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# **RINOE Journal-Industrial Organization**

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Support the international scientific community in its written production Science, Technology and Innovation in the Field of Social Sciences, in Subdisciplines of Market structure, Firm strategy, and Market performance: Production, Pricing, and Market structure, Size distribution of Firms, Monopoly, Monopolization strategies, Oligopoly and Other imperfect markets, Transactional relationships, Contracts and reputation, Information and Product quality, Industrial Organization and Macroeconomics, Macroeconomic industrial structure; Firm objectives, Organization, and Behavior: business objectives of the Firm, Firm organization and Market structure, Vertical Integration, Organization of Production, Firm Size and Performance; Nonprofit organizations and Public Enterprise: Nonprofit institutions, Public enterprises, Boundaries of public and private enterprise, Privatization, Contracting Out; Antitrust policy: Monopolization, Horizontal anticompetitive practices, Vertical restraints, Resale PRICE maintenance, Quantity Discounts, Legal Monopolies and Regulation or Deregulation, Antitrust policy and public enterprise, Nonprofit Institutions, and Professional Organizations; Regulation and industrial policy, Economics of regulation, Industrial policy, Sectoral planning methods; Industry studies: manufacturing, Metals and Metal products, Cement, Glass, Ceramics, Automobiles, Other transportation equipment, Microelectronics, Computers, Communications equipment, Other Machinery, Business equipment, Armaments, Chemicals, Rubber, Drugs, Biotechnology, Food, Beverages, Cosmetics, Tobacco, Other Consumer Nondurables, Appliances, Other consumer durables; Industry studies: Primary products and construction, Mining, Extraction, and Refining: Hydrocarbon fuels, Other nonrenewable resources, Forest products, Construction; Industry studies: Services, Retail and wholesale trade, Warehousing, Entertainment, Media, Sports, Gambling, Recreation, Tourism, Personal and professional services, Real estate services, Information and internet services, Computer software; Industry studies: Transportation and utilities, Transportation, Railroads and Other surface transportation, Air transportation, Electric utilities, Gas Utilities, Pipelines, Water utilities, Telecommunications, Utilities, Government policy.

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## Presentation of Content

In the first article we present, *Transaction modeling on e-Commerce*, by GONZÁLEZ-CASTOLO, Juan Carlos, RAMOS-CABRAL, Silvia, ZATARAIN-DURÁN, Omar Alí and HERNÁNDEZ-RUEDA, Karen, with adscription in Universidad de Guadalajara, as following article we present, *The importance of women in the preservation of the companies dedicated to the production and sale of the Jipi-Japa hat in the Maya area of Calkiní*, by LÓPEZ-PONCE, María Eugenia, SANTOS-VALENCIA, Raúl Alberto, BACAB-SÁNCHEZ, José Rubén and ORTEGA-RODRÍGUEZ, Ana Luisa, with adscription in Instituto Tecnológico Superior de Calkiní, Instituto Tecnológico de Mérida, and the Instituto Tecnológico de Campeche, as following article we present, *Internal organizational communication, applicable to home office, in the company*, by HERNÁNDEZ-FLORES, María Juana & CRUZ-RAMÍREZ, Erik Santiago, with adscription in Tecnológico de Estudios Superiores de Ixtapaluca, as last article we present, *Business strategies most frequently applied in companies in the municipality of Poza Rica, Veracruz*, by MARTÍNEZ-LEE, Maribel, SALAZAR-VIOLANTE, María Abigail, SARMIENTO-REYES, Celso Ramón and GONZÁLEZ-RIVERA, Montserrat, with adscription in Instituto Tecnológico de Poza Rica.

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Transaction modeling on e-Commerce

Modelado de transacciones en comercio electrónico

GONZÁLEZ-CASTOLO, Juan Carlos†\*, RAMOS-CABRAL, Silvia, ZATARAIN-DURÁN, Omar Alí and HERNÁNDEZ-RUEDA, Karen

Universidad de Guadalajara

ID 1<sup>st</sup> Author: *Juan Carlos, González-Castolo* / **ORC ID:** 0000-0003-2659-0646, **Researcher ID Thomson:** R-5580-2018  
ID 1<sup>st</sup> Co-author: *Silvia, Ramos-Cabral* / **ORC ID:** 0000-0003-4204-1700, **Researcher ID Thomson:** R-7124-2018  
ID 2<sup>nd</sup> Co-author: *Omar Alí, Zatarain-Durán* / **ORC ID:** 0000-0002-7934-7765, **Researcher ID Thomson:** E-2222-2019  
ID 3<sup>rd</sup> Co-author: *Karen, Hernández-Rueda* / **ORC ID:** 0000-0002-7209-2907, **Researcher ID Thomson:** AAM-4861-2021  
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Abstract	Resumen
<p>This article presents the formal representation of the sale and purchase transaction process that occurs in electronic commerce (e-Commerce). E-Commerce is an area of study that has acquired a marked interest in recent times. A direct transaction between provider and consumer is analyzed with two variants of the resulting model that follows the criteria considered from a representation of conceptual maps. The conceptual map resembles a graph, with labels of concepts associated with the nodes and labels, of connectors between concepts, associated with the arcs. The description of the process, using conceptual maps, is accompanied by a narrative of events. Conceptual maps are used because they are a resource that facilitates the presentation of complex processes and gives way to their formalization. Formalizing a process is convenient because it enables its subsequent analysis, modification, improvement, control, and/or monitoring. The previous formal representation consists of a graph and a series of equations derived from the narrative sequence of the conceptual map.</p>	<p>Este artículo presenta la representación formal del proceso de transacción de compraventa que ocurre en el comercio electrónico. El comercio electrónico es un área de estudio que adquiere un acentuado interés en últimas fechas. Se analiza una transacción directa entre proveedor y consumidor con dos variantes del modelo resultante que obedece a los criterios tomados en cuenta desde una presentación dada en mapas conceptuales. El mapa conceptual se asemeja a un grafo, con etiquetas de conceptos asociados a los nodos y etiquetas, de conectores entre conceptos, asociadas a los arcos. La descripción del proceso, utilizando mapas conceptuales, se acompaña de una narración de sucesos. Se utilizan los mapas conceptuales porque son un recurso que facilita la exposición de procesos complejos y da paso a su formalización. Formalizar un proceso es conveniente porque posibilita su posterior análisis, modificación, mejora, control y/o seguimiento. La representación formal aludida, consiste en un grafo y una serie de ecuaciones que se derivan de la secuencia narrativa del mapa conceptual.</p>
E-commerce, ICT, Modeling	Comercio electrónico, TIC, Modelado

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\* Correspondence to Author (email:jcgcastolo@hotmail.com)  
† Researcher contributing first author.

## Introduction

In recent years, the development and use of *information and communication technologies* (ICT) have driven change in society (Coccia, 2019), economic (Makoza, 2020), and political paradigms worldwide (Klymash, Demydov, Uryvskiy, & Pyrih, 2020) (Adam, 2020). The extensive use of the *ICT* is as a highway that facilitates the massive communication breaking the barrier of distance and time (Dhamacharoen, Kumpusiri, & Waiyakarn, 2019) (Arrieta Avendaño & Ruiz Verde, 2020).

The high penetration of the use of ICTs covers both organizations (Kim & Kim, 2020) and people (y Murillo de la Cueva & D'Antonio Maicerias, 2019). In organizations, the use of ICTs is observed in market studies (Nasida Binta Wahab, Salauddin, & Moniruzzaman, 2019), administration (Islam, 2016), *e-Commerce* transactions (Xin, Yiming, & Chang, 2020) (Velázquez López, Martínez Carballo, & Torres Hechavarría, 2021), etc. On the other hand, ICTs are present among people in many aspects of their daily lives and it is accentuated in the use of platforms to establish social networks (Shahbaznezhad, Dolan, & Rashidirad, 2021) (Aldemar, 2020) and buy things online (Ah Fook & McNeill, 2020) (Morillo Ridaura & Baviera Puig, 2021). Then, there is notable growth in *e-Commerce* (Agarwal & Terry, 2015).

Various studies have been carried out in relation to *e-Commerce* such as marketing (Xiang, 2020) (Li, Guo, Sheng, & Chen, 2020), market study (Ebad, 2018), customer satisfaction (Anisah & Suhendra, 2018), production level (Wang, Chai, & Liu, 2018), quality (Gajewska, Zimon, Kaczor, & Madzík, 2020), etc.

In *e-Commerce*, transactions are the most critical condition in the sale-purchase process (Barkatullah & Djumadi, 2018) (Ilmudeen, 2019). Some studies affirm that the future of *e-Commerce* depends on the development of extra-judicial mechanism for conflict resolution adapted to internet dynamics (Przemysław Polan, 2017) (Albrecht, 2018). The mechanisms are called *online dispute resolution* (ODR) and they need to be able to provide the same security and trust to consumers and merchants, however there is no agreed international ODR (González & Nava González, 2020).

Electronic transactions have been studied from different points of view, for example: from the point of view of the *provider* (Cardoso & Martínez, 2019) (Acosta Carlos, Gómez Ramos, & Peña Quitiaquez, 2020), from the point of view of the *consumer* (Sheshasaayee & Logeshwari, 2018), from the point of view of the State (Dumortier, 2014), from the bank's point of view (Salamah, 2017), etc. To make the transaction process explicit from any point of view, a formal method of representation is proposed in this paper. This article is organized as follows. The following section presents the glossary of definitions followed by the theoretical framework about conceptual maps used. The transaction modeling example is shown, and a variant is also included. Finally, the conclusions are given.

## Definition glossary

*Greed state (Gs)*: the emotional level at which a consumer (Cmer) is willing to buy a product.

*Product (P)*: a service and/or object that is offered in the market.

*Consumer (Cmer)*: the entity that acquires a P through a purchase-sale transaction (pst).

*Entity*: the organization or individual.

*Purchase-sale transaction (pst)*: Process to pay with money and receive a P in exchange. To simplify the language, this will be called transaction only.

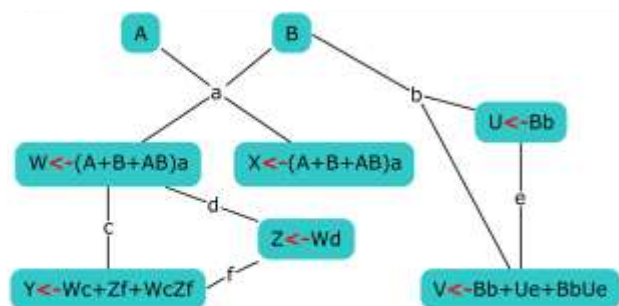
*Provider (Pder)*: the entity that offers its P looking for a pst for said P.

In the context of *e-Commerce*, the *Cmer* and *Pder* are online consumer and provider, respectively. They are called as *econsumer (eCmer)* and *eprovider (ePder)*.

*Or operator*: logical operator that origin a false conclusion when the premises are false.

## Conceptual map formalism

A *conceptual map* is a tool of knowledge representation that resembles a bi-graph where each concept is a node. Arcs are used to relate concepts. The distribution of a *conceptual map* follows a logical link.



**Figure 1** Logical conceptual map with arcs input criteria  
Own Source

### Input criteria

Figure 2 shows that the  $W$  concept is justified by the *or* operator on  $A$ ,  $B$ , and the modifier  $a$  that relates them to  $W$ , (1).

$$\begin{aligned} W &\leftarrow (A \text{ or } B)a \\ &\leftarrow (A + B + AB)a \end{aligned} \quad (1)$$

After the distributive operation, the (2) is obtained and it is reading as *if  $aA$  or  $Ba$  or  $(A$  and  $B)a$  then  $W$* .

$$W \leftarrow Aa + Ba + (AB)a \quad (2)$$

Some elements cannot be present in  $W$  because they are incongruous and/or unnecessary to it explain. Then  $W$  could also be justified by (3).

$$\begin{aligned} W &\leftarrow Aa \\ &\leftarrow Ba \\ &\leftarrow Aa + Ba \\ &\leftarrow Aa + (AB)a \\ &\leftarrow Ba + (AB)a \end{aligned} \quad (3)$$

The  $Aa$  element is the  $A$  concept modified by  $a$ . In other words,  $A$  is related with  $W$  by  $a$ . The  $Aa$  is equivalent to  $aA$  and, the  $(AB)a$  means that each concept is modified by  $a$ , (4). The concept could be referent to an action. In this case,  $(AB)a$  indicates that  $Aa$  and  $Ba$  occur at the same time.

$$\begin{aligned} Aa &\equiv aA \\ (AB)a &\equiv AaBa \end{aligned} \quad (4)$$

The  $X$  node is justified by the same nodes of  $W$  but  $X$  is always different that  $W$  by (3). The *time variable* is present to determine the difference between them. The concept  $V$  is explained by two concepts with a different relationship to each one. Here, the operator *or* is present as equation (1) that explained  $W$ .

Every node has associated one or more modifiers. This is highlighted in  $Y$ , (5).

$$\begin{aligned} Y &\leftarrow Wc + Zf + WcZf \\ \text{as} \\ Z &\leftarrow Wd \\ \text{then} \\ Y &\leftarrow Wc + Wdf + WcWdf \end{aligned} \quad (5)$$

In  $V$  node is presented an atypical case, (6).

$$\begin{aligned} V &\leftarrow Bb + Ue + BbUe \\ \text{as} \\ U &\leftarrow Bb \\ \text{then} \\ V &\leftarrow Bb + Bbe + BbBbe \end{aligned} \quad (6)$$

Then  $Bb$  is different from  $Bbe$ . The  $Bbe$  is a simplify expression of  $(Bb)e$ . In this case, the expressions generated by (4) are limited (7).

$$\begin{aligned} Bbe &\equiv (Bb)e \\ &\equiv (bB)e \\ &\neq bBe \\ &\neq b(Be) \end{aligned} \quad (7)$$

### Output criteria

Figure 2 shows that  $W$  and/or  $Z$  concepts justify  $Y$  with the  $c$ ,  $f$  modifiers, respectively. Additionally,  $W$  with  $d$  justifies  $Z$ . The  $A$  and/or  $B$  concepts justify  $W$  with  $a$  modifier (8).

$$\begin{aligned} A &\rightarrow Wa + Xa + WaXa \\ \text{as} \\ Z &\rightarrow Yf \\ W &\rightarrow Yc + Zd + YcZd \\ &\rightarrow Yc + Yfd + YcYfd \\ \text{then} \\ A &\rightarrow (Yc + Yfd + YcYfd)a + Xa + \\ &\quad (Yc + Yfd + YcYfd)aXa \\ &\rightarrow Yca + Yfda + YcaYfda + Xa + \\ &\quad YcaXa + YfdaXa + YcaYfdaXa \end{aligned} \quad (8)$$

The expression of the node  $A$  has been expanded for the didactic purpose (7) but is enough with the initial representation as shown in Figure 2.

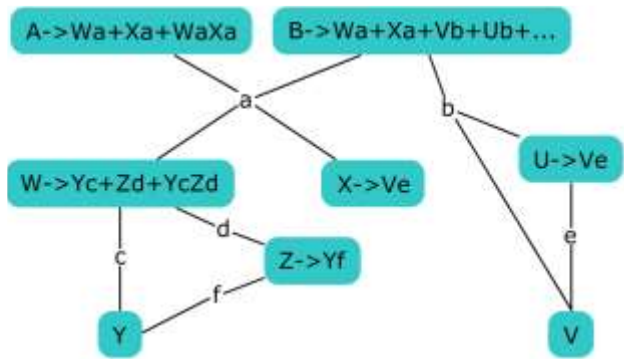


Figure 2 Logical conceptual map with arcs output criteria  
Own Source

Even with a contained representation, the equation for node *B* remains large, (9).

$$B \leftarrow \begin{aligned} &Wa + Xa + Vb + Ub + \\ &WaXa + WaVb + WaUb + \\ &XaVb + XaUb + VbUb + \\ &WaXaVb + WaXaUb + XaVbUb + \\ &WaXaVbUb \end{aligned} \tag{9}$$

The modifier could be omitted in the contained representation when it is not critical to explain the relation. In this case (9) is expressed as (10).

$$B \leftarrow \begin{aligned} &W + X + V + U + \\ &WX + WV + WU + \\ &XV + XU + VU + \\ &WXV + WXU + XVU + \\ &WXVU \end{aligned} \tag{10}$$

The formal conceptual map could be represented with a graph and input and output equations of each node, Figure 3.

