



Management Proposal and Strategic Improvement Applied to A Micro-Hydraulic Services Microenterprise

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Abstract. At present due to the progress and development of globalization, the role of microenterprises becomes an increasingly important issue, despite facing an increasingly competitive market-derived from being able to meet the demands of their customers to meet their needs and thereby achieve their loyalty and permanence within them. However, since its classification and with the beginning of the neo-liberal monetarist economic policy model, this type of company represents around 90% of existing companies globally, employing 50% of the workforce and participating in the creation of 50% of world GDP. In Mexico, microenterprises generate about 78% of total existing jobs, which places them as a fundamental part of the economic development of this country.

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1. Introduction:

Mexico has been characterized as a developing country that seeks various economic units in order to generate development and well-being through the generation of jobs and productive activity.

The National Institute of Statistics and Geography (INEGI) categorizes companies into 3 large blocks: Manufacturing, Shops, and Services.

Table 1. *Stratification of Companies by Economic Sector.*

Tamaño de Empresa	Número de Personas Ocupadas		
	Manufacturas	Comercio	Servicios
Micro	1 – 10	1 – 10	1 – 10
Pequeña	11 – 50	11 – 30	11 – 50
Mediana	51 – 250	31 – 100	51 – 100

Source: INEGI, (2015).

According to INEGI data, there are around 4,020,817 economic units in Mexico, which represent 95.03% of the total existing economic units (4,230,745). In addition, microenterprises employ 12,197,140 workers who represent 67.76% of the total employed personnel in the country. Regarding the gender of microenterprise workers, of the total employees of these businesses, 54.4% are men and 45.6% are women, this being the sector that offers the most employment opportunities to women.

There are several problems for which microenterprises generally do not achieve growth and development in most countries. Among them is the lack of several factors such as relevant laws that regulate and support this activity, administrative procedures within micro-businesses, access to institutional credits, market information and opportunities to increase management skills.

Table 2. *Number of Companies by Size and Employed Personnel.*

Tamaño	Empresas		Personal ocupado
	Número	Participación (%)	Participación (%)
Micro	3 952 422	97.6	75.4
Pequeña	79 367	2.0	13.5
Mediana	16 754	0.4	11.1
Total	4 048 543	100.0	100.0

Source: INEGI, (2015).

In Mexico, small and medium-sized enterprises (SMEs) have a survival of 12 to 24 months, with the profitability of 5 to 6 percent and a cost of 12 percent per year to acquire bank capital, says Manuel Molano Ruiz, deputy general director of the Mexican Institute for Competitiveness (IMCO, 2018).

Consequently, to achieve a higher level of product innovation activities, greater competitive advantages in the market in which they participate, and a significant increase in the level of economic and financial performance, microenterprises need to manage and

exploit other factors to the fullest internal, such as human capital and the knowledge generated both inside and outside the organization.

However, it is also important to consider that several of the microenterprises established in the national territory have implemented entrepreneurial strategies that have allowed them not only to increase their level of competitiveness but also to successfully apply economies of scale that have enabled them to have a higher level of control over the organization, a significant growth in market share and a significant level of investment in the development of new products and services (Treviño-Rodríguez and Chamiec-Case, 2012).

That is why, not only the economic, human and technological factor are sufficient to determine their permanence in the market, this sector also needs to have administrative tools to meet its performance indicators and thus, increase its competitiveness against other newly created companies of all country.

2. Theoretical Framework:

2.1. Management

The term management, whose origin dates from 1884, comes from the etymological root *gesture*, which comes from the Latin *gestures*, defined as attitude or movement of the body, which in turn is derived from *gerere*, which means to execute, lead, carry out (managements) and has as synonyms the words: manage, manager and administrator (Corominas and Pascual, 1984).

Management as a new technology that focuses on practical objectives was presented to the general public during the last decades of the 19th century and quickly became a discipline in the 1920s and 1930s as an organized body of knowledge aimed at supporting

companies that they acted on instinct, generating changes in values and organizational processes.

According to Frederick Taylor (1994), considered the father of the administration, and based on his principles of the scientific organization of work developed in 1911, "management is the art of knowing what you want to do and then doing it a better way and the most efficient way" (p.).

This instrumental notion is characteristic of the industrial society that, determined by productivity and technology, is supported by disciplines that allow it to optimize resources practically with emphasis on the rationalization of work.

