

Innovation in the MSEs of municipality of Puebla**La innovación en las MSEs del municipio de Puebla**

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Abstract

Innovation is a tool for organizations to be competitive in a globalized world. Innovating means introducing modifications in the way of doing things, to improve the final result. Then, an innovation can be from an action on the price of an article to conquer a market, to the improvement of a product or the discovery of a new use for an existing product, as well as in its internal processes. The MSEs have an area of opportunity in their markets through creativity and innovation in their products and services. As these are an important part of the economic development of the countries, both nationally and internationally, as a consequence, governments at all levels and non-governmental organizations seek to strengthen the process of creativity and innovation in the MSEs. The purpose of the study is to describe how the MSEs in the municipality of Puebla apply innovation in their substantive processes as a competitiveness strategy. For this purpose, 359 MSEs companies were surveyed in a period from February to March 2016; with this we have a picture of the innovation of the MSEs in the municipality of Puebla.

Innovation, MSEs, Puebla's municipality

Resumen

La innovación es una herramienta para que las organizaciones sean competitivas en un mundo globalizado. Si innovar significa introducir modificaciones en la manera de hacer las cosas, para mejorar el resultado final. Así, una innovación puede ser desde una acción sobre el precio de un artículo para conquistar un mercado, hasta la mejora de un producto antiguo o el descubrimiento de un nuevo uso para un producto ya existente. Luego entonces, las MSEs tienen un área de oportunidad en sus mercados mediante la creatividad e innovación en sus productos y servicios, así como en sus procesos internos. Siendo éstas parte importante del desarrollo económico de los países, tanto a nivel nacional como internacional, en consecuencia, los gobiernos en todos los niveles y organismos no gubernamentales buscan fortalecer el proceso de creatividad e innovación en las MSEs. El estudio tiene como propósito describir como las MSEs en el municipio de Puebla aplican la innovación en sus procesos sustantivos como una estrategia de competitividad. Para ello se encuestaron 359 MSEs empresas en un periodo de febrero a marzo 2016, con esto se tiene una radiografía de la innovación de las MSEs en el municipio de Puebla.

Innovación, MSEs, Municipio de Puebla

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Introduction

The objective of this research is to analyze through an exploration of how the MSEs of the municipality of Puebla apply innovation in their businesses as a tool to improve their competitiveness. Innovation is one of the main tools for the development of humanity in different fields such as society, technology and science, economics, among others. The word innovation is continuously associated as a synonym of progress, technological development, job creation, improvement of living conditions, etc. There is talk of innovation in the economic, education and social spheres. The etymology of innovation comes from the Latin innovation and is innovative "make new" or "renew", and is formed by in "in and novus "new".

There are different definitions of innovation, for the Royal Spanish Academy is the creation and modification of a product and its introduction into the market. From the economic point of view, Joseph Schumpeter (1961) who introduced this concept in his "theory of innovations", and defines it as the establishment of a new production function.

That is, it is a process of creative destruction, which allows the economy and economic agents to evolve; It is also the way in which the company manages its resources over time and develops competencies that influence its competitiveness. It suggests that inventions and innovations are the key to economic growth, and those who implement this change in a practical way are the entrepreneurs.

Subsequently, based on Schumpeter's definition of innovation, the Oslo Manual (OCD, 2005) states that an innovation is the introduction of a new, or significantly improved product (good or service), of a process, of a new method of marketing or a new organizational method to the market and society. From here arises the question of how Micro and Small Enterprises (MSEs) in the municipality of Puebla promote innovation in their products and services.

Thus, innovation is a key element for other economic and social factors to be renewed. Some of them are productivity, competitiveness, gross domestic product (GDP), wealth, health and well-being in nations.

Those responsible for innovation are, among others, companies from micro to large companies. According to the European Business and Innovation Center (CEEI, 2007): "Innovation can be considered as the commercial application of an idea in such a way that new or improved products, processes or services are created, allowing business profits to be generated. As vital as innovation, it is the diffusion and commercialization that allow to give utility to the generated idea. "In our study we are interested in knowing how micro and small companies lead to participate in the innovation process. In this context, companies have played a central role in the processes of development, introduction and dissemination of innovations to the market. In this regard, Porter (1990) states that the innovation process can not be separated from the strategic and competitive context of a company. In agreement with the above, Drucker (2005, p.64) argues that "systematic innovation consists in the search, organized and with an objective, of changes and in the systematic analysis of the opportunities that they can offer for social innovation or economic".