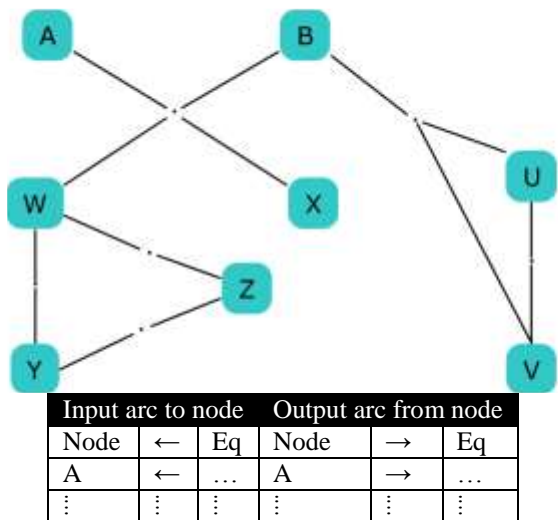


Figure 3 Formal conceptual map representation  
Own Source

Transaction modeling

If payment for a product is received directly by the *ePder*, then it is a *direct transaction*. The payment could be with an *intermediary* and this case is an *indirect transaction*. When the payment could be received directly and indirectly is say *hybrid transaction*. In this work, the *direct transaction* is shown in Figure 4. Table 1 has its description. The *a, b, c, d, e* arcs are essential to explain the relationships between some nodes.

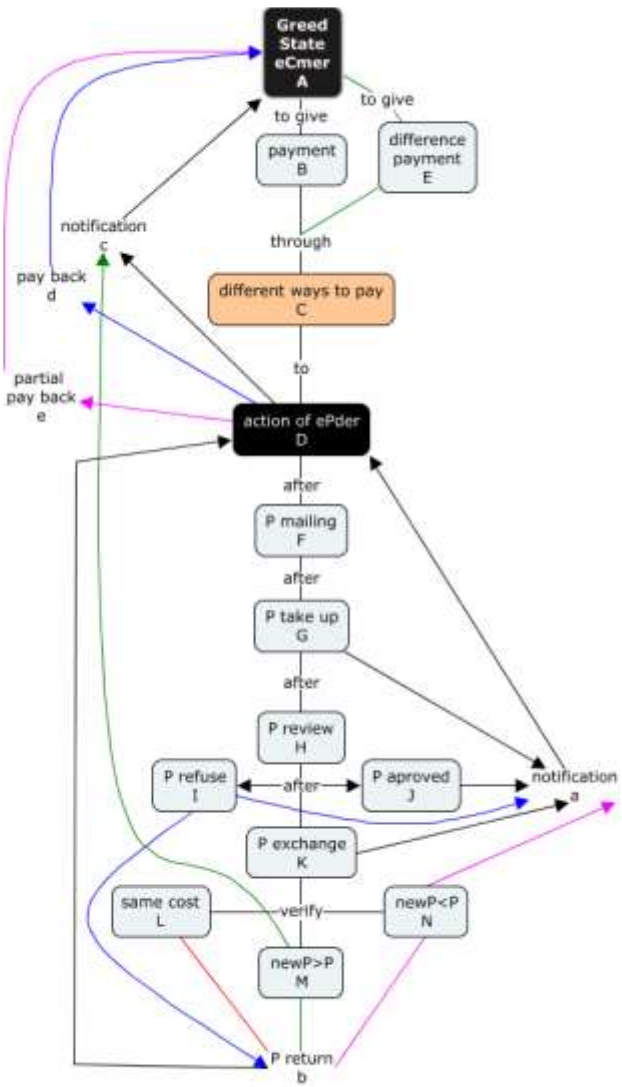


Figure 4 Conceptual map of e-Commerce transaction  
Own Source

Node	arc	Description
A		The <i>eCmer</i> has a <i>G</i> s
B		<i>eCmer</i> going to pay to <i>ePder</i>
C		The payment is through different electronic ways
D		After <i>ePder</i> received the money, he has taken steps to attend <i>eCmer</i>
	c	The <i>eCmer</i> is notified that <i>ePder</i> has been received the money
F		<i>ePder</i> send <i>P</i> in a parcel service
G		The <i>eCmer</i> receives <i>P</i>
	a	Notifies to <i>ePder</i> that <i>eCmer</i> has <i>P</i>
H		<i>eCmer</i> does review <i>P</i> and takes a decision ( <i>I</i> , <i>J</i> , <i>K</i> )
I		<i>eCmer</i> refuses <i>P</i>
	a	Notifies to <i>ePder</i> that <i>eCmer</i> has refused <i>P</i>
	b	<i>eCmer</i> returns <i>P</i> to <i>ePder</i>
D		<i>ePder</i> has taken steps to attend <i>eCmer</i>
	d	<i>ePder</i> return the payment to <i>eCmer</i> and the transaction is finished
J		<i>eCmer</i> is satisfied with <i>P</i>
	a	Notifies to <i>ePder</i> that <i>eCmer</i> is satisfied with <i>P</i> and the transaction is finished
K		<i>eCmer</i> wants to change <i>P</i> and three cases are presented ( <i>L</i> , <i>M</i> , <i>N</i> )
	a	Notifies to <i>ePder</i> that <i>eCmer</i> wants to change <i>P</i>
L		Price <i>P</i> is the same as the new selected <i>P</i>
	b	<i>eCmer</i> returns <i>P</i> to <i>ePder</i> and the transaction cycle continue
M		Price of the new selected <i>P</i> is higher
	b	<i>eCmer</i> returns <i>P</i> to <i>ePder</i>
	c	Notifies to <i>eCmer</i> that it is necessary to cover a price difference
A		<i>eCmer</i> takes steps to cover a price difference
E		<i>eCmer</i> going to pay the difference to <i>ePder</i>
C		The payment is through different electronic ways
D		After <i>ePder</i> received the money and <i>P</i> , he has taken steps to attend <i>eCmer</i> and the transaction cycle continue
N		Price of the new selected <i>P</i> is lower
	b	<i>eCmer</i> returns <i>P</i> to <i>ePder</i>
	a	Notifies to <i>ePder</i> that the price of the new selected <i>P</i> is lower
D		After <i>ePder</i> received <i>P</i> , he has taken steps to attend <i>eCmer</i> and the transaction cycle continue
	e	<i>ePder</i> return the partial payment to <i>eCmer</i>

Table 1. Description of *e-Commerce* transaction  
Own Source

The entry and/or exit arcs to *D* or *A* does not occur at the same time. This asynchrony is noticeable when using different colors.

Figure 5 and Table 2 are the formal conceptual map.

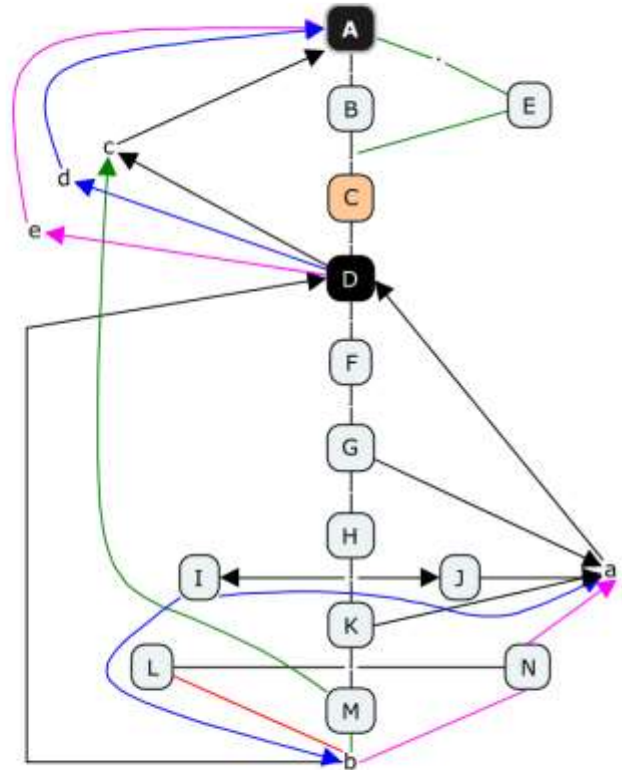


Figure 5 Graph to represent the transaction  
Own Source

input arc to node		
B	←	A
E	←	A
C	←	B+E
D	←	$C+(G+I+J+K+N)a+(I+L+M+N)b+(G+I+J+K+N)a(I+L+M+N)$
F	←	D
G	←	F
H	←	G
I	←	H
J	←	H
K	←	H
L	←	K
M	←	K
N	←	K
A	←	$(D+M)c+Dd+De+DcDd+DcDe$
output arc from node		
A	→	B+E
B	→	C
E	→	C
C	→	D
D	→	$Ac+Ad+Ae+F+FAc+FAcAe+FAe+AcAd$
F	→	G
G	→	$H+Da+HDa$
H	→	$I+J+K$
I	→	$Da+Db+DaDb$
J	→	Da
K	→	$Da+L+M+N+DaL+DaM+DaN$
L	→	Db
M	→	$Db+Ac+DbAc$
N	→	$Db+Da+DbDa$

Table 2 Equations on each node of the graph  
Own Source



Figure 6 shows the *tree coverture* of *e-Commerce* transactions, and this is obtained from Table 1. The green nodes are the end of the branch. The nodes with three dots mean that the *e-Commerce* transaction circle continues. The nodes move from one to the other as their description completes.

From Figure 6, the *a*, *b*, *c*, *d*, and *e*, arcs may originally be nodes on the Figure 7. The description and *tree coverture* do not change. The formal description is presented by Figure 8 and Table 3.

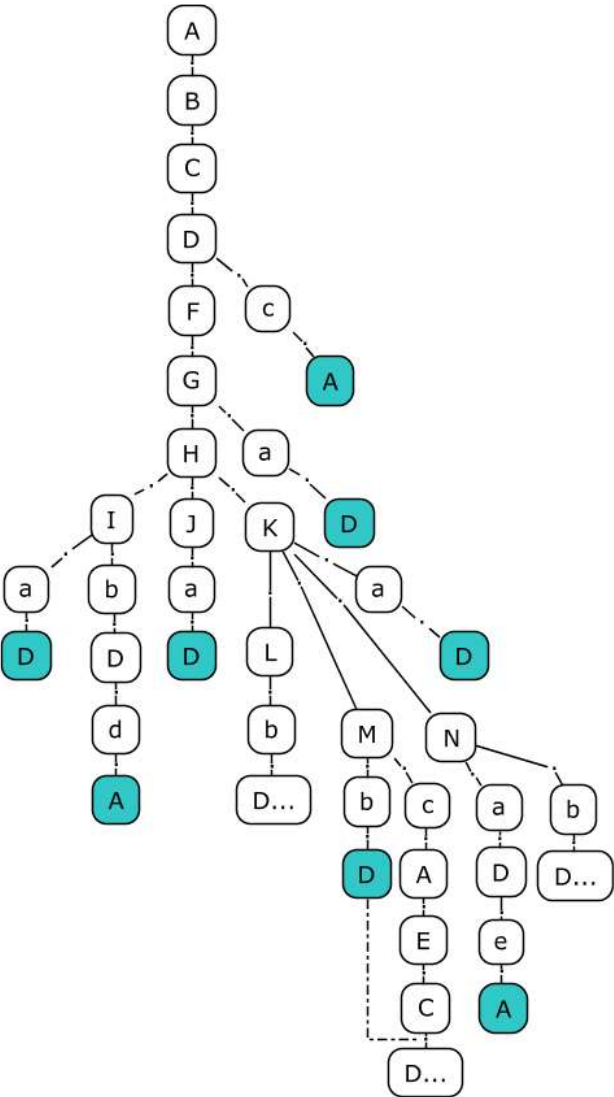


Figure 6 Tree coverture of e-Commerce transaction  
Own Source

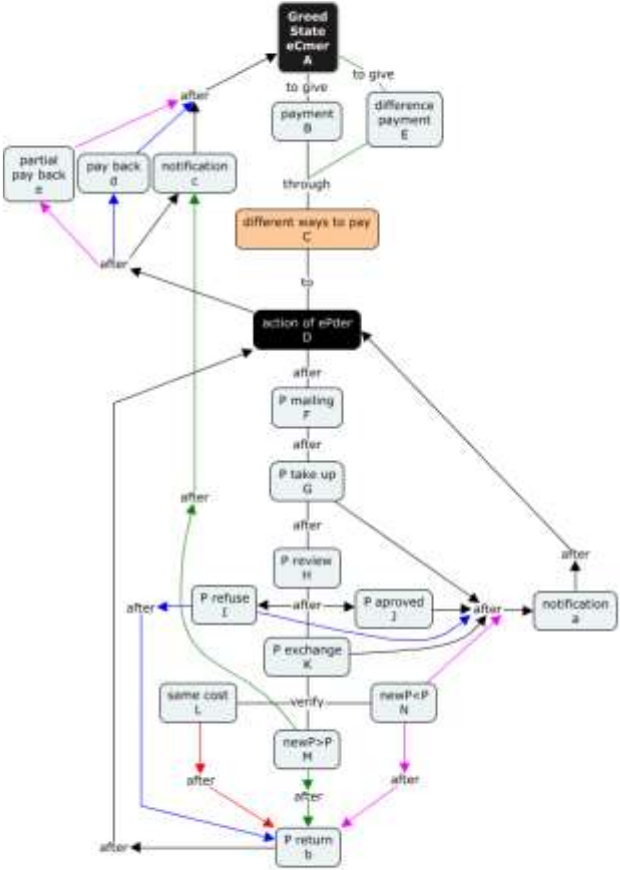


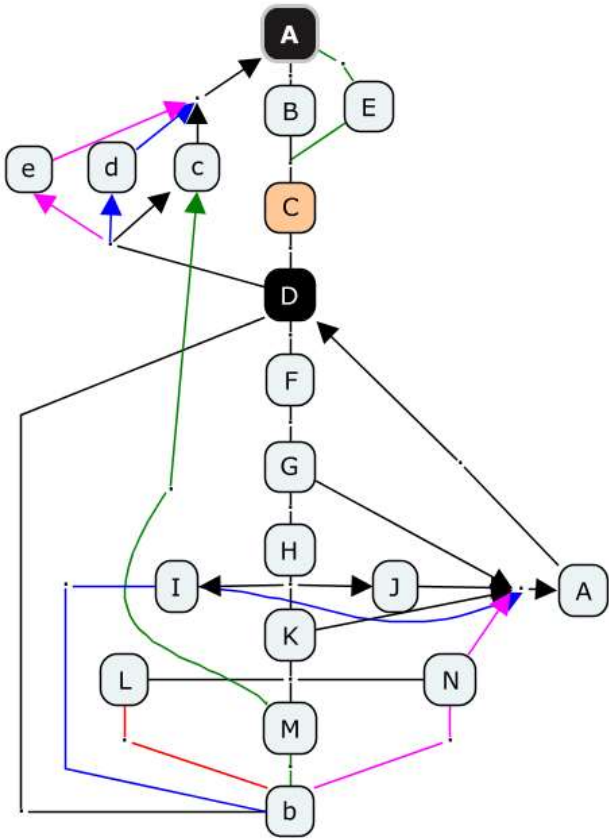
Figure 7 Conceptual map of e-Commerce transaction without relevant arcs  
Own Source

input arc to node	
B	← A
E	← A
C	← B+E
D	← C+a+b+ab
F	← D
G	← F
H	← G
I	← H
J	← H
K	← H
L	← K
M	← K
N	← K
A	← c+d+e+ce+cd
a	← G+I+J+K+N
b	← I+L+M+N
c	← D+M+DM
d	← D
e	← D
output arc from node	
nsertéA	→ B+E
B	→ C
E	→ C
C	→ D
D	→ F+c+d+e+Fc+Fe+Fce+cd
F	→ G
G	→ H+a+Ha
H	→ I+J+K
I	→ a+b+ab
J	→ a
K	→ L+M+N+a+La+Ma+Na
L	→ b



M	→	b+c+bc
N	→	a+b+ab
a	→	D
b	→	D
c	→	A
d	→	A
e	→	A

**Table 3** Equations on each node of the graph without relevant arc  
Own Source



**Figure 8** Graph to represent the transaction without relevant arc  
Own Source

The equations from Table 3 are equivalent to the equations of Table 2. The equation (11) shows an example of this equivalence

A

←

c + d + e + ce + cd

←

(D + M + DM)c + Dd + De + (D + M + DM)cDe + (D + M + DM)cl

DM

≡

∅

A

←

(D + M)c + Dd + De + (D + M)cDe + (D + M)cDd

←

(D + M)c + Dd + De + McDe + DcDd + McDd

McDe

≡

∅

McDd

≡

∅

A

←

(D + M)c + Dd + De + DcDe + DcDd

(10)

In the development of (11) some terms are null because they never happen in the transaction.

