix is a construct of remarkable importance not only for the shoe industry, given its impact on the profitability of companies, the evaluation of this is difficult, due both to the complexity and to which it depends on the perceptions and attitudes of consumers.

The objective of this work is to develop a model that provides empirical support for decision-making by suggesting and validating a multidimensional model, specifically for the design of a marketing mix for footwear manufacturers in San Mateo Atenco of the Blue Square. To support the predictive validity of the model, the weekly sales index is incorporated as a dependent variable, considering that they are the end result of the marketing mix designed.

Method

The type of research that was carried out is with a quantitative approach and exploratory scope that is used when there is no previous research on the object of study or when the knowledge of the subject is so vague and inaccurate that prevents drawing the most provisional conclusions on what aspects are relevant and which not.

The first stage of the methodology was the design of a set of reagents that ensure the validity of the content of the marketing mix. For this, the four components of the marketing mix that are cited in the literature and determined by E. Jerome McCarthy were taken into account. For each of these components of the marketing mix, a certain number of reagents or questions were prepared (Table 1).

Reagents referring to the marketing mix are on a Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The reagents that constitute each of the four components of the marketing mix were integrated into a questionnaire that in total includes 24 questions organized in four sections, the first eight refer to the Product variable, the next four provide information about the second Variable that is Price, for the Plaza variable the following three questions and the following nine questions provide Promotion information that is the last variable to study; Likewise, the comments section is added so that the respondent (shoe manufacturer) can express opinions on aspects that are not considered in the previous questions and are of interest to him (see Appendix 1).

A section was added to the questionnaire that shows the main characteristics of footwear manufacturers in terms of seniority in the business, the number of employees and of course the response variable that in this case is the level of sales, since it consider this as the ultimate result of the manufacturer's effort in designing the right marketing mix to satisfy the consumer. The determination of the independent variables and the research questions associated with each of them are shown in Table 1. The dependent variable was established as the weekly sales level of the producers, in three ranges of values; 5,000 -10,000, 10,001-15,000 and 15,001-20,000.

Variable	Descripción
Producto	El producto es un factor importante de nuestra investigación, es por esto por lo que creemos que es necesario saber cuál es la calidad del producto, qué tipos de materiales utilizan, cómo se realizan los diseños de los diferentes modelos de calzado así mismo, de qué forma innovan los zapatos y cuál es el enfoque del producto.
Precio	Esta variable influye directamente en la venta del producto por lo que necesitamos conocer el proceso y los factores que influyen en la fijación de precio, como por ejemplo la calidad, intermediarios, proveedores, costos fijos y variables.
Plaza	Nos interesa conocer acerca de los factores que influyeron para decidir en la elección del lugar para establecerse de igual manera si influye su ubicación en la venta de su producto, así como también cómo fue que al decidirse por la Plaza Azul se les asignó el local.
Promoción	Para esta variable queremos saber quién está a cargo de la publicidad y cómo esta persona decide hacerlas, cómo influyen en las ventas y además, cómo lo hacen de acuerdo a las temporadas. También queremos saber en qué se basan para establecer descuentos y cuál es el impacto en sus ventas de igual manera si maquilan para alguna marca de calzado o fabrican su propia marca.

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Variable	Descripción
Producto	¿Qué tipos de materiales utilizan? ¿La calidad del producto es con base en sus materias primas? ¿Existen un diseño específico para temporadas? ¿Crean nuevos diseños cada inicio de temporada?
Precio	¿Fija precio conforme a la competencia? ¿El precio está influido con los proveedores? ¿Le beneficia producir a cantidades mayores de producto? ¿Los costos unitarios varían de acuerdo con cada producto? ¿Utiliza alguna técnica para determinar su utilidad en sus productos? ¿Contempla los cargos indirectos para fijar precios?
Plaza	¿Está en un punto estratégico de venta? ¿La ubicación del establecimiento influye en las ventas? ¿Por qué eligió ese lugar para su venta? ¿Cuenta con el espacio suficiente para sus productos?
Promo-ción	¿Da conocer su negocio a través de folletos, revistas, periódicos, redes sociales? ¿La venta personal influye en las ventas? ¿Aplica algún descuento en compra mayorista de sus productos? ¿La publicidad general de la Plaza Azul incrementa los clientes? ¿Asesora a sus empleados para la venta personal de los productos? ¿Le ofrece alguna garantía para la venta de sus productos?