In our country, the Mexican Institute for Competitiveness A.C. (IMCO) provides information about the State and Municipal Budget Index, the State Competitiveness Index, the Urban Competitiveness Index, and so on. With this information, both national and local, the trajectory of the municipality of Puebla has been known (the index includes the Puebla-Tlaxcala cities). According to the Urban Competitiveness Index; the zone of Puebla Tlaxcala has had the following results: 17°-2010; 7th-2012; 11th-2014. Regarding innovation, Puebla Tlaxcala area is located in position 23 in 2014 and in 2012 in fourth place. Thus, the word Innovation appears continuously as a synonym of progress, technological development, job creation, improvement of living conditions.

There is talk of innovation in the economic areas (technological innovation in companies) and social (health, leisure, working conditions, transport, etc.). The Oslo Manual; "OECD Proposed Guidelines for Collecting and Interpreting Innovation Data - Oslo Manual" (OECD, 1997a) defines as technological process and product innovations the implementation of technologically new processes and products, as well as the significant technological improvements made in processes and products.

An innovation implemented is one that has been introduced into the market (product innovation) or used in a production process (process innovation). Innovation involves a series of scientific, technological, organizational, financial and commercial activities.

For the European Commission in its Green Paper on Innovation (1995), Innovation is considered as a synonym to produce, assimilate and successfully exploit a novelty, in the economic and social spheres, in a way that provides unprecedented solutions to problems and allows thus respond to the needs of people and society. The OECD, too, in its Frascati Manual (2002) defines innovation as the transformation of an idea into a marketable product or service, a new or improved operational or manufacturing procedure, or a new method of providing a social service. In this case, the concept is clearly linked to business innovation. There are many definitions and explanations of the term innovation, linked to the economic, sociological, etc., but ultimately all imply that: "Innovate means to introduce changes in the way things are done, to improve the final result. Thus, an innovation can be from an action on the price of an article to conquer a market, to the improvement of an old product or the discovery of a new use for an existing product "(Ferrer Salat, 1984). On the other hand, according to Benavides (1998) innovation can be classified according to three criteria, see table 1.

- The products and services
- The processes
- The way to organize
- The way of relating
- The marketing method

Companies like Google have increased the number of new products that arise from the ideas of their employees, creating work environments that stimulate creativity and allowing them to devote part of their time to developing their own projects. Innovation is one of the main sources of competitiveness and improvement of economic performance for companies and countries. Focusing on the innovation-company binomial, we can consider that at present, in advanced industrial societies, it seems clear that economic growth and employment depend fundamentally on the competitiveness of companies and this in turn, is intimately related to the capacity innovative business sector.

According to the Bogotá Manual (Jaramillo, 2001) "Standardization of Indicators of Technological Innovation in Latin America and the Caribbean" technological innovation is important for competitiveness in a globalized world where the rapid obsolescence of processes and products that characterizes. The current competitive scenario and the increasing weight that differentiated goods are occupying in international trade (especially in the exchange between the most developed economies) have spread and popularized the idea that technological innovation is the master key to the success of firms industrial. At the national level, in turn, having innovative firms implies not only greater competitiveness of the economy as a whole, but also the generation of spillovers or technological spillovers towards the remaining economic agents. On the other hand, Porter (1990) in his definition of the competitive advantages of nations: conditions of the factors, conditions of the demand, companies related horizontally and vertically, and the structure and rivalry of the industries, that form the diamond of Porter, plus two complementary government variables and causal facts are strongly linked to innovation.

Innovation is a key element to achieve these competitive advantages, for example, factor conditions will be a competitive advantage when governments and industries promote and encourage innovation through the creation of advanced and specialized factors.

