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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 Demographic economics: Demographic trends and forecasts, Marriage, Marital dissolution, Family structure, Fertility, Family planning, Child care, Children, Youth, Economics of the elderly, Economics of minorities and races, Economics of gender, Value of life, Foregone income; Time allocation, Work behavior, Employment determination and creation: Labor force and employment, Size, and Structure, Time allocation and labor supply, Employment determination, Demand for labor, Self-employment, Human capital, Skills, Occupational choice, Labor productivity, Retirement, Retirement policies, Safety, Accidents, Industrial health, Job satisfaction, Related public policy; Wages, Compensation, and Labor costs: Wage level and structure, Wage differentials by skill, Training, Occupation, etc., Nonwage labor costs and benefits, Private pensions, Compensation packages, Payment methods; Particular labor markets: Contracts: Specific human capital, Matching models, Efficiency wage models, and Internal labor markets, Monopsony, Segmented labor markets, Agricultural labor markets, Professional labor markets and Occupations firm behavior, Public sector labor markets, Particular labor markets; Labor-Management relations, Trade unions, and Collective bargaining: Trade unions, Dispute resolution, Labor-Management relations, Industrial jurisprudence, Producer cooperatives, Labor managed firms; Mobility, Unemployment, and Vacancies: Geographic labor mobility, Immigrant workers, Occupational and intergenerational mobility, Turnover, Vacancies, Layoffs, Unemployment, Unemployment insurance, Severance Pay, Plant closings; Discrimination; Labor standards: National and International; Working conditions, Labor force composition, Workers' Rights.

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Professional labor markets and Occupations firm behavior, Public sector labor markets, Particular labor markets; Labor-Management relations, Trade unions, and Collective bargaining: Trade unions, Dispute resolution, Labor-Management relations, Industrial jurisprudence, Producer cooperatives, Labor managed firms; Mobility, Unemployment, and Vacancies: Geographic labor mobility, Immigrant workers, Occupational and intergenerational mobility, Turnover, Vacancies, Layoffs, Unemployment, Unemployment insurance, Severance Pay, Plant closings; Discrimination; Labor standards: National and International; Working conditions, Labor force composition, Workers' Rights with diverse approaches and perspectives, That contribute to the diffusion of the development of Science Technology and Innovation that allow the arguments related to the decision making and influence in the formulation of international policies in the Field of Social Sciences. The editorial horizon of RINOE® extends beyond the academy and integrates other segments of research and analysis outside the scope, as long as they meet the requirements of rigorous argumentative and scientific, as well as addressing issues of general and current interest of the International Scientific Society.

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human capital, Matching models, Efficiency wage models, and Internal labor markets, Monopsony, Segmented labor markets, Agricultural labor markets, Professional labor markets and Occupations firm behavior, Public sector labor markets, Particular labor markets; Labor-Management relations, Trade unions, and Collective bargaining: Trade unions, Dispute resolution, Labor-Management relations, Industrial jurisprudence, Producer cooperatives, Labor managed firms; Mobility, Unemployment, and Vacancies: Geographic labor mobility, Immigrant workers, Occupational and intergenerational mobility, Turnover, Vacancies, Layoffs, Unemployment, Unemployment insurance, Severance Pay, Plant closings; Discrimination; Labor standards: National and International; Working conditions, Labor force composition, Workers' Rights and other topics related to Social Sciences.

#### **Presentation of Content**

As a first article we present, *Insertion of a unit for monitoring and evaluation of the management cycle of social projects in the municipality of Sucre*, by CARABALLO, Leonor, FLORES, Alexander, PADILLA, Paulino, RÍOS, Carol and VELÁSQUEZ, Inés, in the next article we present, *Implementation of Scrum Methodology in the construction of the intelligent system Acerkte of Academic tutorials*, by RAMIREZ, David, ALCUDIA, Ever, LOPEZ, Alejandro and RODRIGUEZ, Elías, with adscription in the Instituto Tecnológico Superior de Comalcalco, in the next article we present, *Academic achievement product of socioeconomic and demographic conditions: LAM CU Texcoco case*, by MORENO-VELÁZQUEZ, Iliana & ESPINOSA-TORRES, Luis Enrique, in the next article we present, *Stay through the Mexico - Shanghai student mobility project at Universidad Tecnológica Fidel Velázquez*, by VARGAS-GUTIERREZ, Luis Daniel, HERNANDEZ-CRUZ, Maria Guadalupe, RAMOS-CERDA, Carlos Jair and BLAS-GARCIA, Patricia, with adscription in the Universidad Tecnológica Fidel Velázquez.