Table 1 Reagent Design

The measuring instrument was reviewed by ten San Mateo Atenco footwear manufacturers, who deemed it appropriate for the purposes of the study. This trial, together with the review of the literature on which its design was based and the cross-review that the researchers of this project made, ensure the initial validity of the instrument. This pre-test allowed to correct the syntax of the reagents, modify some terms that were not clear to the respondent and estimate the duration of the surveys.

The source of information by origin is primary, since the data collection was exclusively for the present investigation.

Determination of sample size

The population under study are the producers of the Footwear Industry of San Mateo Atenco that market their products in Plaza Azul, located at Av. Independencia S / N, Magdalena, 52104 San Mateo Atenco, State of Mexico. The square has 366 shops.

The sample size is determined by applying the following formula for finite samples:

$$n = \frac{Z^2\ pq\ N}{Ne^2\ +\ Z^2\ pq} \quad (1)$$

Teniendo como base los siguientes datos:

n = Tamaño de la muestra
Z =1.96 Valor de Z para un nivel de confianza de 95%
p = Probabilidad de que el evento se realice (.5)
q= Probabilidad de que el evento no se realice (.5)
N = Universo (366)
e = Error de estimación, valor máximo permisible 5%, valor del (.05)

Sustituyendo en fórmula:

$$n = \frac{(1.96)^2\,(0.5)(0.5)(366)}{(366)(0.05)^2 + (1.96)^2(0.5)(0.5)}$$
$$= 187.43009 = 188$$

Therefore, from the 366 merchants in the Blue Square, a sample of 188 stores was taken to which the measuring instrument was applied.

The sampling was carried out in a random probabilistic manner, this in order that all traders had the same probability of being surveyed and the sampling was not biased and reliability was lost in the information obtained. For this, all the shops were listed respecting the numbering they have in the square, values from random number tables will be taken and those corresponding to the table numbers were surveyed until the sample size is covered.

The application of the pre-test was carried out on March 22, 2018, the observations about the instrument were attended, giving guidelines to continue with the application of the same in the following two weekends, in a schedule of 11: 00-13: 00 hours and from 16: 00-18: 00 hours. Once the number of surveys was completed, the coding of the responses was performed, setting a unique code for lost data. The data so edited were entered into a spreadsheet.

Results

To contextualize the findings that will be presented in this section, the profile of the San Mateo Atenco footwear manufacturers who market their products in the Blue Square, which formed the study sample, is described. The 4,700 opinions collected correspond mainly to producers who have an average seniority of 5 to 25 years in the business and mostly have less than 11 employees, with an average weekly sales level ranging from $ 7,500 to $ 12,500.

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With the information obtained, data coding was carried out for which the Minitab 18 ® software was used, since it presents the main functions necessary to perform the analytical process from start to finish. Regression analysis was used, which is described as a method to detect interactions in multiple regression models.

The first regression analysis of the dependent variable was performed with all the variables of the marketing mix contemplated in the survey, obtaining a P-Value of 0.041; It can be seen that the independent variables that have a statistically significant effect on sales are: Credit plan with a P-Value 0.023 and Exhibition at the point of sale with a P-Value of 0.058. The model has an adjusted correlation index of R-(sq-ADJ) = 20.85%, we can deduce that the sales index of footwear manufacturers are influenced by multidimensional factors, mainly by changing perceptions, which is difficult to model.

Analysis of Variance

Source	Var	Adj SS	Adj MS	P-Value
Regression		1602986039	16873537	0.046
Product	X1	36461551	9115388	0.535
Designs	X2	13709133	3427283	0.879
High quality	X3	54955533	13738883	0.322
High durability	X4	43536741	10884185	0.444
Special use	X5	50595547	12648887	0.365
Warranty	X6	71304510	17826127	0.198
Brand	X7	89002545	22250636	0.115
Making	X8	14584464	3646116	0.866
Competency	X9	74286994	18571749	0.181
Credit Plan	X10	139913425	34978356	0.023
Accessible	X11	28611446	7152861	0.65
Payment Card	X12	10123460	2530865	0.927
Location	X13	62176613	15544153	0.261
Exhibition	X14	110579201	27644800	0.050
Wholesale	X15	46894942	11723735	0.405
Sup. Personnel	X16	16382927	4095732	0.84
Section System	X17	38509916	9627479	0.508
Catalog	X18	4903593	1225898	0.98
Discount	X19	31154189	7788547	0.611
Direct Form	X20	77267023	19316756	0.165
Pub. Online	X21	36934462	9233615	0.529
Pub. Written	X22	16679011	4169753	0.835
Pub. Radio & Television	X23	37642960	9410740	0.519
Satisfaction	X24	67870772	22623591	0.127
Error		830347294	11532601	
Lack-of-Fit		717847294	12166903	0.255
Pure Error		112500000	8653846	
Total	24	2433333333		