Innovation Classes	
By its nature or object	- Product
	- Process
	- Methods or marketing techniques
	- Methods or management techniques
Por su grado de novedad	- Organizational
	- Radical or ruptura
	- Incrementals
Because of its economic impact	- Adaptive
	- Basic
	- Improvement

Table 1 Typology of Innovation
Source: Benavides (1998)

The Oslo Manual of the Organization for Economic Cooperation and Development (OECD), which is the reference with the highest consensus regarding innovation, defines up to five axes in which a company can innovate (Everis, 2013):

Likewise, for French-Davies (1988): "The markets of differentiated goods, where the obsolescence of processes and products is increasingly fast, demand active technological behavior on the part of firms and a permanent disposition and aptitude for change. On the other hand, they offer the possibility of maintaining more stable trade relations, of taking advantage of the greater dynamism that characterizes these markets, of avoiding any disadvantages in terms of wage costs and of making advantages of an endogenous nature prevail (own capacities of companies), whose expansion in the future does not, in principle, face limitations or barriers outside the company, if the exogenous factors (macroeconomic context, infrastructure, regulations) have a favorable effect. "That is, innovation will allow differentiation as a strategy and supports what has been said by Porter.

Innovation is not alien to productivity. Productivity is a key element for the development and sustainability of MSEs. However, in Mexico it has been decreasing over the years, according to Gabriela Ramos, director of the Cabinet of the Organization of Trade and Economic Development (OECD), this was reduced by 1.4% on average between 2000 and 2014.

In the State of Puebla, in the last four months of 2015, labor productivity decreased by 0.9% in the manufacturing industry, in the commerce sector, wholesale companies grew by 2.8% and retail sales 3.4%, according to INEGI data. In the municipality of Puebla, various strategies have been developed according to the syndic in turn. For example, Mayor Eduardo Rivera Pérez (2011 - 2014) in the Municipal Development Plan considers the guiding axis "Integral Economic Development" generates different strategies to boost competitiveness and therefore productivity. On the other hand, Antonio Gali Fayad, Municipal President (2014 - 2018) establishes different strategies to boost productivity, such as the "Market Intelligence Platform" project together with CONACyT and the National Development Plan (2013 - 2018) necessary mechanisms to facilitate the creation and maturation process to the MSEs, to increase their chances of success and contribute to the permanence of the generated employment with the objective of increasing the productivity of the established companies.

Increase productivity in the municipalities is not only the task of federal, state and municipal governments. It is a task that involves other sectors such as chambers of commerce, private institutions, education institutions, among others. The productivity defined as a mathematical relation of outputs / entries, is not so simple, since different factors intervene. One of them the businessman, in our studio the owner of an MSEs. Throughout this framework we seek to increase competitiveness and productivity. A negative consequence is stress, which is defined as a set of emotional, cognitive, physiological and behavioral reactions to certain adverse or harmful aspects of the content, organization or work environment, Herrera, et al (2016).

According to the Yearbook of Global Competitiveness 2018 (Economist, 2018), prepared by the Institute for Management Development (IMD, for its acronym in English), based in Switzerland, Mexico fell three positions, from 48 to 51 It is the lowest position the country has had since 1997, when it was included in this classification. This fact indicates that our country needs to continue developing strategies to be more competitive. One of the strategies is innovation in the processes of the MSEs:

Material and methods

Next, the municipal context of Puebla will be described, this one has a population of 1,539,819 inhabitants that represents 26.6% of the population of the entity (INEGI, 2015), half of the population, is 27 years old; for every 100 people of productive age (15 to 64 years) there are 48 in the age of economic dependence (under 15 years or over 64), the average number of inhabitants per household is 3.8; 3.8% of the population does not have educational instruction, 44.6% basic education, 0.6% primary completed, 21.9% higher mean, 28.6% higher. The economically active population is 55.3% and the non-active population is 44.3% (INEGI, 2011). The municipality has 90,179 economic units of which 89,079 are MSEs, representing 98.7% (INEGI, 2016).

The present investigation is approached from the quantitative method with a correlational scope, since this study has the purpose of knowing the relationship between the variables in a particular context (Hernández Sampieri, et al 2010).

The design is transversal of correlational - causal type. In this study, primary data were obtained through the completion of questionnaires applied to micro-entrepreneurs in the municipality of Puebla. The secondary sources used are those related to information about innovation, competitiveness and productivity at the international, national and regional levels.

Kinnear and Taylor (1998) define the population as the set of all the elements defined before the selection of the sample. They also define the element as the unit about which information is requested. In this investigation the elements are the owners or responsible of the MSEs and the sampling units are the economic units MSEs.

To perform a sampling, consider whether to use random or non-random sampling. Random sampling considers that each element of the population has the same possibility of being selected for the sample (Kinnear and Taylor, 1998).