In the same way, Henry Fayol, one of the main contributors to the classical approach to administration, referred to the management in his work *Industrial and General Administration*, published in 1916 as *A process articulated by five actions or administrative elements*: planning, organization, direction, coordination, and control. These elements, both in their structuring and in their operation, must comply with the administrative principles that ensure the good form and functioning of the social body, such as the division of labor, authority, discipline, the unit of command, the unit of management, the subordination of private interests to the general interest, remuneration, centralization, hierarchy, order, equity, personal stability, initiative and personal union (Fayol, 1969, p. 164).

In the early twenties of the twentieth century, Mary Parker Follett determines an administrative approach that addresses the human aspect of organizations. Its behavioral orientation establishes that management is "to achieve results through people, determining that the success or failure of any company depends, to a large extent, on the commitment and delivery of its workers" (1924).

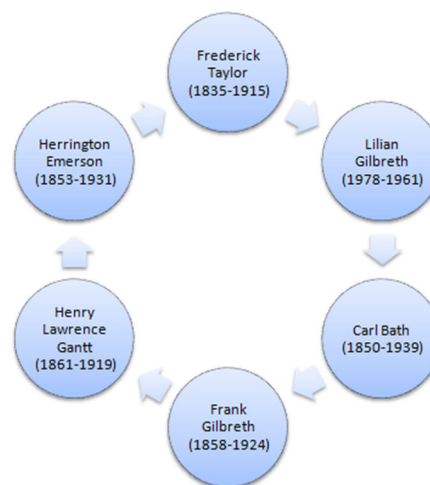


Figure 1. Evolution of management from its main exponents.

Source: Own elaboration taken from the book "History of Administrative Thinking", (2014).

Also, after World War II, Douglas McGregor (1960) raises the theories X and Y2, which propose "two contradictory premises of work attitudes and behaviors that not only dominate the way of thinking of managers but also determine their behavior in organizations" (p. 82). Under these parameters, the behavior of the managers and the application of different management instruments depends on factors such as the nature of the work performed by the employees, their salary scale, the social relationships established in the place, the cultural level and the psychological aspects.

Later, with the pragmatic spirit of neoclassical theory, Peter Drucker defines management from the theory of administration by objectives in his work *Management: tasks, responsibilities, and practices*, published in 1975, as (...) a planning and evaluation method, based on quantitative factors, with which managers and subordinates choose priority areas, establish results to be achieved by the organization, measure their contributions and perform systematic performance monitoring (Drucker, 1981, p. 12).

From this concept, it is determined that planning constitutes the starting point and the basis for decision-making since it is through this that organizational objectives are formulated and the way to achieve them is identified.

Other prominent authors have been Igor Ansoff, who since 1980 and with a strategic management approach, developed a series of actions to conquer new markets; and Michael Porter, who developed the generic strategies (cost, differentiation and selective segmentation) and a series of matrices for the analysis of the five forces and the value chain.

At present, the concept of management has become hegemonic and is associated with administrative or business, institutional or organizational conceptions and is closely linked to the notion of strategy. Thus, the management concept applies to:

New businesses, not just existing ones; Small and medium enterprises, it is not only an attribute of large companies; Social and public institutions (health, education, transportation, among others), as opposed to the idea of applying only to productive activities; All service activities, including those that are not considered as companies; and The search and systematic exploration of new opportunities to meet the needs of individuals in society (Lecuona, 1998, p. 20).

Consequently, management is any activity that is carried out within an organization or any process. If we analyze the meaning of the PHVA cycle well, it is aimed at achieving objectives and results based on the fact that these were previously planned, executed as defined, verified to determine compliance or not and taking actions to direct the execution to the initial planning.

2.2 Strategic Improvement

Gutierrez (2010), states that "the continuous improvement of the overall performance of the organization should be a permanent objective of it." This principle is clear and forceful: The improvement must be global and permanent; therefore, this principle guides the permanent application of the other first five.

In this sense, within the organization, the way to accredit the approach to the client must be sought to have a better knowledge of their needs and best practices to satisfy it; likewise, it is necessary to improve leadership so that it is effective and exemplary; Increase employee participation by promoting their commitment through appropriate management, improve the perspective of processes (where quality is generated) and, finally, improve the understanding of the system.

Continuous improvement is the result of an orderly way of managing and improving processes, identifying causes and restrictions, establishing new ideas and improvement projects, carrying out plans, studying and learning from the results obtained, as well as standardizing the positive effects to project and Control the new level of performance. There are no cycles of improvement without the previous and subsequent existence of a control period, but it is precisely in the context of continuous improvement.

According to Chang Richard (1996), he states: "A continuous process improvement is a systematic approach that can be used to achieve increased and important improvements in processes that provide products and services to customers. By using continuous improvement, you take a detailed look at the processes and discover ways to improve them. The result is a faster, better, more efficient or effective way to produce a product or service.

