

Systems Analysis Model for Micro and Small Businesses

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Abstract - The objective of the research was to propose to the Micro and Small Businesses (MYPES) a friendly, gradual and cheap computer system that allows them to manage the companies according to the characteristics, their own needs and that is incremental in their options according to the growth of the same, within the Market of Goods and Services, since the MYPES constitute 99.1% of the business activity of Peru. The type of research was carried out under the quantitative approach, experimental design, quasi-experimental with a hypothetical deductive method, an instrument validated by expert judgments with a reliability according to the Cronbach's Alpha 0.908 was used, it is concluded that it should be done by industrial sectors, since according to the items it can be understood that they may have the same needs.

Index Terms - industrial operations, ERP, micro enterprises, foundries, supply chain, quality.

INTRODUCTION

The National Institute of Statistics and Informatics (INEI) (2017) indicated that in its compendium Peru Business Structure, the business density is made up of Microenterprises with a 94.8% participation and Small Companies with a 4.3% participation respectively; which determines 99.1% of the business structure of Peru; being the evolution of the MYPES the ones that are increasing more and more, With respect to the commercial companies according to the business part, the Micro-companies have a 95.8% and the Small Companies a 3.7% of participation respectively.

Likewise, the organizations formed in Public Limited Companies according to the business field, Micro-companies constitute 78.0% and Small Companies 17.6%; in the same way, the companies formed as a Public Limited Company according to the business part are constituted by Micro-companies with 78.9%, while Small Companies with 17.4%; on the other hand, the manufacturing companies according to the business segment are constituted by Micro-companies with 93.8% and Small Companies with 5.2%, companies registered as Natural Person according to the business segment have 99.1% concentrated in Micro-companies; Regarding the companies constituted according to their legal organization, there are Natural Persons with 75%, Public Limited Companies with 11.7% and Individual Organizations with Responsibility Ltda with 7.2%.

Making an in-depth analysis of Micro-companies, it can be pointed out that those constituted as Economic Society according to their activity have the Vehicle Repair services in first place with 23.3%, in second place Professional services with 22.3% and in third place to Construction services with 10.9%; in the same way, those constituted as a Public Limited Company are concentrated in the provinces of Lima with 65.2%; Regarding services according to their economic activity, there are Professional services with 23.9%, Food and Beverage services with 19.4% and Transportation and Storage services with 12.1%; Micro-companies of services according to their legal organization are divided into services of Natural Persons with 72%, and Public Limited Companies with 12%. Manufacturing Companies according to their economic activity are Fabrics and Leather with 31.3%, Wood and Furniture with 16.1% and manufacturers of metallic products with 15.5%; Manufacturing companies according to their legal organization are represented by Natural Person services with 75.7%, Public Limited Companies with 12.2% and Individual Companies with Limited Liability with 9.0%; Micro-companies registered as Natural Persons according to their economic activity have Vehicle Repair services with 51.5%, Food and Beverage Services with 9.7% and Professional services with 7.9%; and finally, the Microenterprises registered as Natural Persons according to region have the province of Lima with 39.7%, Arequipa with 5.7% and Piura with 4.8% respectively.

Likewise, the Small Companies, the manufacturing companies according to their legal organizations are the Stock Companies in 56.2% and the Individual organizations with responsibility Ltda with 19.8%; the commercial companies according to their economic activity are Wholesale with 51.9% and Retail with 39.1% respectively; The Small Companies registered as Natural Persons according to region are the Province of Lima with 42%, Arequipa with 5.5% and Piura with 4.7%; The Commercial Companies according to region are the Province of Lima with 53%, Arequipa with 5.5% and Piura with 2.7%; Similarly, Commercial companies according to their legal organization are the most representative, Corporations with 39.3%, Individual companies with Limited Liability with 25.7% and Natural Persons with 22.6%; The Small Companies incorporated as a Public Limited Company are Vehicle Repair with 32.4%, Professional services with 15.9% and Transportation and Storage services with 9.4% as the most representative.