Conclusions

This paper presented a description of the elementary sale-purchase transaction. The transaction can be described using conceptual maps in an easy way, but this is not enough to analyze the process. The proposal is a formal model that facilitates his analysis. The model consists of a graph and equations of input and output from nodes. The work concludes with the model, but the research continues about the analysis method, modification method, and/or transform this to Petri net representation.

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The importance of women in the preservation of the companies dedicated to the production and sale of the Jipi-Japa hat in the Maya area of Calkiní

Importancia de la mujer en la preservación de las empresas dedicadas a la producción y venta del sombrero de Jipi-Japa en la zona Maya de Calkiní

LÓPEZ-PONCE, María Eugenia†\*<sup>1</sup>, SANTOS-VALENCIA, Raúl Alberto<sup>2</sup>, BACAB-SÁNCHEZ, José Rubén<sup>1</sup> and ORTEGA-RODRÍGUEZ, Ana Luisa<sup>3</sup>

<sup>1</sup>Instituto Tecnológico Superior de Calkiní en el Estado de Campeche, (Tecnológico Nacional de México)

<sup>2</sup>Instituto Tecnológico de Mérida

<sup>3</sup>Instituto Tecnológico de Campeche

ID 1<sup>st</sup> Author: López-Ponce, María Eugenia / ORC ID: 0000-0001-7030-1843, CVU CONACYT ID: 503775

ID 1<sup>st</sup> Co-author: Santos-Valencia, Raúl Alberto / ORC ID: 0000-0002-9824-8789, CVU CONACYT ID: 375284

ID 2<sup>nd</sup> Co-author: Bacab-Sánchez, José Rubén / ORC ID: 0000-0002-8861-0852, CVU CONACYT ID: 96835

ID 3<sup>rd</sup> Co-author: Ortega-Rodríguez, Ana Luisa / ORC ID: 0000-0002-0134-2008, CVU CONACYT ID: 228237

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Abstract

In the Yucatán península, the handicraft businesses tend to disappear when the master craftsman dies, losing these family type companies. According with researches applied by Santos y Barroso (2016), point out that the 66% of the companies are run by handicraft woman, who preserve their customs, traditions and handicraft heritage. This document aims to appreciate the importance of the women in the preservation of the companies dedicated to the production and commercialization of the Jipi-Japa hat in the mayan area from Calkiní, in order to know the strengths and weaknesses of these companies for the export to European Markets. The research proposal was mixed and it was carried out in the four mayan localities: Tankuche, Bécal, Santa Cruz ex-Hacienda y San Nicolás from the municipality of Calkiní, in the state of Campeche, in two phases: Phase 1.- Internal analysis of the handicraft's companies. Phase 2.- External analysis of the handicraft's companies through key informants. The results point out that even when the woman has an important leading role in this activity, there is a significant decrease in their number; which indicates, that the new generations do not see the handicraft production attractive perhaps because of the work it implies and the low remuneration, putting at risk the generation of jobs derived from this activity; For this reason, it is urgent to implement strategies in the production and commercialization of the hat that help to strengthen this activity and prevent its extinction.

Preservation, Production, Hat, Handicrafts

Resumen

En la península de Yucatán, las empresas artesanales tienden a desaparecer cuando el maestro artesano muere, perdiéndose dichas empresas de tipo familiar. Según estudios realizados por Santos y Barroso (2016), señalan que el 66% de estas empresas están dirigidas por mujeres artesanas, quienes preservan sus costumbres, tradiciones, y acervo artesanal. En este documento se pretende apreciar la importancia de la mujer en la preservación de las empresas dedicadas a la producción y comercialización del sombrero de Jipi-japa en la zona maya de Calkiní, a fin de conocer las fortalezas y debilidades de estas empresas para la exportación a mercados europeos. El estudio propuesto fue mixto y se realizó en las cuatro localidades mayas: Tankuché, Bécal, Santa Cruz ex-hacienda y San Nicolás del Municipio de Calkiní, en el Estado de Campeche, en dos fases: Fase 1: Análisis interno de las empresas artesanales. Fase 2: Análisis externo de las empresas artesanales por medio de informantes claves. Los resultados indican que, aun cuando la mujer tiene un papel preponderante en esta actividad, se observa una importante disminución en su número; lo cual indica, que las nuevas generaciones no ven atractiva la producción artesanal quizá por el trabajo que implica y la baja remuneración poniendo en riesgo la generación de empleos derivado de esta actividad; por tal motivo, es urgente implementar estrategias en la producción y comercialización del sombrero que coadyuven a fortalecer esta actividad y evitar su extinción.

Preservación, Producción, Sombrero, Artesanías

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\*Correspondence to Author (melopez@itescam.edu.mx)

† Researcher contributing first author.

## 1. Introduction.

In Campeche, the handicrafts family type businesses have survived over the centuries. A large part of these companies are run by women who with their talent, perseverance and dedication have managed to create and position handicrafts products of recognized prestige at a national and international level; However, it has been observed that, during the last decade, these types of companies disappear when the master craftsman dies.

The companies dedicated to the production and commercialization of the Jipi-japa palm hat (*Carludovica palmata*) in the Mayan area of the north of the State of Campeche, offer employment to the inhabitants of four towns in the municipality of Calkiní, this situation determines the need to carry out this basic research that allows finding strategies to guide the planning of actions that could lead to the preservation or rescue of this valuable handicraft activity and leave to future generations, the extensive, traditional and ancient artisan heritage, legacy of the Mayan culture.

Similarly, it is necessary to improve the quality of life of the inhabitants of these communities and / or regions through the strengthening of micro and small handicraft companies, which will also increase sources of employment, reducing migration to urban centers, reduction of the poverty that exists among the people of the Mayan areas of the State of Campeche, but above all of the so-called Camino Real integrated by the Municipalities of Tenabo, Hecelchakán and Calkiní.

And as an added value of this research, it seeks to dignify the relevant role that handicraft women have in the contribution of family spending, since it is observed that they tend to adopt different and different roles in the social structure of Mayan communities, since in addition to being artisans, they must adopt the roles of: wife, mother and businesswoman; For this reason, one must be aware that this traditional handicraft mode of production can be forgotten and be lost, since in recent years the boom in crafts and families dedicated to this work has declined;

All this problem is caused by the famous era of technology since now people prefer to buy imitations at lower prices and thus discredit the crafts, that is why many of the artisans have sought in other activities the way to earn a living; All this is also coupled with the government's lack of vision and empathy, without public policies that allow the necessary support, the Mayan cultural heritage could disappear.

There is a diversity of problems that afflict the artisanal activity, in relation to the elaboration of hats there is a great diversity of aspects that have been flourishing and contributing so that this valuable activity disappears, the following can be mentioned: (1) The production of the Jipi-japa palm, has decreased because the lands do not have adequate conditions for palm cultivation, which makes the process slower and with less production. These plants require a lot of water; This being a determining factor since in this Mayan area the soils are dry and stony. (2) The irrigation techniques that are currently used in some areas are the system through irrigation strips, which helps the growth of the plant. (3) The time to harvest the plant is one and a half to two years to cut the buds that the handicraft uses to make the hat. (4) According to the new regulations, according to what is established by the Ministry of Finance and Public Credit (MFPC), all operation that leads to a purchase-sale must be declared and invoiced, this being totally difficult for the artisan who cultivates it. in a homemade way, since it is not 100% dedicated to this activity.

## 2. Context

The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2012) recognized crafts as a cultural expression that is currently threatened by globalization, which creates strong obstacles to the survival of traditional forms of handicrafts, such as: mass production, environmental and climatic pressures, and land deforestation. The Handicraft companies are found throughout the country and constitute an important factor in the national economic system, both for their contribution to employment and for their contribution to the Gross Domestic Product (GDP).

The Center for Social Studies and Public Opinion (CESOP, 2011), points out that in Mexico during the third quarter, more than one million eight hundred thousand people over 15 years of age were employed in some craft or related activity, of which 507,368 worked as part of the full-time employed population and the rest as underemployed population, (Sales, 2013).

However, although there is much information on micro and small family-type businesses, little research has been carried out on artisan-type businesses, since, due to their own conditions to produce handicraft-type goods or services, they do not have large machinery, tools or equipment that allows them to carry out their activities quickly, uniformly or with unique quality, as demanded by international or national markets today.

However, this activity allows artisans to contribute to the spending of their families and the creation of jobs for family members. For some years now, since there has been the perception that master craftsmen are generally older adults and owners of companies, they do not transmit all their knowledge and technique to their children and grandchildren, but the most important thing is the role that the artisan woman plays in the preservation of the Jipi-japa hat by contributing in the same way to family spending, where many artisans do not see this activity as a business that allows them to have an income to live decently and therefore, do not wish to continue with the tradition artisan and look for other sources of employment where they can enjoy a secure salary. In the Yucatan peninsula, artisan companies tend to disappear when the master craftsman dies, thereby losing a family-type business, sources of employment, tradition and above all a considerable and millenary source of knowledge.

In the State of Campeche, there are 4 regions:

1. The mountain region that includes the Municipalities of Calkiní, Hecelchakán, Hopelchén and Tenabo; This region is characterized by being an indigenous Mayan region, cataloged by the Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL, 2014) as a region of extreme poverty. For this reason, there are very few companies, the main activities being agriculture and handicraft production.
2. The region of La Selva: it is made up of the Municipality of Calakmul. As in the mountain region, this region is characterized by being a region of extreme poverty. The main activities are: agriculture, livestock, forestry and tourism.
3. The river region: this region is made up of the municipalities of Escárcega, Candelaria and Palizada. The main economic activities are: fishing, agriculture, livestock and tourist services. This region is classified as extreme poverty.
4. The region of the Coast: made up of the Municipalities of Campeche, Champotón and Carmen This region is the most economically developed, where 95% of the State companies are located and its main activities are fishing, agriculture, livestock, commerce, tourism and government. However, except for the State Capital and the town of Carmen in the Municipality of the same name, the entire region is classified as a region of extreme poverty.

As can be seen, most companies are in two locations: San Francisco de Campeche (State Capital) and Carmen. Therefore, promoting the generation or strengthening of companies within the State is a fundamental task to prevent the migration of people from rural areas to these localities; avoiding, in this way, the social problems that afflict cities. In relation to the Economic strength of the State of Campeche, according to the National Institute of Statistics and Geography (INEGI, 2013), this amounted and according to GDP to more than 710 billion pesos for the State of Campeche, which placed us as the sixth largest entity in the country according to axis 2 Economic Strength, (State Development Plan, 2015-2021). The percentage share of GDP indicates that the primary sector represents 0.59 percent of the state economy; the secondary sector, which constitutes 87.1 percent, and the services sector, which accounts for 12.3 percent.

The present investigation has as a general objective:



Qualify the importance of women in the preservation of the companies dedicated to the production and commercialization of the Jipi-japa hat in the Mayan Zone of Calkiní. Regarding the specific objectives, we consider:

1. Analyze the level of participation of women in the preservation of artisan companies dedicated to the production of the Jipi-japa hat in the Mayan Zone of Calkiní.
2. Identify the strengths and weaknesses in family-type craft businesses, run by women and dedicated to making Jipi-japa hats.
3. Determine the risk factors in the production and marketing of hats in artisan companies run by women.

Carrying out this study and the impact it is intended to achieve is based fundamentally on axis 2, according to (State Development Plan, 2015-2021) and on National Strategy II. Social Policy: Promote economic reactivation, the internal market and employment according to (National Development Plan, 2019-2024), in which the federal government will promote the modalities of fair trade and social and solidarity economy (page 51), bearing in mind that these types of activities, such as crafts, are an essential pillar to promote and grow the economy of the state itself.

According to the previous section, it is also sought to promote the wealth of the State; as it is in this case the Mayan crafts based on axis 3 according to (State Development Plan, 2015-2021) where it establishes that the work and talent from the Campeche people is manifested through their crafts, currently, there are more Out of 10,000 artisans in the entity, the largest number is in the municipalities of Calkiní 43%, Hopelchén 15%, Campeche 10%, Hecelchakán 9% and Carmen 4%. This project directly benefits the artisans, their children and other people who indirectly help with the production of hats, with 8 basic steps from beginning to end for their elaboration, Chuc (1999): 1.- Cut the Bud; 2.- The scratching or incision to form the "strands"; 3.- Bleached; 4.- The selection of skeins or strands; 5.- The mooring of the bottom of the glass; 6.- Interlacing of the bottom of the glass; 7.- Bending of the cup; 8.- Pressing; (see figure 1).



**Figure 1** Elaboration of the hat Jipi japa  
Source: Own elaboration, 2020.

It is important to note that jipijapa weaving is done in caves; mainly due to the temperature and humidity conditions found in them, which makes it possible for the palm fibers not to dry out and become brittle when weaving. For this reason, caves are an essential means of making the hat. In the same way, there is a strong relationship in terms of time and the amount of material used in the elaboration of the hat, since the artisans call the thickness of the fiber batches, so we have to use a batch for the production of hats with fabric. or thick woven fabric, two items for medium fabrics, three items for fine fabrics and four items for extra-fine fabrics; being these items, a synonym of the quality of the hat because the greater the number of items, the higher the quality of the hat; but also, they have a longer time in the elaboration and, consequently, a greater amount of raw material used.

### 3. Methodology

The research work was divided into two phases:

Phase 1. Internal analysis of the handicraft companies in which it is intended to determine the strengths and weaknesses of the critical factors that would favor the creation or preservation of these companies in four localities of the Municipality of Calkiní, Campeche, dedicated to the elaboration of Jipi- hats. japa.

Phase 2. External analysis of opportunities and threats of handicraft companies to qualify the importance of women in the preservation of the Jipi-japa hat, through the judgment of experts.