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
3395.97	65.88%	20.85%	*

The linear regression equation obtained is:

V = 9727 + 0.0 X1_1 + 1755 X1_2 - 3325 X1_3 - 2966 X1_4
- 3622 X1_5 + 0.0 X2_1 - 303 X2_2
- 1123 X2_3 - 691 X2_4 + 281 X2_5 + 0.0 X3_1 - 9479 X3_2
- 11842 X3_3 - 13644 X3_4
- 11442 X3_5 + 0.0 X4_1 + 9855 X4_2 + 3643 X4_3
+ 4554 X4_4 + 2620 X4_5 + 0.0 X5_1
+ 1696 X5_2 + 938 X5_3 + 3268 X5_4 + 2176 X5_5
+ 0.0 X6_1 + 16116 X6_2 + 14741 X6_3
+ 17012 X6_4 + 18558 X6_5 + 0.0 X7_1 - 5625 X7_2
- 6335 X7_3 - 7179 X7_4 - 6291 X7_5
+ 0.0 X8_1 + 89 X8_2 + 562 X8_3 - 1061 X8_4 - 1308 X8_5
+ 0.0 X9_1 + 3512 X9_2
+ 2080 X9_3 + 1215 X9_4 + 4395 X9_5 + 0.0 X10_1
+ 1875 X10_2 + 2607 X10_3 - 801 X10_4
- 1827 X10_5 + 0.0 X11_1 - 1998 X11_2 + 2564 X11_3
+ 3061 X11_4 + 1877 X11_5 + 0.0 X12_1
- 364 X12_2 + 525 X12_3 + 25 X12_4 + 1005 X12_5
+ 0.0 X13_1 + 868 X13_2 + 771 X13_3
+ 1748 X13_4 - 1066 X13_5 + 0.0 X14_1 + 5592 X14_2
+ 6730 X14_3 + 6002 X14_4
+ 10270 X14_5 + 0.0 X15_1 + 2152 X15_2 - 1739 X15_3
- 3253 X15_4 - 2919 X15_5 + 0.0 X16_1
+ 3000 X16_2 + 2448 X16_3 + 995 X16_4 - 80 X16_5
+ 0.0 X17_1 - 3329 X17_2 + 964 X17_3
+ 532 X17_4 + 178 X17_5 + 0.0 X18_1 - 968 X18_2
+ 982 X18_3 + 596 X18_4 + 578 X18_5
+ 0.0 X19_1 - 3491 X19_2 - 5606 X19_3 - 3698 X19_4
- 4301 X19_5 + 0.0 X20_1 + 4558 X20_2
- 7145 X20_3 - 2788 X20_4 - 3161 X20_5 + 0.0 X21_1
- 4696 X21_2 - 2153 X21_3 - 1990 X21_4
- 2223 X21_5 + 0.0 X22_1 + 1150 X22_2 - 335 X22_3
+ 183 X22_4 + 1056 X22_5 + 0.0 X23_1
- 4907 X23_2 - 1731 X23_3 - 1678 X23_4 - 3241 X23_5
+ 0.0 X24_2 - 4271 X24_3 + 226 X24_4
+ 1084 X24_5

The model was tested by making a prediction with the values of one of 188 observations with a sales level of $ 12,500 and a sales value of $ 11993.7 was obtained as shown in the following table.

Prediction

Fit	SE Fit	95% CI	95% PI
11993.7	2355.67	(7297.74-16689.6)	(3754.67, 20232.7)

It can be noted that the prediction of the model is very close to the real value of sales. However, the confidence interval is very wide, which is due to the relationship between the number of observations and the large number of independent variables.