The Corporations by region have the Province of Lima with a representation of 71.2%; Small Service Companies according to economic activity are Professional services with 31.6%, Transportation and Storage services with 25.3% and Food and Beverage services with 7.2%; of the service companies according to their legal organization there are Stock Companies with 53.7%, Individual companies with Limited Liability 16.3% and Commercial Service Companies with Limited Liability 11.0%; The Small

Manufacturing Companies according to their Economic activity are the Metallic Materials Companies with 25.5% and the Food and Beverage Service Companies with 17%. According to Malpica (2015), he stated that in Peru we have incalculable associations that are smaller than expected and scarce (MYPES) that have a neglected need and this is totally Technological, since they do not have good control of the information they produce. That is the explanation that an information system would be of exceptional help to them, but it requires a lot of time, cost and with the probability that their need will not be met.

Similarly, Small Companies registered as a Natural Person according to their economic activity have Vehicle Repair services with 56.6%, Transportation and Storage services with 10.9% and Professional services with 7.8%; Small Companies according to their economic activity are considered the most representative of Vehicle Repair, Food and Beverage services and Professional services; According to its legal organization, there are Stock Companies with 47.5%, Individual Limited Liability organizations with 20.6% and Commercial Liability Ltda companies with 11.5%; and finally the Small organizations according to region, the province of Lima with 56.1%, Piura 32% and Arequipa with 5.3% as the most representative. The Province of Lima is the most representative in the Regions, with the business segment according to economic activity serving Vehicle Repair with 34.4%, Professional services with 12.7% and Manufacturing Industries services with 14.5%.

Similarly, in the same Region by business segment, according to their legal organization, there are Stock Companies with 79.5% and Limited Liability Companies with 6.6% as the most representative; and finally, in the region of the Province of Lima, by number of companies there are Micro-companies with 93.5% and Small Companies with 5.5%. According to everything explained in the previous paragraphs, it is concluded that Peru is managed within Micro and small companies, which constitute 99.5% of all Business Activity, and it is precisely they who do not have access to software that facilitate their management and allow them to improve their position in the market,

Knowing that the PBI is one of the most important country indicators, which calculates the productivity of a state in a period of time, it always occurs annually, the State monitors this indicator through the National Institutes of Statistics and Informatics. Peláez (2015) stated that: The management of a company in a world governed by globalization, where competition is fierce, requires efficient systems that relate to customers and whose management costs are more than manageable. In this aspect, the Enterprise Resource Planning Systems

/ better known by its acronym in English ERP), play a relevant role since they provide the company with an integrated and flexible resource management.

In Peru, 99.1% of companies are made up of micro and small-businesses, which are family or sole proprietorships and do not have access to computer systems within their reach and at the same time that they are friendly; and that they can be tailored (have the necessary options according to your business management requirements). Additionally, they do not have a culture of long-term investment, and are only focused on finding new clients and fulfilling their business obligations, which are not bad, but could be better, increasing their income and serving more clients through software. Lumbreras (2001) investigated that ERP systems implementation procedures for companies that use traditional systems, The ERP (Enterprises Resources Plannings) system is the way organizations work together. When updating ERP programming, the organization must be adaptable to allow it to receive a progression of practices that have been characterized by others.

For the managers of the MYPES, they do not believe in the benefits of computer systems, since many of them have had bad experiences in acquiring "canned" software, which in the end has benefited them little or nothing, thus losing their investment, which they were mostly expensive. To this is added the fear of leaving their place of comfort, since in the traditional way it has worked for them until today and they do not believe that a computer system would help them to have a better position in the market.