### **Study type and design**

To determine the strengths and weaknesses of the artisan companies dedicated to the elaboration of hats in the towns of Tankuché, Bécal, Santa Cruz Ex-hacienda and San Nicolás of the Municipality of Calkiní, Campeche and the factors to consider to qualify the importance of women in the preservation of the companies dedicated to the production and commercialization of Jipi-japa hats, the type of study begins as exploratory, evolving to descriptive, with a mixed approach and non-experimental, transectional design, since, although it is carried out in artisan companies of the family of Mayan areas.

It is carried out in a single time and space (Hernández, Fernández & Baptista, 2014), with the aim of describing variables and analyzing their incidence or interrelation in a single moment. The method used is field work, using the survey as a technique and the questionnaire and the interview were used as instruments.

For the artisans and their children, the questionnaire was used as an instrument to collect information (quantitative approach) and for key informants from the artisan sector, a structured interview was had as an instrument (qualitative approach). An analysis was carried out on the results of these two instruments.

### **Participants in the Study**

From a total of 10,357 artisans registered in the State Institute for the Promotion of Artisan Activities of Campeche (INEFAAC, 2013); A census was carried out in the four study locations: Tankuché, Santa Cruz Exhacienda, San Nicolás and Bécal of the Municipality of Calkiní, to a total of 130 artisans dedicated to making the Jipi-japa hat.

For the interview, it was administered to three experts in the handicraft sector as key informants, who were selected for convenience by virtue of their knowledge, involvement, and experience in the subject matter.

The characteristics of the study participants are described below:

- a) For the handicraft teachers, the following were categorized:
  1. Women who carry out some craft activity.
  2. With residence in one of the towns of Tankuché, Santa Cruz Exhacienda, San Nicolás and Bécal in the municipality of Calkiní.
  3. With knowledge and experience in the elaboration of handicrafts, at least 5 years.
- b) For experts in craft activities:
  1. Those who are or have worked, up to three years ago, in an organization or agency where they are linked to craft activities.
  2. That they have had contact with the artisan communities.
  3. That they have knowledge of the current problems of the artisan sector.

The experts in the artisanal sector were selected on a discretionary basis, taking into consideration their knowledge and experience in the subject matter.

### **Instrument**

In the present work, the questionnaire was used as an instrument for collecting information. In the elaboration of the questionnaire of the handicraft teachers, quite extensive information was obtained in three sections: the first section is about the data of the respondents and school data, that is, it was verified that the participants have the characteristics of the population under study. Questions such as age, gender, place of birth, municipality, etc. were included. In the second section, 28 items were included, of which 3 were open questions and the rest were multiple-choice, where information was obtained regarding the production and marketing of Jipi-japa hats.

### **Process**

The contact with the companies was made in a personalized way in each of the respective regions studied. In the administering of the questionnaires, the following was considered:



In addition to the researcher and a work team, there were two support teams to carry out the surveys; These teams were students of the Educational Program of the Bachelor of Administration, of the Calkiní Higher Technological Institute in the State of Campeche, who were previously trained in the administration of these instruments, in order to homogenize criteria, clear up doubts and, in general terms, survey the selected people without any setback.

The interviews were conducted personally with each of the experts selected at their discretion. Once the instruments were administered to the experts, the data collected was constructed. At this point the information was collected, ordered, and classified. The variables studied and the results of the factors or areas most influencing the problem of artisan companies were analyzed, as well as the most recommended solutions.

With the data obtained from the quantitative analysis of these instruments, the values obtained in this analysis and the most relevant points of the variables studied were interpreted. From here we proceeded to the analysis of the study variables that allowed us to qualify the importance of women in the preservation of the artisan enterprises of Jipi-japa.

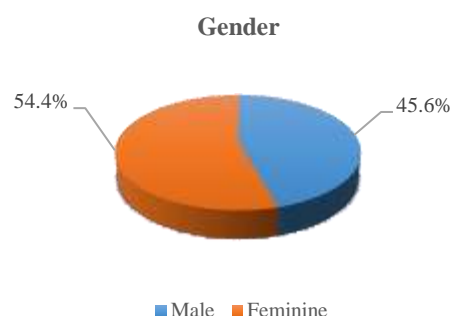
## Information analysis plan

Descriptive statistics were used for the quantitative analysis and the results were presented through graphs. Once the information was collected, the information was analyzed using Excel utilities, the statistical program SPSS (Statistical Package for the Social Sciences). For the quantitative data, the analysis of the expert testimony phrases was performed. They were grouped by frequency of mention and organized into defined categories (Álvarez-Gayou, 2003).

## 4. Results

### 1) Quantitatives

In the initial results, it is observed that the gender of the craftsman dedicated to the elaboration of hats of the four studied localities is 45.6% for the masculine gender and 54.4% for the feminine gender (see figure 2).



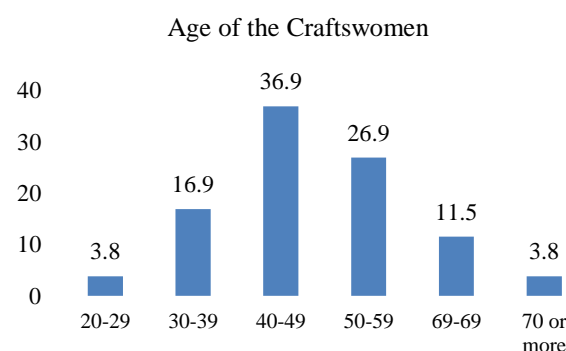
**Figure 2.** Gender of the craftsman dedicated to the elaboration of the hats

Source: Own Elaboration, 2020

Considering the objective of the investigation, the expected products and results are expected to be the following:

1. An instrument that will allow to identify the opportunities, threats, strengths, and weaknesses of the artisan companies dedicated to the production and commercialization of jipi japa hats of the four Mayan towns of Tankuché, Bécál, Santa Cruz ex-hacienda and San Nicolás del Municipio from Calkiní, Campeche.
2. An instrument that will allow deducing, from the perspectives of the participants, the problem of the craft activity and the proposed solution.
3. Information that could explain the importance of women in this craft activity.

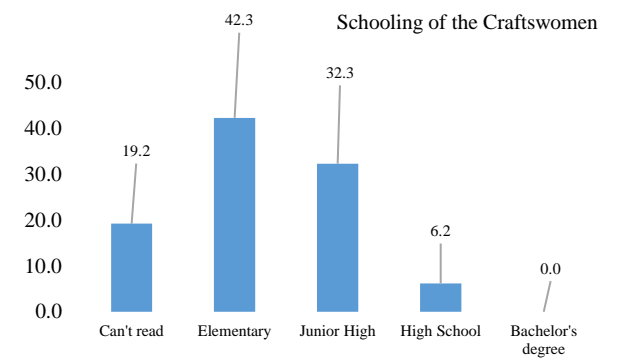
In figure 3, it was observed that 36.9% of the Craftswomen are between 40 and 49 years old; However, it is observed that the new generations are significantly reduced, since only 3.8% are between 20 and 29 years old and 16% of them are between 30 and 39 years old.



**Figure 3.** Age of the craftswomen dedicated to the elaboration of hats

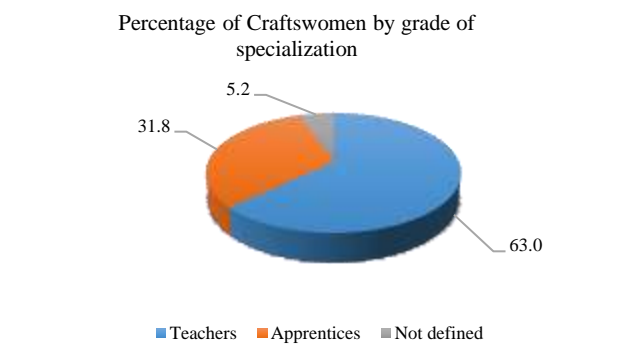
Source: Own Elaboration, 2020

Regarding education, 42.3% of them have an elementary education, followed by 32.3% of them who have junior high; however, 19.2% of these cannot read or write (see figure 4).



**Figure 4** Schooling of the Craftswomen dedicated to the elaboration of the hats  
*Source: Own Elaboration, 2020*

In figure 5, it is observed that 63% of the respondents are artisan teachers since they have been working hat weaving for more than 10 years and 31.8% of them are apprentices.



**Figure 5.** Percentage of craftswomen by grade of specialization dedicated to the elaboration of hats.  
*Source: Own Elaboration, 2020*

### Production

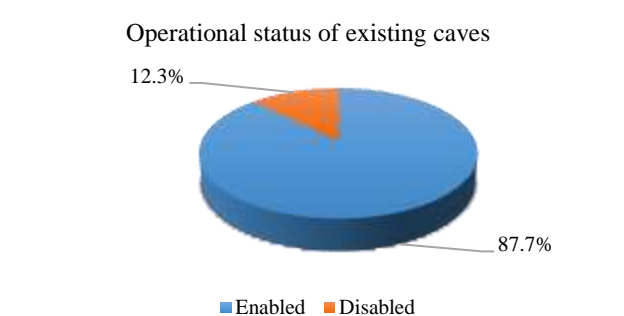
According to the study, 53.1% of the surveyed craftswomen mentioned that they have their own caves where they make the weaving of the hat (see figure 6).

Craftswomen who have their own caves



**Figure 6.** Craftswomen who have their own caves for making hats.  
*Source: Own Elaboration, 2020*

In figure 7, it is shown that 87% of the existing caves are in good condition, which means that they are enabled to carry out productive activity.



**Figure 7** Operational status of existing caves for the elaboration of hats  
*Source: Own Elaboration, 2020*

Only 22.3% of the craftswomen have received training to improve their production (see figure 8).



**Figure 8** Training received by the craftswomen for the elaboration of the hats.  
*Source: Own Elaboration, 2020*

Regarding production, it is observed that the hats have different types in terms of their quality, this applies according to the thickness (split) of the palm: since the thicker the fiber with which the fabric is made, the lower quality. For this reason, the thickest fabric is known as a one-batch fabric, while the thickest or finest fabric in its finish is called a four-item fabric.

In table 1, it is observed that the average time for the elaboration of a hat varies according to the number of games with which it is elaborated, these range from 2.4 to 15 days.

Type of Hat	Average hat-making time (in days).	Amount of raw material (buds) used per hat.
a) One split	2.4	6.5
b) Two splits	6.1	11.5
c) Three splits	12.4	17.1
d) Four splits	15.7	18.1

Table 1. Average hat-making time (in days)  
Source: Own Elaboration, 2020

It is important to mention that the price of the bud varies depending on the place from \$ 3.00 to \$ 20.00 pesos per unit. This is due to the place of origin of the raw material since what is obtained locally is usually cheaper than if it is brought from other states.

Commercialization

Regarding marketing, it was observed that 43% of the surveyed craftswomen made the sale through intermediaries, who, on occasions, buy their hats at very low prices (see figure 9).

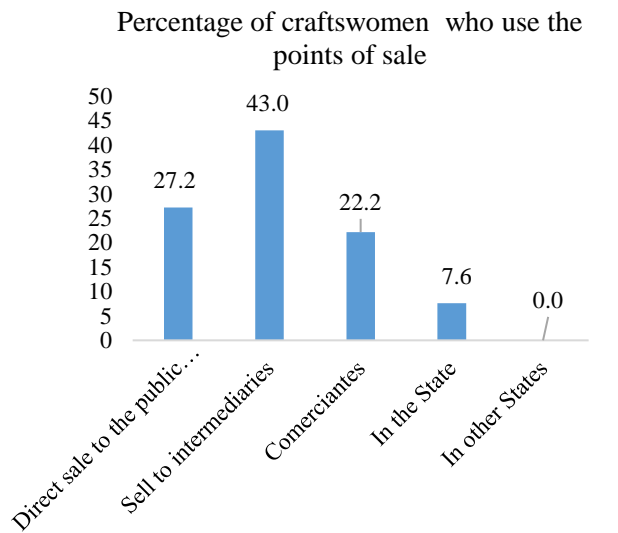


Figure 9. Pattern the hat is marketed.  
Source: Own Elaboration, 2020

The prices offered for the hats vary in terms of their fabric and these can cost between \$ 194.00 for one item, up to \$ 1,730.00 pesos, for four items, according to data shown in table 2.

Type of Hat	Average price of the finished hat (in Mexican pesos)
a) One split	\$ 194.00
b) Two splits	\$ 579.00
c) Threes splits	\$ 1,006.00
d) Four splits	\$ 1,730.00

Table 2. Average price of the finished hat (in Mexican pesos).  
Source: Own Elaboration, 2020

2) Qualitatives

The producers of La Palma Jipi-japa sell the raw material directly to the artisans, who in the same way the Ministry of Finance and Public Credit (SHCP) already asks them to invoice the sale of hats and all handcrafted products, making the way difficult to be able to grow in this activity.

The results obtained, it was detected that many of the artisans are only dedicated to the maquila of hats, in a few words they are women who are taken and / or provided with all the raw material for the elaboration of the hat, but they are not the ones that sell to the consumer, this is a worrying situation because they work on a maquila production; which means that the more they make by knitting the hats, the more the profit will be for them, this profit can range from \$ 194.00 to \$ 1,730.00 per hat.

Next, Table 3 presents the analysis carried out to know the Strengths and Weaknesses related to the Production of the Jipi-japa Hat.

Production	
Strengths	Weaknesses
<ul style="list-style-type: none"><li>– Quality of the hat for competitiveness in the market.</li><li>– Contribution to family spending.</li><li>– Knowledge, skill and experience of master craftsmen.</li><li>– Pride of the Mayan culture and its preservation.</li><li>– Calkiní has 43% of the handicrafts in the State, more than the rest of the municipalities.</li><li>– Artistic and creative skills of the craftsmen in the weaving of the hat.</li><li>– Obtaining natural dyes from trees and plants.</li><li>– Awards and recognitions to outstanding artisans in their work, it is recognize to the Jipi-japa hat for its high cultural and artistic value.</li></ul>	<ul style="list-style-type: none"><li>– Lack of production of the Jipi-japa palm plants.</li><li>– Conditioning of the land for palm cultivation.</li><li>– Slow processes in production due to lack of raw material.</li><li>– Purchase of raw materials informally.</li><li>– Lack of economic resources for the production and subsequent elaboration of the hat.</li><li>– Lack of equipment necessary to obtain raw material and produce it.</li><li>– Loss of conservation of the artisan activity due to the lack of inheritance by not transmitting their knowledge and techniques.</li><li>– Little manpower for the hat maquila.</li><li>– Lack of Federal, State and Municipal government support for the production of the Palm Jipi-japa.</li><li>– There is no training on new designs for making hats.</li><li>– Loss of master craftsmen who are in advanced age (old age).</li><li>– Resistance to change by older craftsmen, it is difficult for them to upgrade.</li><li>– Loss due to felling of trees and plants for the extraction of natural dyes.</li><li>– The hat can only be made under certain conditions, one of them is inside a cave and 100% hand-woven, which would prevent large-scale production.</li></ul>

**Table 3** Analysis of the Production for the elaboration of the hat  
*Source: Own Elaboration, 2020*

Now with regard to the analysis carried out on the marketing of the Hat (see table 4) and derived from the data described above, the craftswomen fight daily with the so-called intermediaries who buy the hats directly and later sell them two or three times more expensive of its original price.

Which is why many craftswomen have opted for direct sales, having strategies in mutual agreement with some residents of the same Mayan area who attract tourists who come to their population to later take them to the homes of the craftswomen and craftswomen to make direct sales, where the profit logically increases for them and that in the end a percentage of 10% of these sales is for the intermediary between the tourist and the craftswomen, this comment it is the strategy that has worked for them, but not all the time there are tourists in the place and many times they are in need of having to go with other types of intermediaries that are the formally established companies who buy their products from them at less than 50% of their value because they have no way of issuing invoices.