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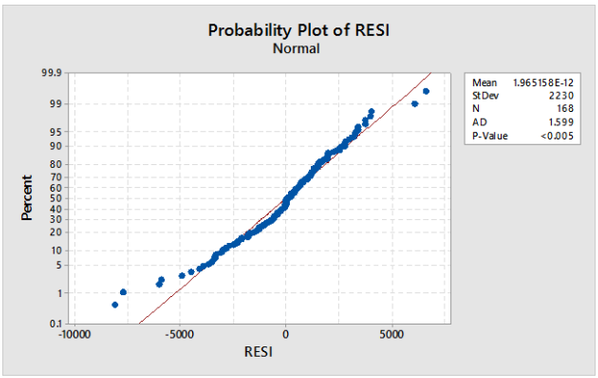
The recommendation for future research would be to increase the number of observations.

Graph 1 shows the test of normality of the waste where the P-Value obtained confirms that the waste is normally distributed.



Graph 1 Normal Probability of Waste. Model with 24 variables

The 10 best variables that influence sales were determined using the Best Subsets tool, obtaining the following:

X1 = Product, X3 = High Quality, X5 = Special use, X8 = Maquilar, X9 = Competition, X10 = Credit Plan, X12 = Card Payment, X14 = Exhibition, X21 = Online Advertising and X23 = Radio and Television Advertising

The linear regression equation is:

V = 7245 + 0.0 X1_1 + 3296 X1_2 - 305 X1_3 - 809 X1_4
+ 140 X1_5 + 0.0 X3_1 + 3137 X3_2
+ 2151 X3_3 + 2665 X3_4 + 3185 X3_5
+ 0.0 X5_1 + 1462 X5_2 + 378 X5_3 + 1488 X5_4
+ 2077 X5_5 + 0.0 X8_1 - 631 X8_2 - 998 X8_3
- 1541 X8_4 - 3600 X8_5 + 0.0 X9_1
+ 2199 X9_2 + 1861 X9_3 + 1729 X9_4 + 4252 X9_5
+ 0.0 X10_1 + 1093 X10_2 + 887 X10_3
- 673 X10_4 - 1356 X10_5 + 0.0 X12_1 + 150 X12_2
+ 958 X12_3 + 1969 X12_4 + 2124 X12_5
+ 0.0 X14_1 - 2753 X14_2 + 458 X14_3 + 511 X14_4
+ 2091 X14_5 + 0.0 X21_1 - 76 X21_2
- 2011 X21_3 - 378 X21_4 - 500 X21_5 + 0.0 X23_1
- 2062 X23_2 - 205 X23_3 - 1350 X23_4
- 2507 X23_5

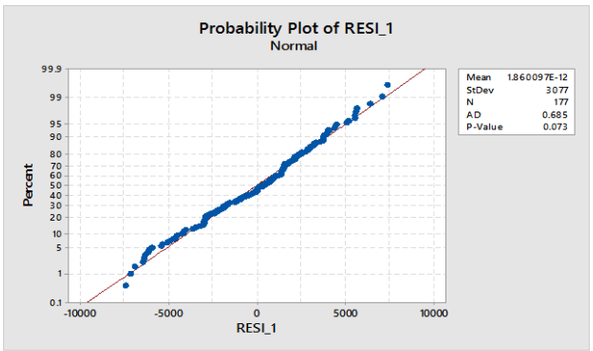
Again, it is observed that the contribution of the individual variables is limited, but as a whole they contribute in a R- (sq-ADJ) = 17.2%, which means that the remaining 14 variables contribute only 3.65%.The model was tested by making a prediction with the values of the same observation used in the first model, with a sales level of $ 12,500. The sales value that was obtained from the prediction is $10,969.6 as shown in the following table.

Prediction

Fit	SE Fit	95% CI	95% PI
10969.6	1562.71	(7879.27, 14060.0)	(3387.98, 18551.3)

Although the sales value is further from the real value than with the previous model, the confidence interval is shorter.

Then the normality test for the waste was carried out, it is shown in Graph 2 with a P-Value of 0.073.



Graph 2 Normal Probability of Waste. Model with 10 variables

A new analysis was performed, in which only the 6 variables that have the greatest contribution to sales were determined. Again the Best Subsets tool was used, obtaining the following:

X3 = High Quality, X5 = Special use, X8 = Making, X9 = Competition, X12 = Card Payment and X14 = Exhibition. With a contribution R- (sq-ADJ) = 9.6%, that is, the remaining 18 variables contribute in only 11.25%.