On the other hand Ignacio (2014) investigated that The integral system of ERP controls for civil works production under development: the subject of the GO LTDA construction corporation. And the promotions to 1st promotion, predominant jobs, records of MOP contractors, Thesis to qualify for a Bachelor's Degree in Civil Engineering, Andrés Bello University, Faculty of Engineering. This document is framed below the importance of the agency Constructors GO Ltda. Increase its competitiveness in discipline and highlight an employer who manages administratively with the utmost professionalism. They have proposed the implementation of a complete ERP1 control system, if they want to improve their flow of records and as a result their administrative management. This record begins with observing the concept of essential ERP management structures, discovering the traits, blessings and disadvantages of these structures; Ultimately, the corporation is defined internally. The improvement of the studies is carried out from 5 levels: Diagnosis and green development of the management, in which the contemporary administrative scenario of the organization is analyzed, to achieve the baseline, which is optimized to generate an administrative version according to the new demands. the market and the device to be applied; Development of selection models, based on the useless requirement that is requested by clients and the need of the companies detected within the diagnoses. Diagnosis and green development of the management, in which the contemporary administrative scenario of the organization is analyzed, to achieve the baseline, which is optimized to generate an administrative version according to the new demands. the market and the device to be applied; Development of selection models, based on the useless requirement that is requested by clients and the need of the companies detected within the diagnoses. Diagnosis and green development of the management, in which the contemporary administrative scenario of the organization is analyzed, to achieve the baseline, which is optimized to generate an administrative version according to the new demands. the market and the device to be applied; Development of selection models, based on the useless requirement that is requested by clients and the need of the companies detected within the diagnoses.

Likewise, Carbajal (2014) investigated the Business Plan for IT services companies for SAP products. The company Vanhauwaert y Vásquez Ltda, considered as a minor company, which offers ICT offers around solving SAP companies. Thus, the thought of the study work is to develop a marketing strategy that allows these commercial companies to increase their profits annually based mainly on the growth of their client portfolios. The external evaluation of the companies allows us to see the behavior of the IT industries, with the boom figures being close to 15% in line in 2011, with a GDP consulting expenditure of 0.06%, which is still

decreasing 6%. Assigned through advanced international locations. Consequently, the market for SAP products is analyzed, a global head within the manufacture of business software programs, to determine the opportunities that the company in question is in this section. As German manufacturers SAP represent a powerhouse within the industry at a national level, leading the business solution market (ERP, CRM and many others) with 31%. The capacity market of the organizations is estimated below, it is observed, the expenses made by Chilean institutions in IT are evaluated, destined an average of 2% of the annual budget in relation to sales. leading the business solution market (ERP, CRM and many others) with 31%. The capacity market of the organizations is estimated below, it is observed, the expenses that Chilean institutions make in IT are evaluated, destined an average of 2% of the annual budget in relation to sales. leading the business solution market (ERP, CRM and many others) with 31%. The capacity market of the organizations is estimated below, it is observed, the expenses that Chilean institutions make in IT are evaluated, destined an average of 2% of the annual budget in relation to sales.

According to Gamarra and Cornejo (2018) they investigated that the open source ERP implementation model for PYME in the automotive sector. Currently, the success that can be achieved in the business sector depends on how assertive the decisions are made and what can be achieved with each one of them, above all, it is sought that decision-making is based on information produced from previously centralized and processed data, in such a way that their analysis does not represent a problem or generate delays. The Automotive Sector, like all other business sectors, does not escape the need to make decisions to achieve the objectives set in an effective and efficient way. For this, there is a great variety of technological tools to achieve the objective.

MATERIALS AND METHODS

The type of research is experimental, quasi-experimental because two groups are proposed, one called control and the other called experimental; As for its process, it is deductive, sequential, probative and analyzes objective reality; It is also quantitative in focus, within a positivist research paradigm with a hypothetical deductive method. In Quasi-experimental research design according to Carrasco (2009) the experimental design manipulates independent variable, a pre-test and a post-test were used, to which the implementation of the Systems Analysis Module for ERP-WIÑAY, for the foundry company Aleaciones Técnicas Especiales SAC, will be proposed.

The evaluation to the same company, the experimental and control groups were formed, represented by the personnel of the company Aleaciones Técnicas Especiales SAC; Thus, the Tests will be taken from the same employees but at two different times: the first moment will be made to the workers according to the current processes of the company and will be called Pre Test; later, the Systems Analysis Module for ERP-WIÑAY will be implemented. Test, and it was called Post Test.