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# Insertion of a unit for monitoring and evaluation of the management cycle of social projects in the municipality of Sucre

# Inserción de una unidad de monitoreo y evaluación del ciclo de gestión de proyectos sociales en el municipio de Sucre

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#### Abstract

The evaluation of the projects context even in the politics publics, such as the initiatives of the civil society have as operational tools for programs or projects. The problems or social needs are translated into these operational tools. This research paper was made on the basis of surveys, questionnaires to every representative from every quarter of the district of Sucre, at the same time it was made a constantly follow to arrive to the prime goal and show the institutional issues and limits which generate petition of professionals in the area of public management in Sucre. In an optic of effectiveness, efficiency, The training of professionals in programming and social assessment involves the ability to formulate and evaluate projects, within the framework of the need to optimize, through programs and projects, public resources. It is very important to comply completely from the cycle of projects that made better the satisfy of the truth needs of the population being the end of the goal of the public precinct. Finally, we characterized the performance of the evaluative models in the social sectors, with reference to their special features for an adequate evaluation, being more effective with an instance specifically responsible for monitoring and evaluation of the project management cycle.

#### Resumen

La evaluación del contexto de los proyectos incluso en las políticas públicas, como las iniciativas de la sociedad civil tienen como herramientas operativas para los programas o proyectos. Los problemas o necesidades sociales se traducen en estas herramientas operativas. Este trabajo de investigación se realizó en base a encuestas, cuestionarios a cada representante de cada barrio del distrito de Sucre, al mismo tiempo se hizo un seguimiento constante para llegar al objetivo principal y mostrar los problemas y límites institucionales que generan la petición de los profesionales en el área de la gestión pública en Sucre. En una óptica de eficacia, eficiencia, La formación de profesionales en programación y evaluación social implica la capacidad de formular y evaluar proyectos, en el marco de la necesidad de optimizar, a través de programas y proyectos, los recursos públicos. Es muy importante cumplir cabalmente desde el ciclo de proyectos que hicieron mejor la satisfacción de las necesidades de verdad de la población siendo el fin de la meta del recinto público. Finalmente, caracterizamos el desempeño de los modelos evaluativos en los sectores sociales, con referencia a sus características especiales para una adecuada evaluación, siendo más efectiva con una instancia específicamente responsable del seguimiento y evaluación del ciclo de gestión de proyectos.

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#### Introduction

Due to the effects of growth and greater development that Public Institutions have experienced in recent years, the consolidation of a globalized space, as well as the presence of new National guidelines, institutions currently face highly complex challenges and from of the Popular Participation Law (Law No. 1551 of April 20, 1994), the Central Government grants new and greater responsibilities, competencies, obligations as well as economic resources for tax sharing to the Municipalities, which are invested to through the execution of projects in coordination with the management and execution of plans and programs, with the aim of satisfying the great and multiple needs of its inhabitants for living well.

The Municipal Governments for a better administration and a transparent distribution of the economic resources, do it through the elaboration ofthe **PDM** (Municipal Development Plan) and the POA (Annual Operative Programming); which are framed in a participatory planning (Main instrument of regional development) through summits, with authorities and representatives of the entire Municipality, where they manifest and make known the supply and demand of their needs, from this it is intended to achieve development sustainability of the municipality.