Commercialization	
Strengths	Weaknesses
<ul style="list-style-type: none"><li>– There is no market not explored by craftwoman for the sale of hats.</li><li>– Some craftwoman carry out direct sales without intermediaries, 27.2% being with points of sale.</li><li>– There is national and international tourism for the acquisition of hats, there is demand.</li><li>– Fine fabric both in hats and in curiosities made with the palm of Jipi japa.</li><li>– Support in the promotion of hats by the government towards artisans who participate in fairs, exhibitions, congresses, etc.</li><li>– High demand in tourist areas such as Cancun, Playa del Carmen, Quintana Roo.</li><li>– The Ministry of Finance and Public Credit (SHCP) is providing training to sellers of handicrafts such as hats, on billing and export issues.</li><li>– Existence of organizations or small cooperatives that encourage and guide artisans to grow as family businesses.</li><li>– High demand in European countries, for which there is data indicating that at least 2000 hats have been exported to Milan, Italy.</li></ul>	<ul style="list-style-type: none"><li>– Lack of knowledge in the management of information technologies for the sale of handicrafts.</li><li>– The artisans are not regularized in the SHCP for the issuance of invoices, they are unaware of the legal regulations</li><li>– Sales below the real price due to the lack of issuance of invoices.</li><li>– The abuse of intermediaries who buy the production of hats below the real price for their subsequent sale.</li><li>– Existence of people who earn percentages for taking tourists to buy the products (the so-called gringo houses, as in the case of Villa de Bécál).</li><li>– Lack of channels for distribution and export due to ignorance of legal regulations for its commercialization.</li><li>– It depends on the fabric of the hat and the number of splits gives the grade of difficulty and time used in its elaboration.</li><li>– There is no cooperative that includes local handicrafts, this in order to meet the demand for orders and benefit the handicrafts.</li><li>– Lack of education to the handicrafts regarding the existing distribution channels of their product.</li></ul>

**Table 4.** Analysis of the marketing of the hat.  
*Source: Own elaboration, 2020.*

## Conclusions

It is observed in the results that, even though the participation of women in the elaboration of hats has been increasing until reaching 54% of the total of the producers of the Jipi-japa hat, the new generations are not attracted to this activity, It observes that only 3.8% of the handicraft are women under 30 years of age.

In production, there is a strong relationship in terms of time and the amount of material used in making the hat, since the higher the quality (greater number of batches), the longer the time and quantity of material.

The price varies according to the quality of the hat, these prices range from \$ 194.00 pesos for the hats of a split, to \$ 1,730.00 pesos for the hat of four splits. Regarding commercialization, it is observed that the sale to intermediaries is the most used means to commercialize the products, followed by direct sale to the public.

There is a lot of potential in handicraft women, but much support is required from the three levels of government (Municipal, State and Federal) so that traditions and customs are not lost, but above all the importance of women in the preservation of the Jipi-japa hat weaving.

The main risk factors in production are: (1) the increasingly scarce workforce, particularly of the new generations, (2) the lack of raw material that is exacerbated by the immoderate logging of wetlands and the change in land use, (3) the disqualification of caves to carry out this activity and (4) the scarce training of craftswomen. Regarding the commercialization and / or sales, the main risk factors are: (1) the ignorance, of the craftswomen, towards new markets, (2) excessive sale to intermediaries and (3) poor organization in cooperatives or associations by part of the craftswomen.

For this reason, it is necessary to develop strategies that could reverse the current trend because, if this trend continues, there is a risk of disappearing this activity.

## Acknowledgments

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Internal organizational communication, applicable to home office, in the company

Comunicación interna organizacional, aplicable ante home office, en la empresa

HERNÁNDEZ-FLORES, María Juana\*† & CRUZ-RAMIREZ, Erik Santiago

Tecnológico Nacional de México/Tecnológico de Estudios Superiores de Ixtapaluca

ID 1<sup>st</sup> Author: María Juana, Hernández-Flores / ORC ID: 0000-0002-1179-1966, CVU CONACYT ID: 719745

ID 1<sup>st</sup> Author: Erik Santiago, Cruz-Ramirez / ORC ID: 0000-0002-4754-0886

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Abstract

For companies today it is necessary to have an avant-garde competitiveness, which can adapt to any activity to be undertaken by companies, that is why the internal organizational communication, applicable to the home office, seeks through the viability of the design of an organizational communication plan in the small digital company, obtain greater control and management of internal communication by employees, thereby strengthening the relationship of employees and their corporate culture. A case study is applied, through which the methodology established for this research is distinguished, initially giving a guideline to the previous analysis, problems of time management, staff needs to communicate, interview results and survey to build a benchmarking analysis matrix, as well as the development and implementation of a communication plan. The contribution that this work, is the efficiency of communication through the optimal use of communication technologies (ICT).

Resumen

Para las empresas hoy en día es necesario contar con una competitividad vanguardista, la cual pueda adaptarse a cualquier actividad a emprender por las empresas, por eso la comunicación interna organizacional, aplicable ante el home office, busca a través de la viabilidad del diseño de un plan de comunicación organizacional en la empresa DIGITAL de tamaño pequeña, obtener un mayor control y manejo de la comunicación interna por parte de los colaboradores, con ello se lograra el fortalecimiento de la relación de los colaboradores y su cultura corporativa. Se aplica un estudio de caso, por medio del cual se distingue la metodología que para esta investigación se establece, dando pauta de manera inicial al análisis previo, problemáticas de la administración del tiempo, necesidades del personal para comunicarse, resultados de la entrevista y encuesta para construir una matriz de análisis de Benchmarking, así como el desarrollo e implementación de un plan de comunicación. La contribución que este trabajo, es la eficiencia de comunicación a través del uso óptimo de las tecnologías de la comunicación (TIC).

Efficient Communication, Home Office, Communication Technologies

Comunicación Eficiente, Home Office, Tecnologías de Comunicación

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\*Correspondence to Author (maria.hf@ixtapaluca.tecnm.mx)

†Researcher contributing first author.

## Introduction

In the companies two aspects are defined: external and internal, the external ones defined from the clients that can be captured while the internal ones are those who develop the internal mobility of the organisation; for that reason from the functionality of the internal aspects, the organisational communication is one of the fundamental factors in the operation of the company, considered as central axis for the development of the activities, in this way it is established that, if a better communicative relation of the internal thing exists it will be reflected in external public, which contributes to create an image and identity that propitiates the effective networks of communication.

Nowadays, it is essential for every company to have an organisational communication plan, which functions as a guide for an adequate communication system, seeking to make the tasks more efficient. In addition, due to globalisation, it is necessary to advance day by day, by implementing the application of technology, focusing specifically on the application of information and communication technologies (ICT). Given the demands of the year 2020 due to the contingency, it is necessary to adapt to digital media and work in the distance mode, so having communication tools will be of great use to the organisation through the effectiveness that the communication plan can provide.

This research is applied in a small-sized company, with technological business activities, mainly dedicated to solutions in the planning of marketing strategies through digital media by means of marketing and design. Although the company, based on its line of business, possesses technologies for its productivity, according to the diagnosis carried out in DIGITAL, the communication that is generated in a remote system is distorted for the company's collaborators. For this reason and as part of the continuous improvement for the company, it is necessary to establish the following alternative hypothesis (Ha): If the internal control of organisational communication has an efficient influence on the performance of the collaborators, then the orientation of the objectives will be facilitated by monitoring and evaluating the internal processes of the Digital company. It should be noted that for reasons of confidentiality the name is omitted, but it will be referred to as Digital.

The research seeks to strengthen human capital through the organisational communication plan, focusing on the communication channels, since if there is a sender and a communication channel with the right message, the information that the receiver generates will be appropriate, in the search to make this communication more efficient. Therefore, the information developed focuses initially on the guideline that can generate a planning through the communication plan that needs to be structured in the company, and secondly, the efficiency of communication with the Home Office.

This helps to section the information to develop through 5 points, addressed as follows: in point one, the guideline that seeks to generate establish a comprehensive communication plan in the company, in point two determines the competitiveness in communication to the Home Office, in point three establishes the advantage to establish a communication system to the Home Office, while point four gives the guideline to effective communication strategies to the Home Office, finally generating the structure that applies to a communication plan, to the Home Office, in the company DIGITAL

## Description of the method

### 1. Guideline for the internal communication plan in the company

To achieve a good guideline, through which you can use effective communication within the company, it is required that this is efficient, which is why the theory of Efficient Communication is considered the premise that the organization is a system generated through the interaction of interrelated elements, such as the communication process through efficient communication to perform tasks or activities effectively to Home Office. By means of the efficiency in the communication environment, better results for the company will be found, focusing on the best performance and increase of the percentage of profits on the part of the company. Through the Home Office and by means of the employees, the aim is to maintain or increase the results that the company requires; in this way, to promote a remote working environment in accordance with the context and the resources that the employees have.



As already mentioned in the introductory section, the organisation needs to work together, the internal part made up of the employees and the external part made up of the service provided to the client, which is why, according to the author Fernández Collado (FERNÁNDEZ, 1999), who defines internal communication as: The set of activities carried out by any organisation for the creation and maintenance of good relations with and among its members, through the use of different means of communication that keep them well informed, integrated and motivated to contribute with their work to the achievement of organisational objectives. From the perspective of (FERNÁNDEZ, 1999), external communication is the set of messages issued by any organisation to its different external audiences.

Therefore, by distinguishing between these two important starting points (internal and external) to generate effective communication, the forms, channels and tools are highlighted, under which an adequate message is generated for the functionality of the activities developed in the company, considering the structure of a communication plan, The information is based on the theory of the X and Y, focusing on the importance of the systems and processes that the organisation has and the availability of human capital, seen as a set of elements necessary to apply effective communication strategies for the Home Office, and its expansion is described in the following section.

As mentioned in the introduction, the contingency established in 2020 led companies to implement a home working system as a result of which they did not have the necessary preparation or the appropriate resources. Thus, for the company Digital, dedicated to the generation of marketing projects, among which stand out the advertising campaigns to various renowned companies, both public and private, obtaining results of 357 successful campaigns, a reach of 5 million people and 111 websites, this achieved in an in-person system prior to the contingency. For the Digital company, it is essential to have a digital tool to implement the activities to be developed internally; for the collaborators it was complex to use the technological systems, as it required careful supervision for the approval of the projects as well as the contribution of new ideas or feedback from the work teams.

Therefore, an efficient communication plan that could guide communication in a virtual situation, carried out remotely, began to be cemented, starting with a study to find out what was available and what had to be improved for the continuous improvement of internal performance and satisfaction of the clients with whom we were working at that time, without forgetting the attraction of new clients.

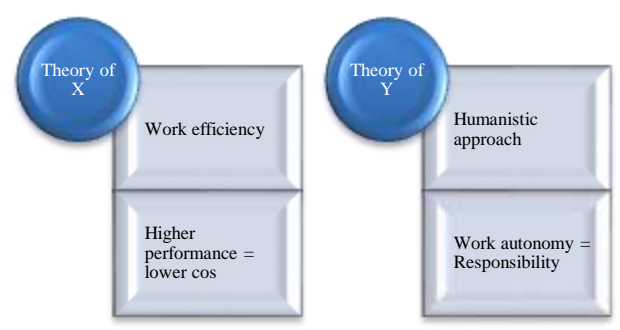
## **2. Determining competitiveness in communication with the Home Office**

Companies always seek to stand out in the market for products and services, for which it generates competition against others in the same line of business or industry, but not all companies can develop competitiveness because it requires highlighting practices that make it different from others. For the digital company it is very important to generate its own competitiveness, for this it is necessary to know what it has and what other companies offer as immediate competition.

As mentioned in the previous section, the theory of the X and Y, as a structural principle of the communication plan, achieving within the plan, to establish effective communication strategies before the Home Office; therefore, figure 1 is analysed, where part of the theory of the X-Y of Taylor and Douglas McGregor is shown; In the X section, the search for work efficiency, achieved through the activities that establish the productivity of the company, from any of the areas, fulfilling a business objective, thus achieving greater performance of the areas and collaborators, which leads to lower costs (time and movements), from the perspective of work specialisation, as part of labour-professional growth. While the Y theory section, marks a humanistic approach, which allows to identify the particular course determining satisfaction and individual growth by the collaborator, for this it is required to develop in the collaborator a labour autonomy, in the search for better results, thus instilling responsibility for the company and the activities that unfolds in the same organisation.

The X-Y theory gives a glimpse of the fact that competitiveness is managed by the internal part of the company, due to the fact that human capital is what moves and generates the functionality of the organisation.

The X-focused theory is distinguished as follows: the X-focused theory evaluates the performance since the activities to be carried out in the area or organisation are communicated; while the Y-focused theory focuses on the part of responsibility, placing the organisation (time-space) working autonomously, both theories would evaluate the efficiency of the communication of the tasks entrusted to the functionality of the department (Figure 1).



**Figure 1** Theory of X - Y "Competitiveness of communication vis-à-vis the Home Office"  
*Source: Elaborated by Hernández Flores. (2020)*

From the previous theory of the X-Y, it is distinguished that the performance assigned to employees in different areas and tasks requires strategies that help to improve work performance and the use of the correct communication channels, so that efficient work performance is achieved.

Following the aforementioned theory, the analysis of the Digital Company is generated through the SWOT Matrix, in order to determine key points that emphasise the continuous improvement of the company, making use of a Communication Plan as the main strategy.

As can be seen in Table 1, in the section on strengths, the company has tools such as Information and Communication Technologies (ICTs), which can be reinforced by making more use of them as a competitive advantage; likewise in the section on opportunities, where points that can be strengthened to boost the company's growth are described.

The weaknesses and threats can strengthen the organisation, with a view to strengthening Digital in the administrative and efficient communication areas.

For Digital, as part of the SWOT analysis, communication, positioning, professional preparation of its employees, customer satisfaction and tangible objectives are part of its strengths, which it wants to expand through opportunities, focused on adapting to business changes, customer loyalty and customer acquisition, as well as undertaking social challenges. Without leaving aside the weaknesses that can be transformed through the implementation of company policies, establishment of the organisational culture, determination of the organisational structure coordinating tools for the modality of work at home. Taking into account the threats that may be latent through the increase of competition in the digital era, causing the emergence of regulations for companies in the digital sector, which would trigger an increase in prices on digital platforms. This analysis determined by means of the SWOT that emanates from DIGITAL, highlights points of improvement that can evolve into areas of opportunity with an impact on business growth. (See table 1)

FODA	
Strengths	Weaknesses
<ul style="list-style-type: none"><li>– Communication is handled through digital media.</li><li>– The positioning of the company is quite remarkable.</li><li>– The company's human talent has a high level of knowledge and a great track record in experience.</li><li>– It has a good track record of satisfied customers.</li><li>– It has good projects and long-term goals for the work team.</li></ul>	<ul style="list-style-type: none"><li>– There are no policies for communication management.</li><li>– It does not have a well-defined organizational culture.</li><li>– It does not have an effective organizational structure.</li><li>– It does not have tools for the work-at-home modality.</li></ul>
Opportunities	Threats
<ul style="list-style-type: none"><li>– Over time, the company can become stronger and adapt to new trends and changes.</li><li>– There is a high demand for its services in the market.</li><li>– The changes caused by the Covid-19 pandemic, can be a great growth opportunity for digital companies.</li></ul>	<ul style="list-style-type: none"><li>– More and more competition in the digital era.</li><li>– New regulations for companies in the digital sector.</li><li>– Price increases in digital platforms.</li></ul>

**Table 1** SWOT Matrix of the company DIGITAL  
*Source: Prepared by Cruz Ramírez Erick Santiago (2020), with data from DIGITAL*

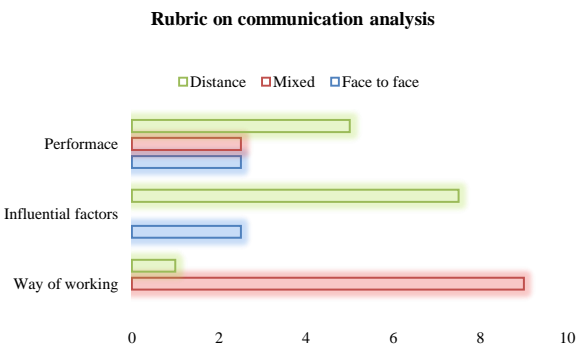
Therefore, this matrix of the company Digital, can give different changes to the organisation, from the way of working, to the way of communication. From the SWOT analysis it is considered to carry out a survey, directed to the collaborators of the company, in which it is sought to establish three moments: 1) face-to-face context, 2) the mixed and 3) at a distance; managing to distinguish in which of them will be more optimal the performance.