The population according to Hernández, Fernández and Bautista. (2014) defined it "As the set of all cases that agree with certain specifications" (p.365). The population was represented by all the staff of the foundry company "Aleaciones Técnicas Especiales SAC", when the company works at 100% of its installed capacity, there are 56 collaborators, being a census-type population.

Productive flexibility, which allows the adaptation of production without having to raise production costs and increase productivity, delivering the correct volumes of production or services to the market; and finally, labor flexibility, which allows optimizing the company's workforce, training its collaborators in order to increase production, giving them the possibility that they can follow a career path that ensures a stable and well-paid job. .

The second evaluation factor is Applicability, which proposes a computer system based on an ERP, but at the same time improved, that can be applied to all types of transformation or service companies, without the need to make changes in their structures, since it is designed in such a way that they can be used by micro, small, medium and large companies, taking into consideration five modules (Logistics, Production / Service, Sales, Personnel and Accounting) at three levels (basic, intermediate and advanced), this means that it can not only be oriented to any type of company but that the options can become more complex according to the needs and / or requirements of the companies or the complexity of the IT system can grow according to the growth business.

The third evaluation phase is related to Replicability, which suggests that it can be applied to several companies of the same category and organizationally different and even of different levels; replicability also becomes a strength for the Information System, since it explains that the System works and the same user proposes it to be used in other companies. And finally, the evaluation factor is profitability, which should not only be understood that the software is cheap to install and use; rather, it allows the company to be profitable due to its agility, good use of information, integrated into all the organic units of the company, among others.

The present work used a validated instrument so it does not require validators. Conbach's Alpha was performed, with a high level of reliability, for which the objective measurement was carried out in the investigation. The test was carried out by 32 employees of the company Aleaciones.

RESULTS

The company Aleaciones Técnicas Especiales, like many micro-companies, opted for a Standard ERP, known as Business ONE, which cost 50,000.00 USD, which was financed in 6 years; with professional licenses for managers at \$ 2,700.00 USD and licenses for those in charge of finance, accounting, CRM, logistics among others at \$ 1,400.00 USD.

The company that implemented the system oriented the company's work processes to the options of the modules already pre-established by them, so it did not adapt to the company's requirements and the ERP was not used one hundred percent. Later, he was presented with the option of implementing ERP.WIÑAY, which was more effective according to the requirements of the company.

REGARDING THE SUPPLY CHAIN

The company Aleaciones Técnicas Especiales SAC, has problems with the inventory of raw materials and supplies, since the materials are not codified and a physical inventory is not carried out correctly, since a person cannot be paid to manage the spaces assigned to warehouses, in this sense these spaces are not fenced and any operator can take the amount that is needed in production to comply with the Work Orders, although every operator is obliged to record the output of materials in notebooks, it usually happens that they do not register it well or in other cases they forget to register it.

For this reason, and added to the disorder that exists in these two areas, there is no information on the exact amounts of raw materials, and even less if some of these materials are already finished; producing a problem

for the company since these materials are not easily found in the local market, causing a delay in the start of Work Orders, rescheduling of activities or unnecessary purchases, since sometimes you have to buy materials that are later. Another problem to be considered is the dispatch of the finished products, since the company has to hire the services of a truck or trucks, as the case may be. These two problems are the most critical, since they generate the investment of a lot of money, which is also not measurable by them,

REGARDING OPERATIONS

The main problem that the company Aleaciones Técnicas Especiales SAC, is referred to the ignorance of maximizing the use of the furnace, this leads to unnecessary energy consumption and a lack of programming that leads to not being able to determine an optimal programming, ceasing to be able to open other Orders of Job; as well as not having standard processes for equal Work Orders, in terms of their tasks, damaging the technical requirements, promoting returns, re-processes and / or penalties-

REGARDING SALES

With regard to sales, there is more than one list of clients, what type of part was cast and when the contract was made, this allows clients to be lost, due to not following up; This loss of customers is detrimental to the company, since the majority of customers are companies and they may need more parts requirements at any time.