For this there are different methods such as simple, systematic, stratified and conglomerate random. In non-random sampling, the choice of an element of the population that is part of the sample is based on certain criteria of the researcher.

There are different methods such as quotas, intentional or convenience, snowball and discretionary.

For this study, non-random sampling is used for convenience, where the element is self-selected or selected due to its easy availability (Kinnear and Taylor, 1998), that is, it is selected based on the convenience of the researcher. For the collection of information, questionnaires were applied, for which 156 students were trained to apply the instrument and then captured on a platform over the Internet. The director of the participating company did not capture directly on the Internet to avoid a bias in favor of companies that had access to the network. It was held from March 31 to April 26, 2016.

The equation (1) used to determine the sample size is:

$$n = \frac{N * z_{\alpha}^2 * p * q}{E^2 * (N - 1) + (z_{\alpha}^2 * p * q)} \quad (1)$$

Where the minimum sample size should be 383 MSEs, given a population of 89,079 economic units in the municipality of Puebla (National Institute of Statistics and Geography, 2016) with an error of 5% and the proportion of success of 50% with a 95% confidence level. 359 micro and small businesses were surveyed in a period from February to March 2016. An instrument designed by Posadas, et al (2016) of the Technological University of San Juan del Río was used. The questionnaire was designed to be self-administered on paper; however, the questionnaires could be read by the interviewers depending on the level of education of the respondent.

For the application of the questionnaires, students from the Technological University of Puebla (UTP) participated in the courses of Advanced University Technician in Administration, in Industrial Area Maintenance and in Information and Communication Technologies, these being 156. Each participant student was responsible for capturing their data in an online platform created for the research, a training was given to the students according to the design of Posadas, et al (2016). The instrument was made up of 219 items in its entirety. For the present study, only 5 items are considered for innovation with a Likert scale of 5 points and for productivity, 4 perception items 3 are considered with a Likert scale of 5 points and an item with a question closed at intervals on the rate of profits of the company among the number of workers. From the questionnaire (Posadas V., Aguilar R., & Peña, 2016) "Systemic analysis of micro and small enterprises" the responses of the innovation section were analyzed. The questions corresponding to innovation are the following:

- 37a. I encourage employees to propose changes in my products, services and processes.
- 37b. I frequently offer new products or services based on suggestions from my clients.
- 37c. I focus a lot on offering innovative products or services that distinguish my company
- 37d. Development or payment to innovate my production or distribution processes.
- 37e. Development or payment to innovate the products or services that I offer.

- 37f. Development or payment to innovate the way in which I sell my product or service.
- (design, packaging, promotion, form of quotation, etc.)
- 37g. Development or payment to innovate the way in which I organize the company.
- 37h I attend fairs, courses, congresses, or other activities related to the business.

For the statistical validation of the questionnaire, the MINITAB software was used to execute a factorial analysis, obtaining the following results shown in table 2:

Variable	Total	Average	Deviation standard
37a	390	2.97	1.52
37b	390	3.554	1.363
37c	390	3.554	1.378
37d	390	2.921	1.484
37e	390	2.962	1.492
37f	390	2.869	1.509
37g	390	2.838	1.461
37h	390	2.762	1.496

Table 2 Factorial analysis of the instrument used
Source: Own Elaboration

The factorial analysis showed a value of Cronbach's alpha of 0.991 (George & Mallery, 2003), this means that the questionnaire used is statistically reliable and for each question its statistical validation and consistency between the items is shown in table 3.

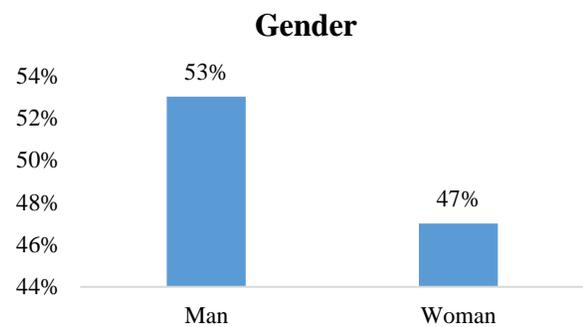
Variable	Alpha
37a	0.9889
37b	0.9923
37c	0.9924
37d	0.9888
37e	0.9888
37f	0.9891
37g	0.9891
37h	0.9897