Although the projects are inserted in the **POA** their execution during corresponding period, which according to the Resolution of the Municipal Council, in its First Article states; "institutionalize the methodology of the OUALIFIED DEMAND APPROACH in the pre-investment and investment stages of projects from the validity of the resolution, at the Municipal level (either by direct administration or by third parties)". It also states in its Second Article that "the inclusion of the elements of the Qualified Demand Approach methodology in the specifications must be made mandatory by the contracting entities (Municipal Executive, NGOs. And others)". In its Third Article, it states "the Municipal Government, that Surveillance Committee, the Center, the leaders of the communities, neighborhood associations and civil society as a whole are in charge of monitoring and controlling the application of the processes that the methodology of the Qualified Demand Approach implies", are the product of a Municipal process.

#### **Background**

During previous administrations, Bolivia, for a better investment of its resources, has been carrying out different plans, looking for different strategies, methods and other development programs, before this arises the need to delegate powers, organizing in different competencies. To comply with the efficient investment of resources, a study is made of policies that contribute to good administration, such is the case of the qualified demand approach.

The challenge is not only to start from a demand, it is about maintaining an "attachment" and link to it throughout the duration of a project. It is about the interested group or community having tools and instruments to verify the permanence of the genuineness of their demand. (Qualified Demand Approach: ATTICA, Page 3.) According to Lic. Janneth Mónica Thompson Baldiviezo in her book "project management cycle" indicates that projects follow a cycle that consists of: Idea, Design, Execution and Evaluation, within which the Methodology cycles are also found "Approach Demand Qualifies". On which this research work will be In order to comply with aforementioned, the idea of creating a specific unit for monitoring and evaluating management cycle of social projects arises, thus achieving an efficient administration of public investment.

#### **ProblemStatement**

Based on the Public Investment Regulations, all public sector Institutions (Municipalities) are obliged to execute economic resources, based on projects, with the purpose of improving living conditions or solving population problems; whose design must be the result of a participatory process, constituting the beneficiary group in the main actor, who defines the lines of action.

Currently in the Municipality of Sucre, the execution of the economic resources available (TAX CO-PARTICIPATION, IDH, HIPIC II, OWN RESOURCES AND OTHERS), carried out through projects aimed at the health, education, productive infrastructure, agriculture, livestock, fruit growing and other sectors, whose results of the project cycle management are not known, due to the inexistence of a responsible Municipal instance or unit.

After an analysis of public investment in the Municipality of Sucre, it is observed that both Authorities and administrative personnel apparently do not fully know the situation of the executed projects, that is to say, that the evaluation stage has not been fulfilled; situation that is detrimental to good public administration.

It was possible to identify that the Autonomous Municipal Government of Sucre lacks a specific unit or suitable professional staff to adequately develop the monitoring and evaluation process of the project management cycle, generating or causing disinformation in this regard, Dissatisfaction of the needs of the beneficiaries, Projects without social impacts paralyzing their execution, Little participation of the beneficiaries during the entire process of elaboration and execution of the project, disfavoring the construction and analysis of the reality of the Municipality to subsequently design responses to their problems and develop concrete actions and make effective relationship between Civil Society - State - development, so that Social actors are protagonists of their own true democratization destiny, achieving decision-making for Municipal and National development.

To what extent is the project management cycle fulfilled, in relation to the Municipal Participatory Planning regulations in the Municipality of Sucre?

#### **Importance or justification**

Currently, the Municipal Government of Sucre has the following regulations: Government Administration and Control Law (SAFCO) No. 1178, Popular Participation Law No. 1551, Municipalities Law No. 2028, Municipal Ordinances and Resolutions, which regulate the management transparency of economic resources, as well as the monitoring and evaluation of projects included in the Annual Operational Programming (POA).

The purpose of this research work is to provide information regarding the importance of fully developing the project management cycle, since projects of a different nature were executed, are executed and will be executed in the Municipality, from which it is not known if the project cycle is fulfilled (idea, design, execution and evaluation).

On the other hand, it has been seen that the beneficiary community or group does not take ownership of the project either due to minimal participation in planning and especially in the design and evaluation stages; in the evaluation phase or stage, it is not evaluated based on the indicators that refer to the project's objectives, as a consequence of which many of the projects remain as white elephants that do not satisfy the needs of the target population.