The linear regression equation for the 6 best variables is:

V=5142 + 0.0 X3_1 + 4446 X3_2 + 4063 X3_3 + 3913 X3_4
+ 4521 X3_5 + 0.0 X5_1 + 1448 X5_2
+ 966 X5_3 + 1277 X5_4 + 1941 X5_5 + 0.0 X8_1 + 10 X8_2
- 1163 X8_3 - 1067 X8_4
- 2438 X8_5 + 0.0 X9_1 + 1421 X9_2 + 1773 X9_3
+ 2128 X9_4 + 3344 X9_5 + 0.0 X12_1
- 441 X12_2 + 1010 X12_3 + 1503 X12_4 + 1352 X12_5
+ 0.0 X14_1 - 4161 X14_2 - 741 X14_3- 1316 X14_4
+ 395 X14_5

The new model was tested by making a prediction with the values of the same observation used in the first and second models. The sales value that was obtained from the prediction is $ 11,999.5, this being the best prediction obtained.

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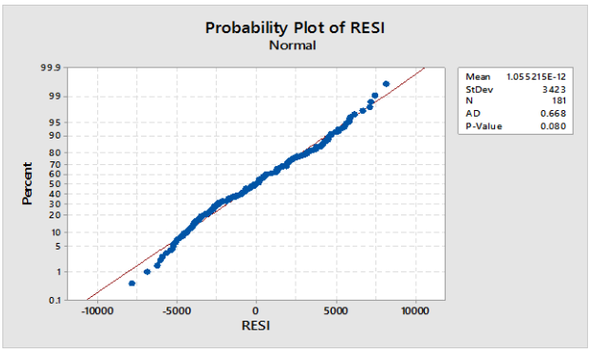
When testing models with a smaller number of variables, it was observed that the value of the correlation coefficient (r) decreases considerably, so that the model selected was that of six variables, since with this number of variables, the model reaches a balance between predictability and size, which gives greater practical utility, since the number of variables on which actions should be taken is reduced, facilitating the design of a successful marketing mix.

Prediction

Fit	SE Fit	95% CI	95% PI
11999.5	1276.26	(9478.49, 14520.4)	(4311.30, 19687.6)

The residue normality test was performed, which is presented in Graph 3. In this it can be seen that the P-Value is 0.080, the highest value of the three models.



Graph 3 Normal Probability of Waste. Model with 6 variables

When making the run with the best results for 6 variables, it was obtained that the variables with the greatest contribution are: High quality, Guarantee, Maquilar, Competitive prices, Card payment and Exhibition in the place. With a contribution of 9.6%, that is, the remaining 18 variables contribute in only 11.25%.

To better understand the behavior of sales with respect to the variables of the marketing mix, an analysis was made about the correlations between the independent variables, the results show that the largest correlations are the following High quality with High durability r = 0.517; Location vs. Local display r = 0.504; Wholesale sales with Discounts r = 0.448, Direct sale with Satisfaction r = 0.439; Location with Wholesale Sales r = 0.408; Display with Guarantee r = .405 and High durability with Display r = 0.405.

It is logical that High quality, High durability, Wholesale and discount sales are highly related, however, it is interesting that Location and Exhibition are related to other variables.

Of the results obtained, it is noteworthy that the Guarantee and High Quality have a correlation index under r = 0.23, when a high positive correlation is expected, since with an excellent quality a high guarantee can be granted.

Conclusions

Having a model that allows them to visualize how the market responds to the different variables of the marketing mix is of vital importance for shoe manufacturers in San Mateo Atenco, since the factors that influence the acceptance of their product have been identified through the market, they can take the road to continuous improvement to increase their competitiveness in the market.

The model presented shows that consumer behavior is influenced by multiple factors.

The factors considered in the model are: High quality, reflected in the use of manufacturing materials and product manufacturing with adequate quality control; Special use, refers to the manufacturer of footwear manufactures footwear for a specific use such as: industrial footwear, orthopedic footwear, ballet shoes etc .; The Maquilar variable refers to the manufacture of footwear that is marketed under a brand different from that of the manufacturer; Competition refers to offering products at a competitive price; Payment by card, as the name implies refers to the payment of the product by credit or debit card; and Exhibition refers to the characteristics of the point of sale, space, form as the product is shown as well as the models that are in sight of the consumer.

Suggested regression models indicate that no variable alone contributes significantly to sales. However, when determining the correlation of the different combinations of variables, a model is obtained that can support the manufacturer to pay special attention to the variables whose contribution is greater.

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Contrary to expectations, the high quality of the materials is not being used by manufacturers to grant a guarantee that is attractive to the consumer, in favor of an increase in sales. Product display, high quality, card payment, online advertising, as well as radio and television advertising are important factors for sales, which is why they should not be neglected. Another variable that attracts attention is maquila, a competitive strategy that is positive for footwear manufacturers, since they use their productive capacity to the fullest. On the other hand, the special use shoe is serving an important niche market.