Continuous improvement is not a one-time investment, if your goal is to achieve total customer satisfaction, both internally and externally, continuous improvement must become an everyday matter, a way of life".

Alvear (2002), refers to continuous improvement to the fact that nothing can be considered as something finished or definitively improved. It is always in a process of change, development, and possibilities of improvement; life is not something static, but rather a dynamic process in constant evolution as part of the nature of the universe, so this criterion applies to both people and organizations and their activities.

This cycle allows renewal, progress, and the possibility of responding to the changing needs of the environment to provide a better service or product to customers or users.

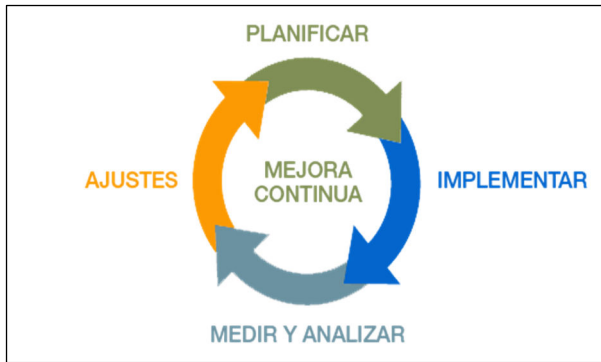


Figure 2. Continuous improvement cycle.

Source: Taken from the book "Total Quality II, Assurance and continuous improvement", (2002).

2.3 Oil Hydraulic

Oil hydraulics is defined as "the technology that deals with the production, transmission, and control of movements and efforts by means of pressurized liquids, mainly oils, assisted or not by electric and electronic elements" (De la Cortina León, 2009).

In essence, oleohydraulics is the technique applied to the transmission of power by means of fluids of liquid type (as opposed to pneumatics, which uses air as a fluid), such as water (little used), soluble oil (little suitable, although economical), vegetable oil (better properties than water), chlorinated hydrocarbons, and mineral oil (to which additives are usually added to improve their properties).

The drives performed on the machines can be mechanical, electrical, electronic, pneumatic or hydraulic, each of which has its advantages and disadvantages.

Hydraulic drives have unique advantages, in such a way that they are essential in the construction of a large number of machines, being used primarily in those technologies where significant efforts are required, mainly linear, and in which high precision is required, such so that their development without hydraulic oil would have been more limited, or at least different. "It can be said that oleohydraulics is a means of energy transmission using techniques with compressed oils" (Serrano Nicolás, 2002).

Thus, the advantages of oleohydraulics can be: 1) It allows working with high levels of force or turning movements, 2) The oil used in the system is easily recoverable, 3) It has an easily controllable acting speed, 4) Its facilities are compact, 5) It has a simple overload protection, and 6) It has rapid changes of direction.

Similarly, the disadvantages of hydraulic oil are: 1) The fluid is more expensive, 2) There are losses of load, 3) There are specialized personnel for support, 4) Contains fluid very sensitive to contamination, 5) There may be mechanical problems, and 6) Abnormalities may occur due to the elasticity of the system.

2.4 Oil Hydraulic Applications

The fields of application of oleohydraulics are multiple but can be specified in two: Stationary oil hydraulics (machine tools, textile machinery, presses, steel, plastics industry, cement, mining, industry and heavy machinery in general); Mobile oil hydraulics (civil works machinery, agricultural machinery, cars, cranes, railways, armaments, ships, aircraft ...). Its field of application, in short, is where significant and/or precise efforts are required.

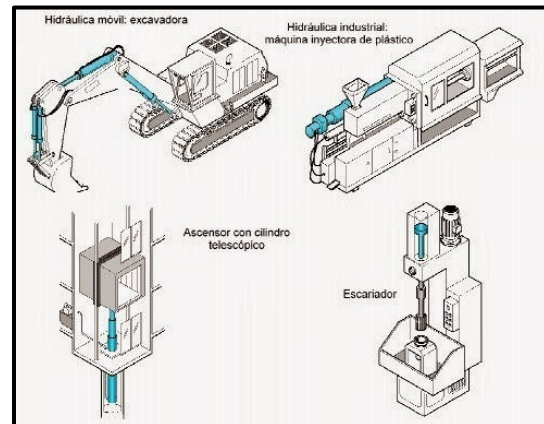


Figure 3. Oil hydraulic applications.

Source: Taken from the book: "Oil Hydraulic Manual", (2009).

The different applications that oleohydraulics can have can be: 1) Mobile; 2) Industrial; 3) Automotive; 4) Aeronautics; and 5) Naval.