On the other hand, a catalog of castings has not been formed, not only so that customers know the types of parts manufactured, but also so that Operations management has a file of drawings and technical standards, which they could use in other Work Orders and minimize manufacturing times. The companies that need foundry companies are mostly mining companies, and since there are not many, they always compare prices, so you must have a product price list so that you do not have very different prices for the same piece or Similarly, this creates discomfort among customers and damages the image of the company.

REGARDING HUMAN MANAGEMENT

A large part of the operators of the company Aleaciones Técnicas Especiales SAC do not need to have more experience to manufacture parts, which is why staff turnover is very frequent, since this type of staff is always looking for better salaries, and The company under study does not offer an attractive remuneration, added to the lack of commitment to the company, there is a lot of absenteeism, absences and delays. On the other hand, the shifts are rotating, when required, due to the need to fulfill deliveries of work, processes or change of priorities.

REGARDING ACCOUNTING

On the accounting issue, the most important thing is the compliance with the payments to the National Administrative Tax Superintendency (SUNAT), since due to the lack of hiring of accounting administrative personnel, no one monitors the payment of taxes to the State and on more than one occasion , these have been breached and generated high penalties.

ERP WIÑAY

ERP WIÑAY, is a computer system that provides a different proposal with respect to traditional ERPs, since it has basic intermediate and advanced tasks that can be interrelated according to the needs of the MYPES, and integrate tasks to the modules of according to the growth or requirement of the micro and medium enterprises; This allows them to have a "tailored" system, and to continue being tailored despite the growth or market demand, in order to achieve a better positioning of the MYPES in the market.

DISCUSSION

A systems analysis model must be implemented to obtain an ERP- Wiñay for Micro and Small companies in the Department of Lima. It is concluded that it should be done by industrial sectors, since according to the items it can be understood that they may have the same needs. Likewise, with the experience obtained, it will be possible to make proposals for modules and options that they could use and that they still do not know. In the same way, as a company, it will allow to standardize the options and the data levels, making them less expensive since they are only replicated, proposing that this analysis in the Department of Lima, since it concentrates more than 99% of the MYPES. The results coincide with what is stated in the Law for the Promotion and Formalization of Micro and Small Enterprises (Law No. 28015), better named "Mype Law" of 2003 after intense debates (1) It consists of aid measures for the sector of micro companies (groups of ten people) and small companies (agencies of 10 to 50 people). (2) In other measures, this regulation includes a Special Labor Regime for microorganisms, small organizations are excluded from this advantage, with efforts that reduce the prices to employers of these monetary devices once they hire employees, with respect to the fees paid by the most important groups, from the general labor regime. It is not always the first

regime of special efforts, taking into account that there is a single labor regime for the rural region Law No. 27360, under pressure considering 2000.

An information access model for Micro and Small companies should be put in place in the department of Lima. It is important to invite the MYPES to have a better approach to the new forms of access to information through new applications and software, in the same way to sell them the idea that these accesses are friendly and economically accessible and very quick to recover their investment This is why Corral et al. (2007), declared that: It is not only the largest organizations those with the highest visibility that can contribute to the formation of a more useful climate to improve personal satisfaction. The most modest organizations also play a vital role in the economies of Latin America and the Caribbean. In certain district nations,

In the same way, explain the importance of having information in real time and its relevance for decision- making. Economically, it is important to have information in real time since it could access discounts in the supply chain, quality, business opportunities, among others. The image of the company would grow and it could have a better position in the market and preference of its target market, since its image as an MYPE would be that of a more technological company-An information analysis model must be carried out for the Micros and Small Companies in the Department of Lima, in this regard Yamada (2010), stated that: Two out of every three jobs in Peru are created in independent miniature work and family organizations. This exam uses the particular module "Free specialist payment" in private non-agrarian companies from the National Household Surveys, somewhere in the range of 2002 and 2006, and evaluates a series of experimental models that attempt to clarify the distinctions in genuine development rates and levels of payment in these efforts. They appear in a lot of good results with a progression of correlative techniques.