3. Advantage of establishing a system of communication with the Home Office

A communication system that lacks efficiency is very difficult to maintain, due to the constant mistakes that are made, for not having and following an adequate communication channel, supported through an internal analysis of the company. Digital, as already mentioned, has a turn focused on the technology market, but at the time the communication and information technologies (ICT's) were relegated to the internal environment of the company, as the roles and actions corresponding to the service process that the company provides were executed in person.

But during the year 2020 that is forced to work remotely due to the contingency, it becomes noticeable through the SWOT, that the systematisation of the work organisations, were distorted in the Home Office system, because initially there was a lack of strategies and only handled an experimental phase, to determine the appropriate means applicable in the process of internal communication; with the passage of time were knowing which were the most suitable channels of communication and platforms for sending information more feasible, however factors that also influenced this process were glimpsed being these: The lack of learning or knowledge on the part of the collaborators, the lack of specialisation on the part of the leaders (area managers), as well as the tactics for the delegation of tasks that led to the fulfilment of the company's objectives.

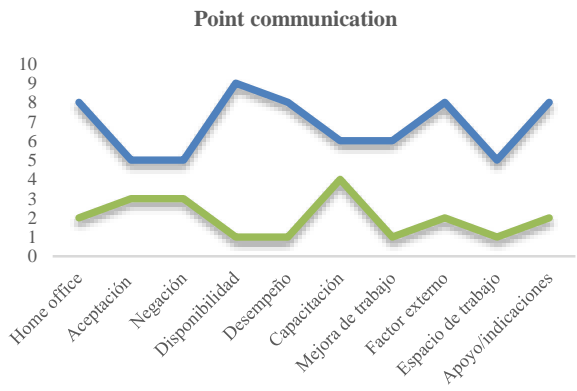
A quantitative investigation was carried out in order to identify what could be improved in the company. For this purpose, we structured items that would show, through questions addressed to the leaders and collaborators, points of improvement that would lead to actions that would benefit Digital. In graph 1 it can be seen that the moments that are considered are measured from the headings of a) performance (skills and abilities, training to increase knowledge and improve work through supervision or review of activities); b) influencing factors (influencing factors such as indications (activities), place or work space and external factors); c) form of work (focused on adaptability and availability, to perform activities remotely or in a mixed way).



**Figure 1** Communication items  
*Source: Prepared by Cruz Ramírez Erick Santiago and Hernández Flores María Juana with data from DIGITAL*

As can be seen in graph 1, the way of working and the way of establishing internal communication are points that will determine the possibility of carrying out business tasks, both in a mixed system and remotely, these two scenarios being favourable for the organisation. Taking into consideration these scenarios and moments for the development of the work, key points for internal communication can be distinguished, broken down in the Communication Plan, which will be established on the basis of: 1) activities assigned to each area or collaborator, 2) improvement of activities through knowledge, applied to work practice and 3) accompaniment of collaborators, guided by the person in charge of the area and feedback from the work team.

From the results of this research, based on the quantifiable analysis items by the collaborators that make up the Digital company, the advantages that could be developed by the communication proposed in the three moments defined as face-to-face, distance or mixed are supported.



**Figure 2** Points for internal communication  
*Source: Elaborated by Hernández Flores (2020)*

As shown in Graph 2, the linear sequence at the top shows the advantages of developing work through the home office either remotely or mixed, while the linear sequence at the bottom highlights the few possibilities that could be had in terms of business growth by returning to the face-to-face method.

The competitiveness of the company under the home office communication system can become outstanding for the company in a contingency situation, showing itself to be at the forefront in terms of the use of technological tools and efficient strategies that boost the company's growth.

Results

1. Structure that is applied to a communication plan, before the Home Office, in the DIGITAL company

In order to generate a comprehensive communication plan, it was necessary to apply an analysis, which consists of using the benchmarking matrix, a technique used to analyse other companies seen as competitors. This analysis aims to compare the following: a) how they carry out administrative processes, b) distinguish their way of working, c) tools and technology used; by applying the Benchmarking Matrix, the aim is to distinguish the points of improvement of the Digital Company, in order to be more competitive and to fulfil its vision of being the best in its field.

The analysis of the Digital Company considers the immediate direct competition, represented by some digital marketing agencies in Mexico City, the analysis focuses specifically on the social networks of the companies, because they are the means by which they communicate the general activities that are being carried out both internally and externally; in this way it is possible to obtain points of improvement that is undoubtedly an important factor for the company.

Table 2 is shown below, in which we can see in the columns the companies that are analysed, described as Digital, Competence 1 and Competence 2; while in the rows are located the items under which the work of competitive impact is focused, developed by each of the companies, thus providing relevant information for the structure of the communication plan.

Company	DIGITAL	Competence 1	Competence 2
What is it? (strategic approach)	Plan strategies according to the business objectives of each of our clients.	Generate digital advertising strategies focused on results.	Create strategies and experiences focused on the growth of your brand.
Website analysis (what aspects you handle of your organization)	Quality work before customers.	Degree of training of its workers.	Quality emphasizing teamwork.
Analysis of social networks (content focused on your organizational structure).	Management of service information, focused on Instagram.	Its Instagram network handles content related to its staff, as well as the design of the workstation, while on Facebook it only handles informative content.	On the website if they reflect more their organizational way of working.
Key points	Focus your activities on the home office.	Concrete content putting quality first.	Educational platforms and the marketing Ebook, this gives seriousness and commitment to the company.
Similarities of the type of approach	It specializes in very specific niches, however it has a resemblance to Competition 1, for the type of content that was handled in its beginnings, residing here, that competitive advantage.	The work on Instagram is similar with Digital, although it later takes another approach.	It takes more into account its staff, in addition its Ebook and certification give it that plus.

Table 2 Competence Benchmarking Matrix Analysis  
SOURCE: Prepared by Cruz Ramírez Erick Santiago(2020)

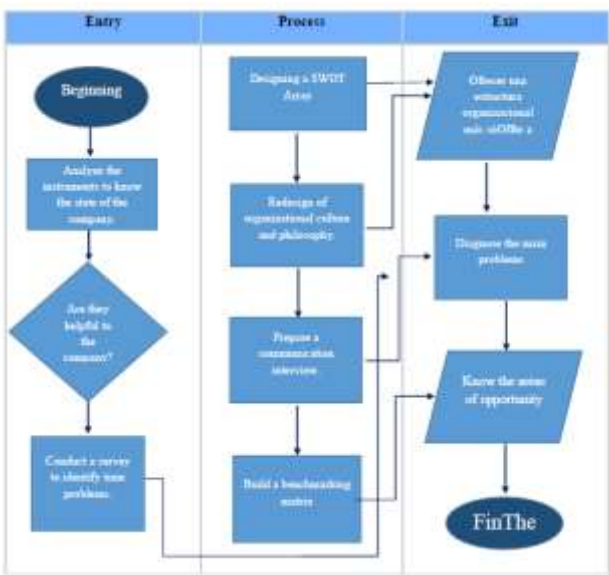
The analysis of the Benchmarking Matrix shows that internal efficiency is achieved by strengthening the communication channels applicable to the Home Office, which will be reflected in the best practices of external communication using the planning of strategies in line with the business objectives of each of the customers, delivery of quality work for customers, as well as the management of information services through social networks such as Instagram. The Digital Company seeks a competitive advantage through electronic media, using efficient internal and external communication, because it specialises in very specific niches. The structure for the communication plan, which will serve to optimise the resources available to the Digital company, mainly the human and technological resources of the Home Office, can be understood from here.

The Communication Plan for the Digital company consists of establishing improvements in the control of internal communication between the work team, applied in a hierarchical way in the home office work modality; detecting different needs as well as difficulties in establishing adequate internal communication, thus favouring home office work in a correct way, in: the structure, the organisational culture and philosophy, as well as the tools and platforms used for communication.

In order to base the Communication Plan, use is made of different models to be applied in the Digital company, taking into account the SWOT analysis matrix (table 1) and the benchmarking matrix (table 2), supporting the structure of the plan, showing through the two matrices, the current situation of the company; use is also made of research techniques such as the survey and the interview, to find out the needs of the staff, allowing to focus on the most latent problems of the company. A pilot is carried out to provide feedback, applying evaluations, diagrams and models that allow the development of the plan.

Scheme 1 shows the structure of the process of implementation and integration of the Communication Plan, which is composed in the header of the table with a sequence of Input-Process-Output; the development of the flowchart describes each activity to be carried out by means of the symbolisms that it handles.

As mentioned above, the diagram expresses in its input part the identification of the problems regarding the effectiveness of communication, supporting the diagnosis of the main problems. The process section shows the application of the analysis through the matrices, as well as the research instruments (survey and interviews) applied to the collaborators; both the matrices and the instruments, determining the areas of opportunity to work on in the company. Finally, in the output section, the strategies to generate effective communication are implemented.



**Figure 3** Flowchart of the process of developing a communication plan  
*Source: Own elaboration with data from the survey applied in the SKYGROOVE DIGITAL company*

One of the benefits that this communication plan brings to the company is to improve the planning and organisation of activities, so that employees know what is going to be done considering: 1) to be clear about the direction of the work assignments, 2) to foresee each of the aspects that each task must have in order to achieve the objectives, 3) to know who is going to carry out the activities (improving communication and delegating tasks to the work team). Following the administrative structure in the management part of the communication channels, those involved in the plan contribute to the achievement of objectives, having the power to improve the motivation and leadership of each of the collaborators. Finally the control will help to follow up the plan, to get feedback and to reflect the continuous improvement within the company.

**Methodology**

**1. Effective communication strategies for the Home Office**

Internal communication strategies can be effective, as long as the right channels of communication are established, the right message is transmitted in the communication process, but above all the guidance through which employees feel confident to perform their work to the best of their ability. Scheme 2 establishes three aspects on which it is proposed to develop communication strategies.



It is understood that efficient communication must be based on knowing how to transmit each of the activities, with the pertinent indications giving rise to minimising doubts on the part of the collaborator. With regard to the application of the home office, it is important to take into consideration that activities carried out remotely will generate doubts when they are executed, so in order to achieve good performance and fulfilment of objectives, the tasks must be backed up by the support of the hierarchically established authorities, facilitating the employee's performance. The third, focused on the use of technologies, is to be able to count on advantages for the reduction of costs, determining an investment but with great profits.



**Figure 4** Strands for communication strategies

Source: Elaborated by Cruz Ramírez Erick Santiago and Hernández Flores María Juana. (2020)

Starting from these aspects as strategies, the Home Office, Communication Technologies and Efficient Communication, it can be considered the adequate channel to make an activity functional; considering that the home office will represent for the Digital company a competitive advantage in the internal and external environment of the company, at the moment of making use of the technologies making an efficient communication; important points to establish as a structural guide of a strategic communication plan, before the home office.

## 2. Methodological process applied to the Internal Communication research

This research considers the independent variable through the plan, as it is a strategic part of the project, influencing the objectives, strategies, tools and organisational communication, applicable to the problems posed. In addition, the plan, through its structure, defines the meaning of the research, designing each of the parts for its implementation in organisational communication.

The dependent variable, worked through organisational communication, measures the performance within the company, considering the effective functionality in the organisation.

Therefore, the research design, making use of different techniques, such as data collection, in order to collect the required information based on the problem posed, through instruments designed and applied to the collaborators (leaders and staff) of the Digital Company. This research allowed the collection of quantitative and qualitative data, by means of interviews and surveys; getting to know more concretely the opinions of the people who work in this company, which made it possible to obtain different points of view from the perspectives of the hierarchical levels.

Through these instruments key information was collected, which was used to generate a decision making process that emphasised the improvement of internal communication in the company, and also helped to evaluate what strategies and tools could be implemented to obtain a technological benefit that would make Digital's communication with the Home Office more efficient.

In order to calculate the sample, statistical methods were applied, which allowed us to obtain the necessary information for the development of this research; highlighting that the initial calculation of the population is affected by the current pandemic (COVID-19), due to the fact that the number of respondents and interviewees was reduced, due to an internal problem of the company.

The Digital company is composed of a work team that hierarchically is composed of leaders and staff, through which the characteristics of the participants who were part of this research are generated, highlighting that each of them has a great experience in digital marketing as well as an average experience of 4 years in this area, they have knowledge about design, content creation and people specialised in web development, in addition to recognising that they are experts in the management of data analysis tools such as google ads, semrush, google analytics, among others.

The sampling procedure seeks to know how many employees will be surveyed, being these who provide data on the problems of the company, through statistical calculations will have greater accuracy in the analysis and recommendation for an assertive decision making on the results obtained.

Formula:

$$n = \frac{N \cdot Z \cdot P \cdot (1-P)}{(N-1) \cdot e^2 + Z^2 \cdot P \cdot (1-P)} \quad (1)$$

### Substitution of the population formula

$n = ?$

$N = 13$

$Z = 95\% = 1.96$

$P = 50\% = 0.5$

$e = 3\% = 0.03$

$$n = \frac{13 \cdot 1.96 \cdot 0.5 \cdot (1-0.5)}{(13-1) \cdot 0.03^2 + 1.96^2 \cdot 0.5 \cdot (1-0.5)}$$

$$n = \frac{13 \cdot 1.96 \cdot 0.5 \cdot (0.5)}{(12) \cdot 0.0009 + 3.8416 \cdot 0.5 \cdot (0.5)}$$

$$n = \frac{6.37}{0.0108 + 0.9604}$$

$$n = \frac{6.37}{0.9712}$$

$n = 7$  Entrevistas y Encuestas

After making the relevant calculation of the sample, it is obtained that of the total population of 13 workers, a sample of 7 collaborators is considered, in order to carry out the application of the proposed interviews.

On the other hand, a greater veracity of the information is considered, which is why the decision was taken to consider the population, due to the fact that the company, as a result of the contingency, presented a notable reduction in the workforce.

The procedure for measuring variables and collecting data is done by means of the analysis of statistical results through the processing of data from the application of the surveys; as a result of the interview, an analysis is carried out through the answers provided by the study population. For both cases, the information on the criteria that influence the home office is considered to be grouped, so that strategies can be implemented in the company, so that the team of collaborators can develop and improve their performance in remote work.

### Acknowledgement

The Tecnológico Nacional de México (TecNM), through our institution, the Tecnológico de Estudios Superiores de Ixtapalca (TESI), seeks to be in constant contact with the productive sector, thanks to which the development of this research is possible. To the participation of each one of the collaborators of the company Digital, who gave the facilities for the compilation of the information. We are also grateful to the people who, through their human warmth and support, have made this achievement possible.