The model that is most suitable for the prediction of sales is the one that considers the 10 best variables that influence sales using the Best Subsets tool, since it shows that the contribution to sales of the 14 additional variables have a contribution marginal (3.65%). In this model, although the predicted sales value for a particular observation is the furthest from the three models, the confidence interval is better than the model that includes the 24 variables. As for the test of normality of the residues, although the 24-variable model is better, the normality test of the model with 10 variables is acceptable. The 6-variable model contributes very little to sales.

The results of this research contribute to the literature on the marketing mix used by the San Mateo Atenco shoemakers and the effect it can have on the end consumer's acceptance. The main limitation of this study is that it worked with a single place (distribution channel) and with a limited number of small footwear manufacturers. Relevant extensions to this work include studies with footwear producers located in other parts of the Mexican Republic, assessing the impact of consumer loyalty before the entry into the national market of shoes made of synthetic materials of lower quality and lower price. The realization of these studies is relevant to generalize results and specify how the variables of the marketing mix affect the service, satisfaction and loyalty of the Mexican consumer.

Recommendations

Footwear manufacturers should consider the following aspects that have the greatest influence on sales. Pay attention to high quality, since this significantly affects sales, it is also advisable to promote the manufacture of footwear for special use.

With regard to maquilar, this option does not represent a good alternative since it impacts negatively on business sales. The strategy of offering products at a competitive price results in increased sales as well as the possibility of paying by credit and / or debit card positively impacts sales. The display of the product at the point of sale has a negative contribution on sales, so it is recommended not to dedicate resources to improve this aspect.

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Apéndice 1

Cuestionamiento por variable

PRODUCTO
Mi producto es diferente de la competencia
Mis diseños son innovadores
Los materiales que utilizo son de alta calidad
Mi producto es de alta durabilidad
Mi producto es para uso especial
Ofrezco garantía de mi producto
Ofrezco mi propia marca
Maquilo para otras marcas de calzado
La variedad que tengo de producto satisface la necesidad de mis clientes

PRECIO
El precio de mi producto está por arriba de la competencia
Manejo plan de crédito para ventas al mayoreo
Mi precio es accesible para el público
Acepto pago con tarjeta
Ofrezco descuento en la compra de mi producto

PLAZA
Tengo una ubicación adecuada dentro de la plaza
Exhibo todos mis productos en el local
Atiendo pedidos por mayoreo
Mi producto lo vendo de forma directa

PROMOCIÓN
Superviso al personal para realizar la venta de mi producto
Manejo sistema de apartado
Vendo mi producto por catálogo
Doy a conocer mi negocio a través de publicidad en línea
Doy a conocer mi negocio a través de publicidad escrita
La publicidad en radio y televisión de la plaza azul beneficia a mi negocio

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Clearly focus each of its features

Clearly explain the problem to be solved and the central hypothesis.

Explanation of sections Article.

Development of headings and subheadings of the article with subsequent numbers

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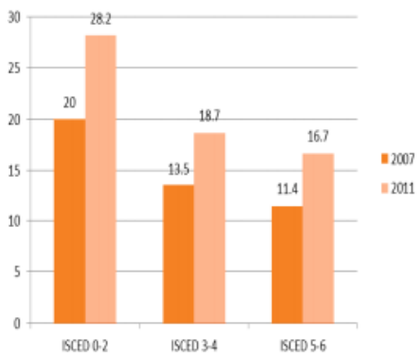

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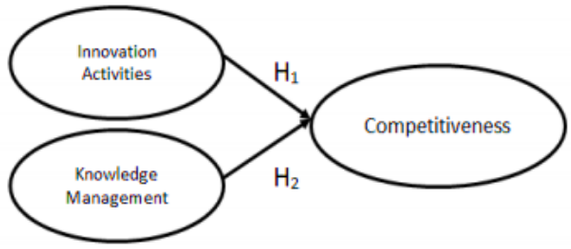

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	test statistic	Optimal lag	critical value	test statistic	Optimal lag	critical value
VOL	-	0	-	-	0	-
OPT	-	0	-	-	0	-
PES	-	0	-	-	0	-
NOR	-	0	-	-	0	-
ER	-	1	-	-	1	-

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Results

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Tables and adequate sources

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