Data management through analysis to obtain information that allows MYPES to grow as a company and to be in a very important place in this type of company. In this regard, Rodríguez and Murillo (2016) stated that: Micro and small enterprises (MYPE) have quite possibly obtained the main lucrative areas for the economies of emerging nations, due to their commitment to monetary development and the era of abundance. The article presents a basic investigation of human capacity and its relationship with entrepreneurial achievement, close to the informal microenterprise, showing the components that make it up and its application in the sphere of the monetary turn of events. This information was acquired through a study conducted in the casual miniature business area of the Tarqui area.

The importance of the correct use of the information is also crucial since sometimes it is tried or misused, although in some cases it is due to stinging. The good use of the information analysis would allow the MYPES to propose other types of information, other reports or alerts important for the development of your business activities. In this regard, Ossa (2010) stated that: This article proposes a model through which commercial banks can sell monetary items and administrations with an enormous scope to microenterprises. The methodology of this model is the consequence of the survey of some piece of accessible writing comparable to the subject and of an individual commitment. The model depends on the way in which large corporate banking is used to sell monetary items and administrations for enormous reach to micro-enterprises, updating miniature commercial banking and infiltrating this portion of the market or, as has been said in the world exhibition language, doing a downscaling. A lot of basic factors are recognized and how they need to be characterized to dramatically expand the likelihood that the marketing of monetary items and administrations for a huge reach to micro-enterprises will be feasible and practical in the long term. Carbajal (2014) investigated on Business Plan for companies of information services of SAP products, The company Vanhauwaert and Vásquez Ltda, Considered as a minor company, It offers ICT deals around solving SAP companies. Thus, the thought of the study work is to develop a marketing strategy that allows these commercial companies to increase their profits annually based mainly on the growth of their client portfolios.

That is why González and Bergovist (2016) stated that: The purpose of this study is to portray 4 slags from copper smelters in the 19th century, coming from deserted landfills in the Atacama-Chile Region, using the strategies of X-ray fluorescence (X-beam), X-ray diffraction (XRD). and microscopies. testing devices (SEM), examination of molecules by laser diffraction (ADL), Fourier shift infrared spectrometry (FTIR) and thermogravimetric investigation (ATG).

A good analysis of the information allows to reorganize the organizational structure, making it more horizontal and allowing a better functionality of the same. An information interpretation model for Micro and Small companies in the department of Lima should be implemented. For this reason, Chacaltana (2008), He explained that: This report has been organized at the request of the International Labor Organization (ILO), with the collaboration of specialists Bernedo and Gómez for the construction of the survey of micro- entrepreneurs and another specialist in the prosecution of the facts. . Peña and Díaz(2016), expressed that: The serious task needs model is one of the central pillars of activity methodology research. These needs are at the core of this technique along with the construction and foundation options. Various methodologies have appeared in the particular brief to clarify how organizations compete as indicated by these needs.

It is important to have models implemented in some MYPES according to the heading to analyze how the MYPES begin to transform organizationally and procedurally, including their earnings. The results coincide with Matute, et al. (2008), stated that: Small enterprises have become the focal point of consideration since they produce business, generate opportunities and boost the economy. The mypes serve more than 98% of all Peruvian organizations, retain 88% of the public EAP and produce 42% of GDP. Be that as it may, only a small level of them come close to credit, which goes to an underserved market for scrutiny. On the other hand Espinoza (2016), investigated that the Implementation of a SAP system in management by budget processes in a Peruvian organization.

It is recommended to implement a systems analysis model for Micro and Small companies in the Department of Lima. Likewise, launch an information access model for Micro and Small companies in the department of Lima. Carry out an information analysis model for Micro and Small Businesses in the Department of Lima. Finally, an information interpretation model for Micro and Small Businesses in the department of Lima should be launched.

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