2.5 Classification of Hydraulic Oil

Oil hydraulics can currently be divided into three states: 1) Conventional and modular; 2) Proportional; and 3) Servo valves.

Conventional hydraulics use all or nothing components or valves, the liquid passes or does not pass, uses normal, mechanical regulations (cams, pushbuttons, rollers), piloted with auxiliary or electrical hydraulic circuits with normal electromagnet. Its great limitation is the difficulty of precise regulation of force and speed. It is understood here by oleohydraulics not only this one in itself, but also the electrooleohydraulics, although it does not usually receive this name as long, but simply hydraulic (Crane, 2010).

Modular hydraulics is the same as conventional hydraulics except in what might be called a "wiring" arrangement. Trying to reduce pipes to eliminate leaks and pressure losses, the valves and components are coupled forming modules. In addition, with some normalization, costs have been reduced (Durr & Wachter, 1975).

The oleohydraulics of servo valves appeared around 1950, is used mainly for regulation. An electrical

control picks up electrical input signals to transform them into a mechanical position signal. Proportional intensity-flow control is achieved and therefore speed regulation (electro-hydraulic). A proportional intensity - pressure control and therefore force (electro-hydraulic) regulations are obtained. They are high-quality components. Solve problems that conventional hydraulics do not solve (Roldán, 2010).

2.6 Oil Hydraulic Systems

These systems are based, for their operation, on the pressure exerted by a liquid, usually a type of oil. Machines that are normally made up of hydraulic actuators have greater speed and greater mechanical resistance and are large, so they are used for applications where they require a heavy load (greater than 10 pounds and up to 2000 pounds).

An oleohydraulic system can be executed manually in the case of the typical hydraulic jack that we transport in cars or turn be driven by a pump capable of generating great pressure and a considerable flow, on this last variable will depend on the speed of exit of the rod of the cylinder that contains it (De Asignatura, 2011).

The advantages of actuators of this nature are: 1) High rates between power and load, 2) Greater accuracy, 3) Higher frequency response; 4) Smooth performance at low speeds, 5) Wide speed range, and 6) Produces more force than a pneumatic system of the same size.

2.7 Types of Hydraulic Systems

Electric motor. It is the device that converts electrical energy since it feeds on electricity and transforms it into mechanical energy, this energy is, which is transmitted to the hydraulic pump by means of a coupling to make it rotate. It is selected according to the design requirements for its power (Mataix, 2011).



Figure 4. Electric motor.

Source: Taken from the “Oil Hydraulics Basic Concepts”, (1998).

Hydraulic pump. It is responsible for absorbing the hydraulic fluid and sending it to the cylinder (s) with a given pressure and flow. There are several types of pumps: piston pumps, vane pumps, gear pumps, etc. Similarly, according to the design of the hydraulic

system, it is selected by the volume of compressed oil, pressure, flow.

The simplest gear pump consists of two straight gears meshed together and rotating in opposite directions inside a housing. Any liquid that fills the space between the teeth of the gear and the housing must follow along with the teeth when the gear rotates (Sperry, 2011).

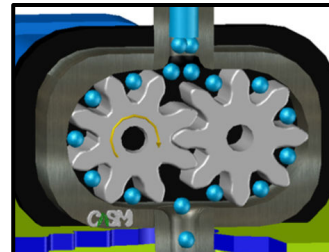


Figure 5. Gear pump.

Source: Taken from the “Oil Hydraulics Basic Concepts”, (1998).

Cylinder. It is in charge of the final work that is intended to be performed, it is capable of moving large loads and in machinery such as dump trucks, backhoes, cranes, and it is the visible element. There are several types such as submersible cylinder, telescopic cylinder, single acting cylinder, double-acting cylinder, etc. (Mataix, 2011).

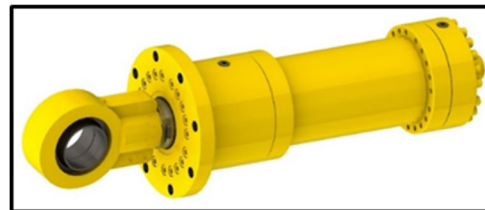


Figure 6. Hydraulic cylinder.

Source: Taken from the “Oil Hydraulics Basic Concepts”, (1998).

Pressure-regulating valve: This device allows to regulate the pressure in the system and at the same time serves as a safety element since if for some reason the pressure rises, the valve is opened allowing the fluid to return to the tank (Ortiz de Zárate, 2007).

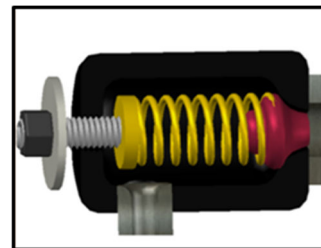


Figure 7. Pressure-regulating valve.