Table 3 Cronbach's alpha for each question
Source: Own Elaboration

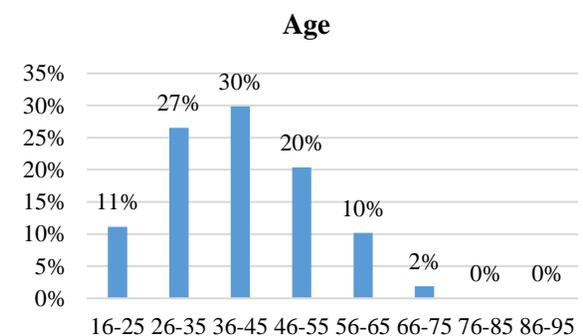
Results

The profile of entrepreneurs of MSEs in the municipality of Puebla is described below. Figure 1 shows that 53 percent of the directors or managers of the MSEs are male and 47% are women in the sample. 30% of the respondents have an age of 36 to 45 years, being in the second place the interval of 26 to 35 years with a percentage of 27%, graph 2.

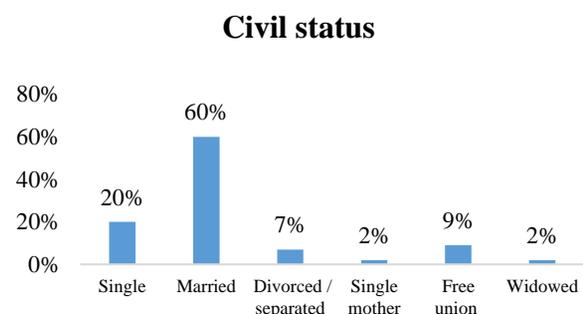
Continuing with its sociodemographic characteristics, 60% marital status is married, followed by singles with 20%, graph 3. For the characteristic of degree of study, see graph 4, entrepreneurs of the municipality of Puebla, 29% concluded their baccalaureate or are technicians, 23% finished secondary education and 18% studied a bachelor's degree.



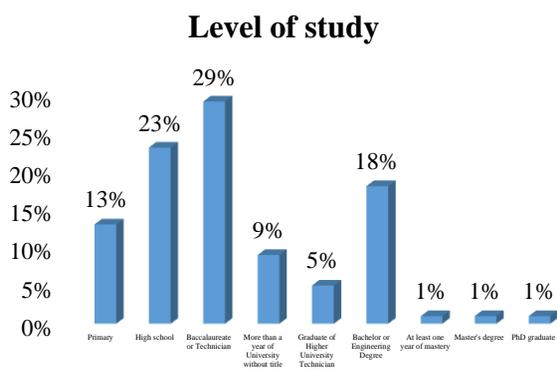
Graphic 1 Sociodemographic characteristics of the entrepreneurs of the municipality of Puebla
Source: Self Madz



Graphic 2 Sociodemographic characteristics of the entrepreneurs of the municipality of Puebla
Source: Self Made

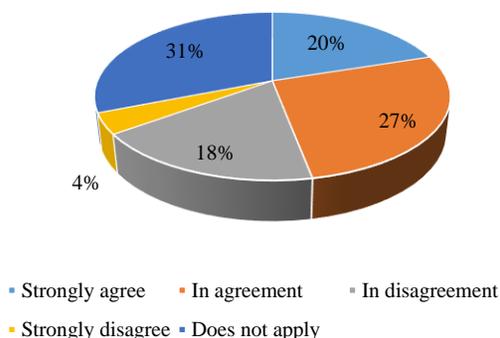


Graphic 3 Sociodemographic characteristics of the entrepreneurs of the municipality of Puebla
Source: Self Made



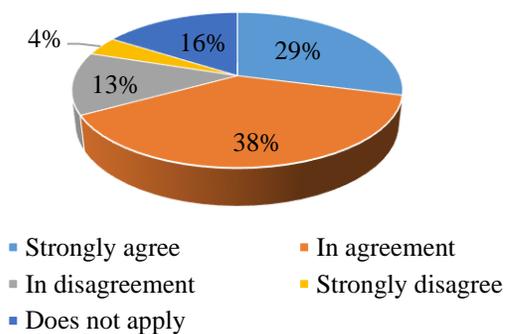
Graphic 4 Sociodemographic characteristics of the entrepreneurs of the municipality of Puebla
Source: *Self Made*

According to the questions asked to entrepreneurs regarding innovation, in Figure 5, it is observed that 47% promote that their employees participate in the innovation of their processes, services and changes in order to improve.