### Conclusions

In the companies it is necessary to carry out an efficient communication, because this will impact in great measure in the activities that are executed internally and externally, it is for that reason that the proposal to generate a Plan of Organisational Communication for the company Digital, was a decision that was taken in reference to the deficiencies and needs that were detected in the way of communicating and managing tasks, due to the fact that there was a transition from face-to-face work to the home office modality, which was a complex process, since at the beginning of the company the minority of collaborators did not work in this modality at the time.

The company's employees, being in contact through digital platforms, identified ways or strategies to provide solutions to the problems they faced when working remotely, which was not enough, as it was necessary to make use of tools to support the accurate detection of the problems, so a methodological process was generated for the development of a Plan, which initially establishes an analysis, then a proposal of strategies, focused on possible solutions and finally a documented functional structure of the Communication Plan for the Digital company.

Within this research it was vital to know the communication needs, because it was detected as a problem, the deficiency in the control of internal communication in the Digital company, therefore a solution of value was sought, based on the Hypothesis of alterna (Ha) described below: Yes, the internal control of organisational communication influences efficiently in the performance of employees, then, it will facilitate the orientation of the objectives by monitoring and evaluating the internal processes of the Digital company. Obtaining very satisfactory results, generating different proposals or alternative solutions, creating instruments applicable to the case, which were of great help in identifying all the situations for improvement, giving guidelines to propose instruments that will help to establish strategies as part of a competitive advantage.

When the research study and the design of the instruments for the improvement of communication were carried out, the communication plan was proposed, which had the following goals: to improve the remote work in search of meeting the objectives, so that the company could obtain a better development and growth in the field of digital marketing.

Through this it was possible to empower the organisation in the management of communication, since nowadays many companies face unexpected changes such as taking the work to another modality, however many of them are not prepared to exercise the work as a Home Office and tend to become extinct for not supporting such radical changes, therefore the results obtained regarding the communication plan are crucial for the Digital company and some other companies, to continue in operation and above all to adapt to changes.

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Business strategies most frequently applied in companies in the municipality of Poza Rica, Veracruz

Estrategias empresariales con mayor frecuencia de aplicación en empresas del Municipio de Poza Rica, Veracruz

MARTÍNEZ-LEE, Maribel†\*, SALAZAR-VIOLANTE, María Abigail, SARMIENTO-REYES, Celso Ramón and GONZÁLEZ-RIVERA, Montserrat

Tecnológico Nacional de México/ Poza Rica. / Head of Business Management Engineering

ID 1<sup>st</sup> Author: Maribel, Martínez-Lee / ORC ID: 0000-0002-3928-8967, CVU CONACYT ID: 578164

ID 1<sup>st</sup> Co-author: María Abigail, Salazar-Violante / ORC ID: 0000-0002-6715-4595, CVU CONACYT ID: 480669

ID 2<sup>nd</sup> Co-author: Celso Ramón, Sarmiento-Reyes / ORC ID: 0000-0002-5400-8062, CVU CONACYT ID: 35783

ID 3<sup>rd</sup> Co-author: Montserrat, González-Rivera / ORC ID: 0000-0001-5657-5450

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Abstract

This document presents the results obtained from the study conducted in order to know which were the most frequently applied strategies in the companies of Poza Rica, Veracruz, Mexico, to which a strategic plan was developed as part of academic projects carried out by students of the Business Management Engineering career, considering as axis the subject of Strategic Management of the academic program of the National Technology of Mexico with key AED-1035, during the years 2018, 2019 and 2020. The objective of the study is to identify the strategies that are most frequently presented, and in this way, help entrepreneurs to have a reference of the areas that are more susceptible to analyze in their companies. The study consisted of classifying the strategies by areas, based on the existing theoretical framework in this regard, resulting in that the strategies that appear most frequently are financial, marketing, processes and human resources, and some less frequent ones called others.

Functional areas, Strategies, Strategic management

Resumen

El presente documento presenta los resultados obtenidos del estudio realizado con el fin de conocer cuáles fueron las estrategias aplicadas con mayor frecuencia en las empresas de Poza Rica, Veracruz, México, a las cuales se les desarrolló un plan estratégico como parte de proyectos académicos realizados por alumnos de la carrera de Ingeniería en Gestión Empresarial (IGE), considerando como eje la asignatura de Gestión estratégica del programa académico del Tecnológico Nacional de México con clave AED-1035, durante los años 2018, 2019 y 2020. El objetivo del estudio es identificar las estrategias que se presentan con mayor frecuencia, y de esta forma, coadyuvar a que los empresarios tengan una referencia de las áreas que son más susceptibles de analizar en sus empresas. El estudio consistió en clasificar las estrategias por áreas, con base en el marco teórico existente al respecto, dando como resultado que las estrategias que aparecen con mayor frecuencia son financieras, de mercadotecnia, de procesos y de recursos humanos, y algunas menos frecuentes denominadas como otras.

Áreas funcionales, Estrategias, Gestión estratégica

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\*Correspondence to Author (maribel.martinez@itspozarica.edu.mx)

† Researcher contributing first author.

## Introduction

Strategy is a word used within companies, which has always been immersed in their daily work. The first definitions of strategy are focused on military operations, becoming involved in a general vision of command or leadership, taking relevance in the business environment since the early seventies due to social and cultural changes that impacted on trade.

These strategies are the result of gathering information about what exists within the company (in its various areas), what is outside it (government, technology, society, demographics, others) and where you want to go, that is, the vision that the company has; in this sense, the application of engineering techniques and tools for obtaining business strategies makes it possible to structure the company so that decision making is more reliable (Gallardo, 2012); unfortunately, this information is not always taken into account by entrepreneurs, either by ignorance or by considering that it is not necessary.

In the career of Business Management Engineering of the Instituto Tecnológico Superior de Poza Rica, the subject of Strategic Management is taught, which includes the necessary methodology to diagnose, analyze, establish, evaluate strategies, and make decisions to improve the areas of the companies. This allows linking the academic sector with the productive sector, applying the tools provided by this subject, to support companies in their analysis. Thus, several generations of students have resorted to the companies that exist in the municipality in which the educational institution is located, to diagnose their situation and based on that to design strategies for them, but it has been observed that entrepreneurs, do not know the application of techniques and tools to reduce their risks and also do not have a historical reference of the types of strategies that have been developed more frequently (if so) in the companies of Poza Rica, Ver.

This document is intended to provide information in that sense, which business strategies present the highest frequency to improve the various areas of the companies in the area, offering the ability to identify these areas of improvement decrease or eliminate unwanted situations in one's own business.

To do this, an analysis of the academic projects carried out in the period 2018-2020 was carried out, which is presented through tables and graphics to facilitate understanding.

## Justification

Currently micro and small businesses in the city of Poza Rica, Veracruz, do not consider using techniques or tools to know their areas for improvement, this being a niche for students to take advantage of Business Management to develop academic projects focused on making a diagnosis and from this generate various strategies for improvement.

From the projects that have been developed in the last 3 years, very useful information was obtained for the city's businessmen. In this way, knowing which are the most frequently used strategies (resulting from the diagnoses of the academic projects), allows companies to focus their attention on these areas, thus foreseeing the solution of future problems. On the other hand, showing the methodology used by the institution has two objectives: first, to contribute to participate in the permanence and development of microenterprises and, secondly, to show a reference of the use of engineering techniques and tools in companies for the diagnosis of their situation.

## Problematic

There are several businesses, micro and small companies in the region that do not have a control of the situation that prevails in them, these entities are exposed to a risk level in their operational areas, risks that can be financial, in their legal constitutions, and inherent in human resources, among others; therefore, they are susceptible to be affected, even to the extent of disappearing.

With this, it is possible to observe the lack of knowledge of the existence of techniques and tools that can be used to know the real situation of their businesses, as well as which are the strategies that are more frequently developed and implemented in the businesses or companies of their environment, being lacking of experiences to consider for the improvement of their business.

It is important to note that the techniques and tools in the diagnosis of the real situation of a business or company have a considerable influence on the permanence and development of the same, so, given these circumstances, the need to analyze the results of the application of techniques and tools of Strategic Management in the projects that have developed students of Business Management Engineering during the last 3 years, and identify the strategies that appeared most frequently in these projects is detected. This analysis is presented through graphic and illustrative designs of the description of the strategies.

### Objective

Identify the strategies designed and implemented more frequently as a result of the methodological application of Strategic Management in companies in the municipality of Poza Rica, Ver., from 2018 to 2020.

### Theoretical Framework

Every company is made up of various departments, known as functional areas, which “are those that allow the proper functioning of the company [and that the] working together helps them to achieve the objectives set by the general direction of the organization” (Chao, n.d.); among the main ones we can distinguish: finance, marketing, production, and human resources.

The finance area is in charge of the correct administration of the financial resources that the company has, as well as the raising of funds so that it can carry out its operations. In short, “the financial function of the organization is to try to increase the shareholders' equity by obtaining modest funds and the proper management and investment in resources that generate economic gains” (Garza, 2000, as cited in Chao, n.d.). Also, Chao (n.d.) mentions that the marketing department is one of the most important within the company, because “it is responsible for identifying a need and satisfy it through a deep knowledge of the customer and seeks to ensure that the product or service is tailored to it”. Regarding the production department, it is understood as “the one in charge of transforming inputs into finished products or services” (Chao, n.d.).

According to David (2003), the human resources area “includes activities such as recruitment, interviewing, appraisals, selection, orientation, training, development, care, evaluation, reward, discipline, promotion, transfer, demotion and dismissal of employees, as well as the management of union relations”.

On the other hand, according to Gallardo (2012), every organization needs to define actions to achieve the structural process. This set of actions is known as strategies. Therefore, he defines strategy as “the selected process through which it's expected to achieve a future state”. The main reason for companies to make use of its application is to have a better position in the market compared to its competitors, as well as to capture a greater number of customers.

In this way, Paris (2005) defines strategic planning as “the process by which an organization, once it has analyzed its environment in which it operates and set its medium and long-term objectives, chooses (selects) the most appropriate strategies to achieve those objectives and defines the projects to be implemented for the development of its strategies”.

In this sense, Martinez et al. (2020) mention that strategic planning is essential in organizations, especially if they want to survive and succeed in these times of globalization, where technological advances grow every day with greater agility. This requires a high degree of preparation, skill and anticipation of the social needs of the same organization. These same authors present some of the advantages of strategic planning, such as:

- Anticipates the allocation of resources for the achievement of the determined objectives, facilitating decision making in the organization.
- Effectively applies human, financial, material, information and time resources.
- It detects in advance the opportunities and threats close to the organization.
- It specifies the basic factors that mark the success or failure of the company.
- Stimulates communication from the top management of the organization.
- It allows the evaluation, acceptance and rejection of action alternatives.
- It allows to take reference points for decision making.

- It makes it easier to handle situations outside the company.
- Reduces uncertainty within the organization.

In addition, Martínez et al. (2020) point out that in order to carry out strategic planning it is first necessary to make a strategic analysis of the organization, which is the process that investigates and analyzes the internal and external environment of a company, in order to formulate strategies for decision making. The internal analysis consists of studying the different elements within a project or company, in order to know its situation. While the external analysis allows to objectively evaluate the external elements in order to better understand the environment in which the company operates; so it's precisely this external analysis that provides the advantage of detecting in advance the opportunities and threats close to the organization.

Gallardo (2012), points out that, from the information obtained from these two analyses, “It is necessary to discern which situation is critical for the company and what priorities exist according to the structural bases (mission, vision and values)”. For this reason, Martinez et al. (2020) mention that for a better understanding of the results, it is necessary to synthesize the information obtained from tools known as portfolio techniques. These techniques for the analysis of competitiveness are made up of: the SWOT matrix, the BCG matrix and the McKinsey-GE matrix, which are explained below:

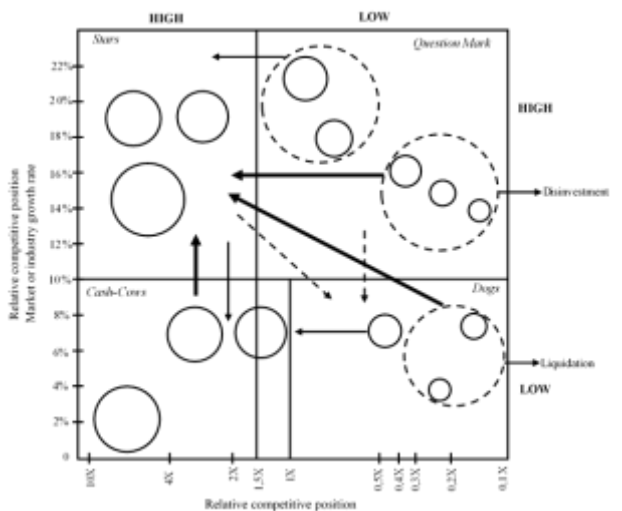
The SWOT matrix is an easy-to-use tool to obtain an overview of the strategic situation of a company. It has multiple applications and can be used by all levels of the corporation and in different units of analysis, such as product, market, product-market relationship, product line, corporation, division, strategic business unit, etc. (Gallardo, 2012).

The SWOT matrix allows to determine how competitive the company is and how capable it is to perform in the market. In this analysis, the first thing that is done is to classify the internal factors, which are strengths and weaknesses, and the external factors, which are opportunities and threats. Subsequently, those factors that should be included in the SWOT matrix are selected.

The strengths of an organization are those functions that are performed correctly, such as: certain skills and abilities of staff with certain psychological attributes and evidence of their competence. In contrast, a weakness is defined as a factor that makes the organization vulnerable or simply an activity that the company performs poorly.

Opportunities are those external environmental forces that represent potential elements of growth or improvement. Threats, on the other hand, represent the sum of environmental forces that are not controllable by the organization, but represent negative forces or aspects and potential problems.

The Growth - Participation matrix, created by the Boston Consulting Group (BCG) (hence it is known as BCG Matrix), is a tool that, according to Alcaide (1984), is based on the idea that businesses have different financial characteristics and can design different strategies according to their position of growth and competitiveness. The BCG matrix is formalized in a 2 x 2 structure, where the vertical axis represents the market growth rate and the horizontal axis represents the market share, as shown in the figure below:



**Figure 1** BCG Matrix  
Source: Own elaboration, based on Alcaide (1984)

According to Alcaide (1984), the positions of a company can be:

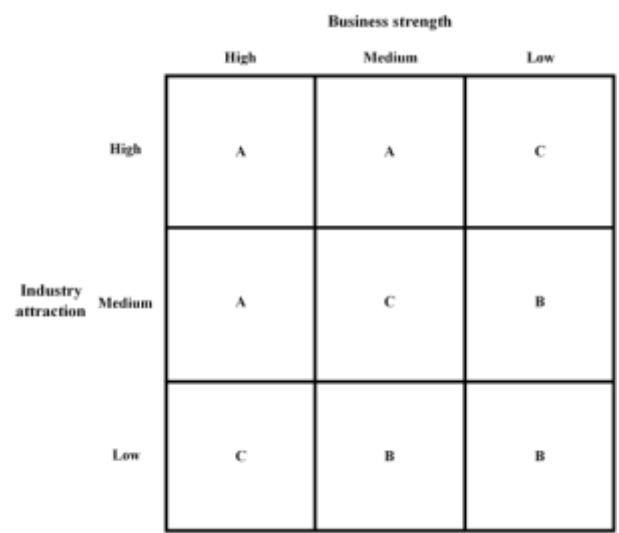
- Stars: They seek to improve and/or defend their position in the market; their net cash-flow is close to zero or negative.
- Question marks: Aggressive move to capitalize on growth opportunity or divestment. Negative net cash flow.