The Municipal Executive, although it has personnel from the area, this is not enough to achieve the objective of this research topic, even more so when you want the personnel to work together with the direct beneficiaries, thus achieving an efficient investment of the resources. economic resources available to the Municipality (TAX CO-PARTICIPATION, IDH, HIPIC II, OWN RESOURCES AND OTHERS) and are distributed in a transparent manner, since the ideas must come from the beneficiaries, take ownership of their project and meet the needs of beneficiaries through sustainable projects.

The present investigation aims to achieve and generate reliable information, referring to the fulfillment of the project management cycle based on the methodology of the Qualified Demand Approach in the Municipality of Sucre, this process being a fundamental element to execute, make transparent and satisfy the needs of the society.

Another important aspect is the fact that the Municipality of Sucre currently lacks an designated official specifically for evaluation monitoring and of project management processes, a situation that is detrimental to agility, consequently the projects are delayed, they do not achieve the objectives set out in their design, disagreement and little participation of the beneficiaries.

#### Goals

#### **Overall Objective**

Propose the implementation of a unit for monitoring and evaluation of the application of the management cycle of social projects, to carry out an adequate follow-up of public investment, taking into account the regulations of Participatory Planning in the Municipality of Sucre.

#### **Specific objectives**

- Design the incorporation of an organizational body responsible for monitoring and evaluating the project management cycle in the Autonomous Municipal Government of Sucre.
- Analyze the current process and the limiting phases of compliance with the project management cycle in the Municipality of Sucre.
- Demonstrate the importance of the efficiency and effectiveness of fully complying with the management cycle of municipal projects aimed at facilitating the transparency of economic resources.
- Propose the management model of the Monitoring and Evaluation Unit of the project management cycle, structural, functional and positional.

#### **Hypothesis**

The satisfaction of the needs and the social impact is achieved through the follow-up and fulfillment of the project management cycle, the active participation of the population, the insertion of a new monitoring and evaluation unit in the Municipality of Sucre, for a better resource management.

#### Operationalization of variables

Variable	Dimension	Indicator
Satisfaction of needs and social impact Follow-up and	Quality of service	Immediate and continuous attention Bureaucratic care
fulfillment of the project management cycle	Impact	High social satisfaction, greater project execution and better development Little social satisfaction and considerable execution of projects
The active intervention of the population	Achievement of the Design of the Phases and Processes	Strong controls: Completely Partially Occasional
Insertion of a monitoring and evaluation unit in the Municipality of Sucre	Democracy	Intervention Transparency Establish concrete actions to make the tasks a reality
Efficient resource management Satisfaction of needs and social impact	Management by results	Objectives achieved (goals) Concrete actions Performance
Follow-up and	Strategies Have done	Development models Weather
fulfillment of the project management cycle	Effectiveness efficiency	Attitude ability purpose

#### Table 1

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#### Methodological development

### Materials and methodology Method or inquiries of the theoretical type

With the application of these methods, they contribute to the development of scientific theories, essentially relieving the object of the investigation with the existing theoretical aspects on the subject, which are evidenced:

#### **Analysis-Synthesis Method**

This method was applied in the elaboration of the research diagnosis that allowed knowing the reality of the context and making a systematization that served as the basis to continue with the work of the object of study. On the other hand, it is used to be able to carry out an analysis of the present research topic throughout the elaboration process, in relation to the different ideologies and characteristics that arise according to the progress of the work.

#### **Historical Method**

It will allow to know the characteristics, antecedents, causes and historical conditions in which the research topic arises and develops, for which an objective description was made, as a basis for the development of the topic of study, applying in the background, the justification, in the theoretical framework, in addition to knowing the events and studies that have been carried out in relation to the subject under investigation.

#### Logical method

This method implies the development of the historical, the rationalization, the conceptual abstraction, the investigation of the general, which allowed a description and support of the subject, since it is framed in Constitutional Norms, Laws, Supreme Decrees, Regulations and other Provisions. Legal in force in the Country and therefore in the Municipality, the same expressed in the legal framework.

#### Hypothetical deductive method

This method was used or applied throughout the research development process, taking into account the characteristics of the problem from the general to the particular and the analysis of empirical data: which helped to formulate and propose the hypothesis.