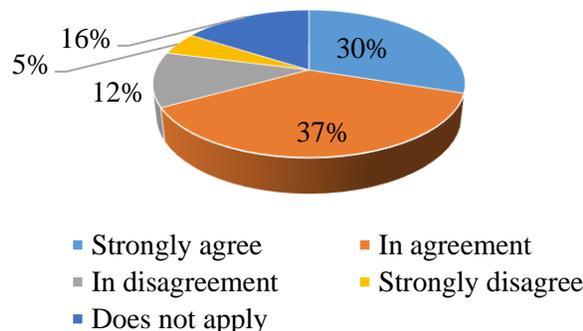
Graphic 5 Participation of employees in the innovation of products, services and processes of the MSEs
Source: *Self Made*

47% of MSEs often offer new products or services based on suggestions from their clients, 18% do not agree to offer new products and 31% do not consider that this activity should be developed to increase their participation in the market, as shown in Figure 6.



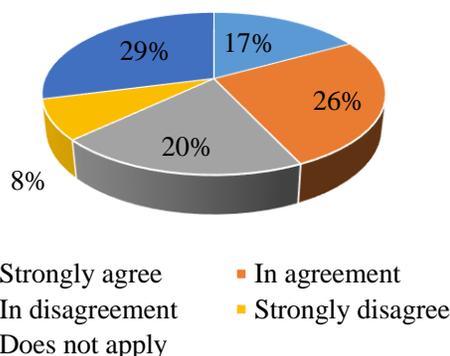
Graphic 6 The MSEs offer new products at the suggestion of their clients
Source: *Self Made*

For 30% of MSEs it is important to offer innovative products or services that distinguish your company from its competitors, 37% agree to carry out this practice of innovating in their products or services, 17% do not consider innovation as important and 16% say it does not apply to your company, see graph 7.



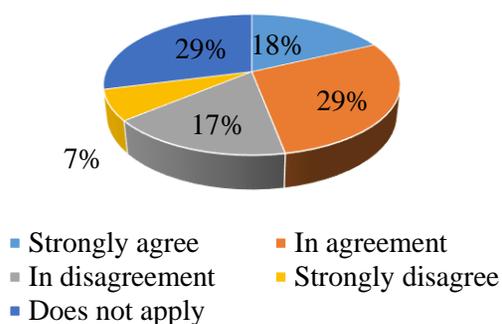
Graphic 7 The innovation of products or services of the MSEs
Source: *Self Made*

17% of MSEs consider the development of their production or distribution processes vital through innovation, 26% agree on the development of their production or distribution processes applying innovation, 28% make a payment for innovation of its production and distribution processes and 29% does not consider it important the innovation of its production or distribution processes, see graphic 8.



Graphic 8 MSEs develop or pay to innovate their production and distribution processes
Source: *Self Made*

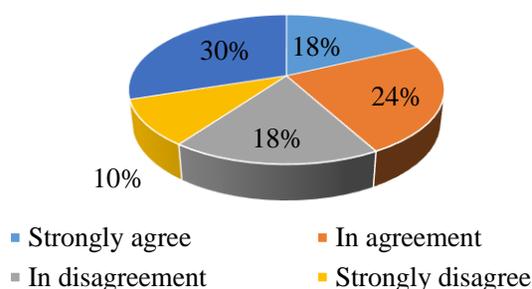
Figure 9 shows that, 18% of MSEs consider innovation in the development of their products and / or services paramount, 29% agree to apply innovation in developing their products and / or services, for 24 % is better to pay to innovate your products and / or services and 29% do not consider innovation as a means to develop their products and / or services.



Graphic 9 MSEs develop or pay to innovate their products and / or services

Source: Self Made

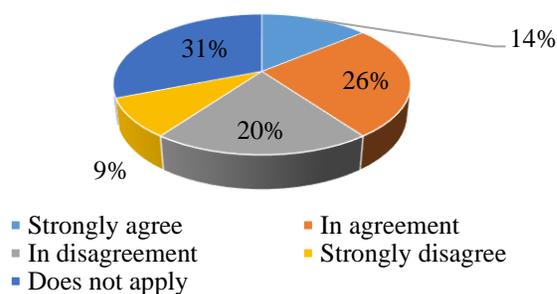
For 18% of MSEs, it is important to develop through innovation the way in which they sell their product and / or service design, packaging, promotion, form of contribution, etc.), 24% agree to innovate the development of the sale of your product and / or service, 18% pay for the innovation of the sale of your product and / or service and 30% do not consider innovating the sale of your product and / or service, see graphic 10.