- Cash-cows: Maximize the generation of financial resources. Positive net cash-flow.
- Dogs: Movements towards divestment or liquidation. Net cash-flow close to zero or negative.

Depending on the position of the company (or the product), strategies are implemented according to the situation.

Also, Gallardo (2012) mentions that the BCG matrix allows a multi-divisional organization to manage its business portfolio by analyzing the relative share of the market it is occupying and the industry growth rate of each of the organization's divisions. On the other hand, in the 70s of the twentieth century, the company General Electric requested support from the consulting firm McKinsey to analyze the situation at that time, since its sales were growing, but did not provide the expected return.

From the BCG matrix, McKinsey elaborates its own matrix (known as the attractiveness-competitiveness matrix, McKinsey Matrix or General Electric Matrix) that provides more information, by using several indicators to evaluate the dimensions, which are: strength of the studied business and attractiveness of the industry, both with 3 possible levels (high, medium and low). The strength of the market (competitiveness) is placed on the horizontal axis and the attractiveness of the industry (or market) is placed on the vertical axis, as shown in the following figure:



**Figure 2** GE-McKinsey Matrix  
*Source: Own elaboration, based on Alcaide (1984)*

As can be seen in the figure, in the lower right corner there is a low market attractiveness and low business strength or competitiveness, which could lead to a decision to disinvest.

On the other hand, a high attractiveness but low competitiveness (upper right corner), advises selective development, that is, investing resources only if the opportunities compensate. On the other hand, a low market attractiveness but high competitiveness (lower left corner) implies having to maintain market positioning but without the need for large investments.

Finally, the ideal situation is when the market attractiveness is high and at the same time a high competitiveness is maintained (upper left corner), which allows to implement an offensive strategy in which resources must be invested to grow.

The rest of the areas that make up the matrix correspond to products for which the positioning is undefined.

**Methodology**

The present research was conducted under a quantitative approach, by means of a descriptive and statistical study of transversal cohort studying the integrative projects developed by three generations of the career of Business Management Engineering (2018, 2019, 2020) of the Instituto Tecnológico Superior de Poza Rica, which carried out such projects having as axis subject Strategic Management of the academic program of the Tecnológico Nacional de México with key AED-1035.

As part of the first stage, we began with the review of the academic projects carried out by the students of the three years, from which we obtained the total number of companies and the total number of strategies. In the second stage the classification of the strategies resulting from the diagnoses was made, the classification is considered in the areas of finance, marketing, processes, human resources and others, the latter are those that have little frequency, finally it is schematized with statistical tools and the analysis is presented.

Results

The methodology applied by the students of the Business Management Engineering career, in the integrative projects having as axis subject Strategic Management consisted in the development of a diagnosis with the application of techniques such as: EFE (external factors evaluation) matrix, IFE (internal factors evaluation) matrix, Systemic analysis matrix, also known as influence matrix (internal analysis factors), Impact-probability matrix (external analysis factors).

We proceeded to the phase of analysis of the results and applied the matrices for setting strategic objectives such as: SPACE Matrix (Formulation of objectives using the SWOT matrix, BCG Matrix, McKinsey-GE Matrix) thus obtaining the strategies that companies should apply to improve their areas, such as finance, marketing, administrative, human resources, processes and operational, among others.

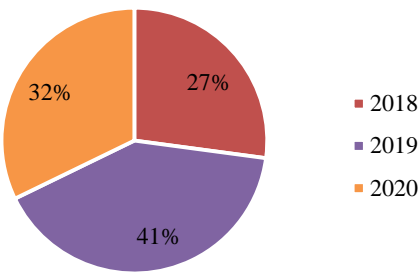
At the end of the academic projects that were applied between the years 2018-2020, the concrete information of the strategies of various companies was obtained, as explained below.

Table 1 provides information on the total number of companies in which the students of the Business Management course carried out academic projects resulting in different strategies.

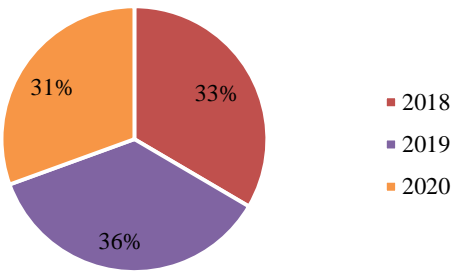
Year	Companies	Strategies
2018	16	92
2019	24	99
2020	19	84
Total	59	275

**Table 1** Total number of participating companies and strategies obtained in the development of integrative projects in the years 2018-2020  
*Source: Own elaboration, with information from the projects*

With this it can be seen that in these three years being analyzed there was the participation of 59 companies, being the year 2019 where there was the largest number of companies, representing 41% total of the participating companies, and a total of 275 strategies were obtained, being likewise the year 2019 where there was the largest number of strategies, representing 36% of all strategies generated, as shown in graphics 1 and 2.



**Graphic 1** Companies participating in Integrating Projects during the years 2018-2020  
*Source: Own Elaboration, with information from the projects*



**Graphic 2** Strategies developed in Integrating Projects during the years 2018-2020  
*Source: Own Elaboration, with information from the projects*

Subsequently, the strategies for each year were classified according to the theory presented by Gallardo (2012) in the following areas:

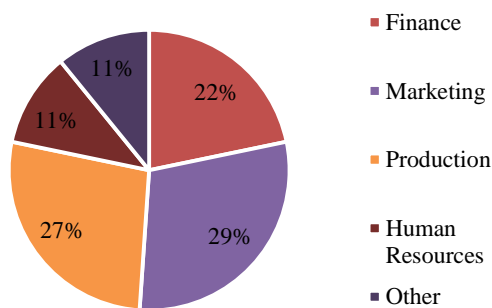
- a. Finance.
- b. Marketing.
- c. Production.
- d. Human resources.
- e. Other (administrative, legal, customer service, etc.).

Table 2 contains the 2018 strategy ranking information.

Year 2018	
Types of strategies	Quantity
Finance	20
Marketing	27
Production	25
Human Resources	10
Other (administrative, legal, customer service, etc.)	10

**Table 2** Ranking of strategies obtained in 2018  
*Source: Own Elaboration, with information from the projects*

Also, Graphic 3 shows the percentage frequency of strategies in 2018.



**Graphic 3** Percentage frequency of each type of strategy in 2018

Source: Own Elaboration, with information from the projects

Based on the table and graphic above, it can be seen that the type of strategy that had the highest frequency this year was marketing with a total of 27 strategies, representing 29%, followed by production, which had a total of 21 strategies, representing 27%.

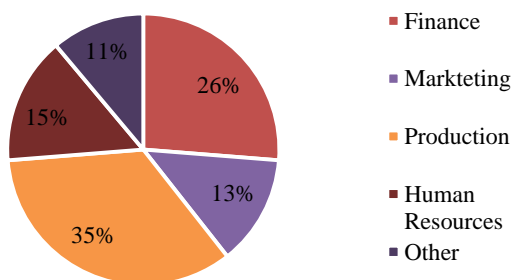
Table 3 contains the 2019 strategy ranking information.

Year 2019	
Types of strategies	Quantity
Finance	26
Marketing	13
Production	34
Human Resources	15
Other (administrative, legal, customer service, etc.)	11

**Table 3** Ranking of strategies obtained in 2019

Source: Own elaboration, with information from the projects

Also, Graphic 4 shows the percentage frequency of the strategies in 2019.



**Graphic 4** Percentage frequency of each type of strategy in 2019

Source: Own Elaboration, with information from the projects

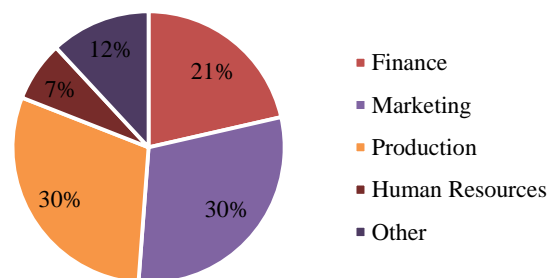
Based on the table and graphic above, it can be seen that the type of strategy that had the highest frequency this year was production with a total of 34 strategies, representing 35%; followed by finance, which had a total of 26 strategies, representing 26%. Table 4 contains the 2020 strategy ranking information.

Year 2020	
Types of strategies	Quantity
Finance	18
Marketing	25
Production	25
Human Resources	6
Other (administrative, legal, customer service, etc.)	10

**Table 4** Ranking of strategies obtained in 2020

Source: Own Elaboration, with information from the projects

Also, Graphic 5 show the percentage frequency of the strategies in 2020.



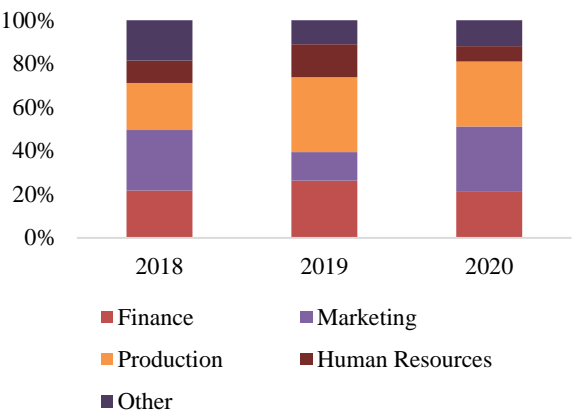
**Graphic 5** Percentage frequency of each type of strategy in 2020

Source: Own elaboration, with information from the projects

Based on the table and graphic above, it can be seen that the types of strategies that had the highest frequency this year were marketing and production, with 25 strategies respectively, representing 30% each; followed by finance, which had a total of 18 strategies, representing 21%.

From these data, the percentage distribution of the strategies obtained in each year was analyzed, as shown in Graphic 6, in order to be able to observe more clearly the difference between the number of strategies of each type that were developed each year.





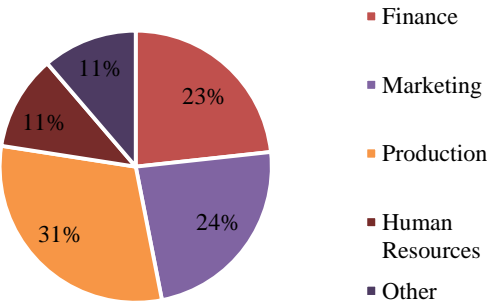
**Graphic 6** Percentage distribution of the strategies developed in Integrating Projects during the years 2018-2020  
*Source: Own Elaboration, with information from the projects*

Finally, Table 5 shows the total number of strategies generated by each type during the three years covered by this study.

Years 2018-2020	
Types of strategies	Quantity
Finance	64
Marketing	65
Production	84
Human Resources	31
Other (administrative, legal, customer service, etc.)	31

**Table 5** Ranking of strategies obtained in the years 2018-2020  
*Source: Own Elaboration, with information from the projects*

Also, Graphic 7 shows the percentage frequency of strategies during the years 2018-2020.



**Graphic 7** Percentage frequency of each type of strategy in the years 2018-2020  
*Source: Own Elaboration, with information from the projects*

Based on the table and graphic above, it can be seen that the type of strategies that had the highest frequency during the three years was production, with a total of 84 strategies, representing 31%; followed by marketing, which had a total of 65 strategies, representing 24%.

On the other hand, according to the order of priority of the strategies, they can be classified as follows:

1. Production.
2. Finance.
3. Marketing.
4. Human resources.
5. Other (administrative, legal, customer service, etc.).

This classification was made based on previous knowledge and experience, as well as those acquired during the development of these projects; taking as a starting point that by improving the production area of a company, the rest of the areas are also favored, so this is considered as the area that should be given higher priority when developing strategies within a strategic plan.

Conclusions

As a starting point it is identified that the companies of Poza Rica should pay more attention to the processes in their production area, because this is the area where more strategies arise as a result of the diagnostics and analysis carried out with the methodology of the study program of Strategic Management during the development of academic projects, that is, the production areas of the various companies studied are generally not planned or organized, which is why when making a diagnosis with the methodology of strategic management, they are detected as areas of opportunity to carry out improvements through various strategies.

These strategies are aimed at optimizing the production processes of the companies, using tools and philosophies such as just in time, kanban, inventory control, 5S, etc., in order to achieve production efficiency, taking advantage of the time and resources available.

On the other hand, Marketing is the area that has 24%, followed by Finance with 23% and Human Resources with 11% of the 100% that make up the strategies. Specifically, marketing strategies focus on market growth using population forecasts and advertising resources, while finance strategies refer to establishing a solid financial situation, based on sales growth, cost savings, improving profits and forecasting the company's economy, and human resources strategies impact on service and customer treatment through attitudes that are achieved with training and job analysis.

Definitely, the identification of the strategies that most frequently arise when companies are diagnosed and analyzed, is a reference for entrepreneurs in the municipality of Poza Rica, that although it is true that all companies have different characteristics, consequently it originates to fix their attention on those areas that are identified in the companies of their environment, which can be extremely useful to prevent the development of problems in the future. In other words, we can conclude that regardless of the line of business and size of the company, Strategic Management is essential to support its permanence and development.

### Acknowledgments

To the Tecnológico Nacional de México, as well as to the Instituto Tecnológico Superior de Poza Rica, for giving us the opportunity to carry out this research and allowing us to use the information presented here. In addition, we thank all the businessmen of the municipality of Poza Rica, Veracruz, who opened the doors of their businesses to the students of the Business Management Engineering program so that they could develop these academic projects. Finally, to the teachers and all the staff of the institution for always being a guide for the students in the fulfillment of their activities and, above all, in the development of their professional competencies.

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**Abstract (In English, 150-200 words)**

Objectives  
Methodology  
Contribution

**Keywords (In English)**

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\* Correspondence to Author (example@example.org)

† Researcher contributing as first author.

Introduction

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General explanation of the subject and explain why it is important.

What is your added value with respect to other techniques?

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

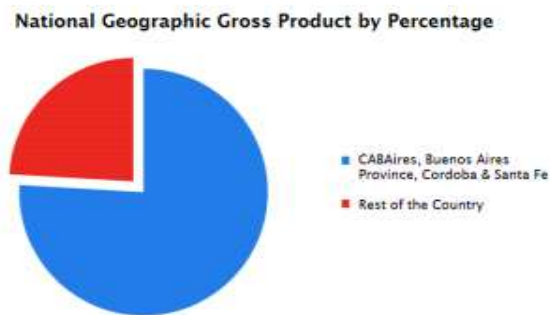
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Graphic 1 Title and Source (in italics).

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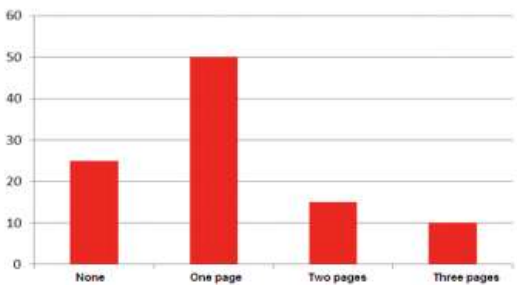


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For the use of equations, noted as follows:

$$Y_{ij} = \alpha + \sum_{h=1}^r \beta_h X_{hij} + u_j + e_{ij} \tag{1}$$

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Develop give the meaning of the variables in linear writing and important is the comparison of the used criteria.

Results

The results shall be by section of the Article.

Annexes

Tables and adequate sources thanks to indicate if they were funded by any institution, University or company.

## Conclusions

Explain clearly the results and possibilities of improvement.

## References

Use APA system. Should not be numbered, nor with bullets, however if necessary numbering will be because reference or mention is made somewhere in the Article.

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