Source: Taken from the “Oil Hydraulics Basic Concepts”, (1998).

Hydraulic fluid: It transmits the energy generated by the pressure while protecting the parts of the entire system from corrosion. Oil is usually used since it has a range of operations from -27°C to 125°C without problems (Aciles, 2011).

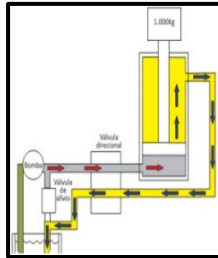


Figure 8. Hydraulic fluid.
Source: Taken from the “Oil Hydraulics Basic Concepts”, (1998).

Oil tank: Contains the fluid needed by the system, allows the oil to cool, and must necessarily have a filter before the fluid returns to the valves and cylinders (Ravell, 2011).

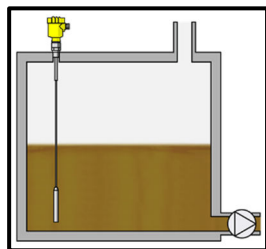


Figure 9. Oil tank.
Source: Taken from the “Oil Hydraulics Basic Concepts”, (1998).

2.8. The methodology of the management proposal and strategic improvement

Once the above information has been analyzed, the methodology of the management and strategic improvement proposal will be established, which consists of a series of steps that are shown and described below:

3. Conclusion:

As we can see, nowadays, MSMEs must excel in a globalized world, that is, to emphasize innovation and their role in facing the challenges of competitiveness, given that these organizations have a major role in the productive fabric and existing business, which should be reinforced by the adaptability potential they possess.

Once analyzed the above, it is concluded that in Mexico limitations such as the capacity for modernization, product innovation and investment in technologies and strategies, as well as weaknesses such as the lack of business advice, poor administration, unqualified talent, ignorance of markets and systems Quality, are some of the areas in which you must work in MSMEs and require a modification of the institutional legal framework.

Despite the areas of opportunity, one of the biggest obstacles is still access to financing to move forward with your business ideas or product innovation.

Although it is possible to specify aspects such as 1) The lack of knowledge in the new organizational development culture, 2) Lack of clarity on how to bring your products or services to the final consumer, 3) Inability to strengthen the commercial and sales area of the company, 4) Not knowing if the staff they currently have is adequate in a growth process, and 5) Resistance to change.

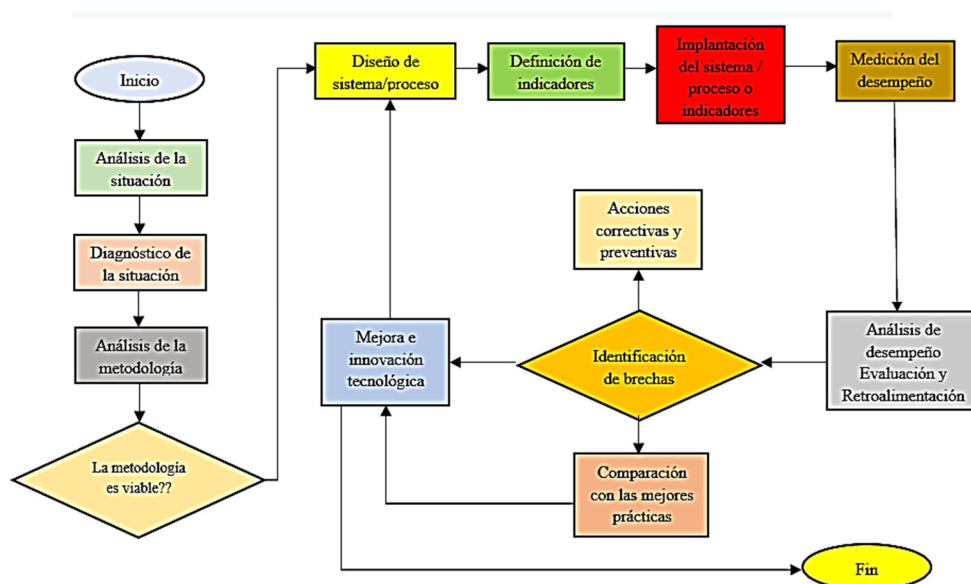


Figure 10. Methodological proposal
Source: from the National Quality Award, (2005).

However, there are efforts to reach this business sector, support programs such as the 2019 National Entrepreneurs Fund, encourage development and strengthen Mexican companies, through training and technical assistance, so access to these calls from the Secretariat de Economy will provide the tools for companies to increase their sales and improve their production processes through equipment and introduction of technological innovation.

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