Graphic 10 The MSEs develop or pay to innovate their means of sale

Source: Self Made

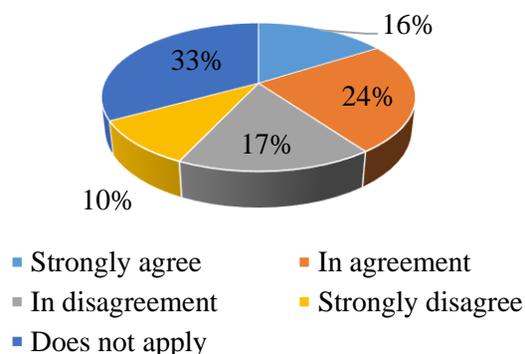
In figure 11, it is indicated that 14% of MSEs innovate the way in which they organize their company as their priority and 26% agree to innovate the organization of their company, 20% of them make a payment for the organization of the company and 31% do not believe that the organization of your company must be paid or developed.



Graphic 11 The MSEs develop or pay to innovate the organization of their company

Source: Self Made

16% of MSEs prefer to attend fairs, courses, congresses or other activities related to the business, 24% agree to attend activities related to their business, 275 do not attend activities related to their business and 33% do not see it as something that has to be done, see graphic 12.



Graphic 12 Assistance of MSEs to fairs, courses, congresses or other activities related to your business

Source: Self Made

Discussion

It has been observed that less than 50% of MSEs consider that the participation of their employees is important for the innovation of their products or services, it should be a strategy that employees participate actively in the innovation of products or services, since They know the processes and the clients, as Salas (2013) comments: It is a myth that the best ideas for companies come from investment in Research and Development, since only 8% come from this source while 71% arise of the employees. Hence the importance of employees actively intervening.

On the other hand, MSEs are listening to their customers for the improvement of their products, since 57% innovate their products by suggestions from them.

If the customer is the reason for the MSEs, it is convenient to develop new products or services with the participation of customers, for example, Dell, Starbucks, Peugeot, Nespresso, Muji and Fluevog (Cid, 2009). In this sense, only 30% of the MSEs consider the innovation of their products or services very important.

If there is no change in this thinking, the MSEs will not be able to survive in the long and medium term.

In terms of who should develop their production and distribution processes, as well as their products or services, 17% and 18% respectively, do it internally through innovation, this is interesting if it correlates with employee participation and innovation of the substantive processes of the companies. The fact that there is an outsourcing for innovation can be a strategy that contributes to the achievement of the company's objectives. Outsourcing has become a taboo subject among small businesses before the myths surrounding this business practice. Employees are the first to fear the term because they consider that, in some way, their rights as workers are violated. However, the experts explain that far from this idea, this practice is intended to delegate responsibilities to experts to provide more efficient resources of the company (Mendoza Escamilla, 2011). In such a way that, 29% of the MSEs perform outsourcing for the organizational structure against 40% that does it itself.

Innovation requires information and research, MSEs hardly have departments or areas of Research and Development (R & D), however, attendance at fairs, courses, congresses or seminars related to the business to which they are dedicated are a valuable source for generate new products or services. Studies from Costa Rica and Peru (Ponce R & Zevallos, 2015) show that innovation in MSEs is possible. However, to achieve innovations that contribute to the sustainability of business, it is necessary to develop a "culture of innovation" in companies, which involves a change in organizational paradigms and new practices of interrelation between them.

Conclusion

The need to improve substantive processes and gain more market segment are objectives of large, medium, small and microenterprise organizations. This will ensure that they generate wealth for themselves, society and countries. In general, the MSEs must continue to develop innovation and creativity in their products, services, production processes, distribution channels and other areas so that they can be economically and socially successful. For this it is essential that a culture of innovation be created with its employees and with the commitment of the owners or managers.

This culture must be permanent, as is the technological changes in this era of globalization. There are different instruments, both public and private that support the development of MSEs.

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