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#### **Cause Method**

It was used in the analysis of the problem situation, reasoning between cause and effect.

#### **Empirical methods or inquiries**

The application of these methods allowed the formulation of new theories about the facts and existing theories, through the analysis and direct perception of the object of investigation and the problem..

#### **TheSurvey**

With the purpose of fulfilling the objectives, the population of the Municipality of Sucre was surveyed, represented by District authorities, considered as key informants, Municipal Officials who were evaluated for the degree of knowledge of the application of the project management cycle. as part of participatory planning, who will be able to give their opinion, their knowledge, their interests and needs on the subject.

#### The interview:

This technique will be applied to the Municipal Executive and the hierarchical levels of the organic structure of the Municipality (Oficial Mayor) that constitute key informants of the present investigation, in order to gather information necessary for the achievement of the objectives.

#### **Bibliographic Method**

This method was applied to determine the ideal bibliographic material that contributed to the elaboration of the theoretical framework of the investigation, for this, different documents, events, facts expressed in different books, laws, etc., which support the subject under investigation, were analyzed and interpreted.

#### **Instruments**

#### The questionnaire

This instrument was applied to the entire group involved with a series of questions that were easy to understand. The content of the questions was given according to the object to be investigated.

#### **Interview Guide**

This instrument was applied to the representatives of the population under study, which allowed obtaining real information, it was structured and carried out according to the objectives of the investigation.

#### **Contextual framework**

The Municipality of Sucre, like other municipalities, went through different legislative modifications and administrative and functional changes, in order to better manage state resources, in accordance with the regulations required by the Bolivian state.

Being one of the most effective forms of redistribution of resources, the execution of projects, the Municipalities work hard in this area, a situation that allowed us to focus the present research topic, for the achievement of the objectives and an impact on society, it is Compliance with the project management cycle in its entirety is essential, even more so with the implementation of a unit that carries out timely follow-up and monitoring with transparent objectivity.

#### **Results and Discussion**

#### **Results obtained**

Real situations are explained using the inputs generated in documents, interviews and surveys, rescuing and highlighting the information that allows an analysis of the problem in specific topics related to the application of project cycle management and for their respective fulfillment of the objectives set. in this research topic.

### **Background of autonomous municipal** government of sucre

Since April 20, 1994, with the enactment of the Popular Participation Law, there has been a complete change with a new philosophical conception of Municipal action, giving it a leading role as a generator of economic and human productive development policies within its territorial jurisdiction. with autonomy and its own management, its own legal regulations, its own administration and inspections.

Based on these antecedents, each Municipal Government of the 327 Municipalities that exist in the country must implement its own internal regulations for expenses, follow-up and control within the framework regulations of Law 1178 and other laws in force. (Sucre Municipal Development Plan 2010-2014)

### Mission of the Autonomous Municipal Government of Sucre

#### **Institutional mission:**

The institutional Mission is the reason for being the institution, it is the element that defines it, distinguishes it from others and contextualizes it in relation to what the population has delegated to it, it reflects the social demand.

In this understanding, the mission of the Municipal Government of Sucre is:

"The Municipal Government of the Capital Section of Sucre is a public, autonomous and legitimate entity, with administrative, supervisory, operational and regulatory powers and competencies, aimed at generating the conditions for the integral and sustainable development of the Municipality, prioritizing the participation of the population and the honest, efficient and transparent performance of the municipal server, committed to improving the quality of life and well-being of the population" (PEI, institutional strategic plan, 2010-2014).

#### **Institutional view:**

It represents the desired and feasible situation that the highest authorities of the Municipal Government intend to achieve by 2014, it expresses the aspirations, challenges and values on which the institution will base its work. It is the principle that guides the allocation of resources, effort and motivation of all members of the institution.

"Organized Municipal Government, with management capacity, economically strong, with qualified human resources, provider of quality services, that enjoys credibility and legitimacy, to lead, coordinate and agree on the comprehensive development of the Municipality of Sucre" (PEI, strategic plan institutional, 2010-2014).

### Planning of the autonomous municipal government of sucre:

According to the investigation, it was perceived that the planning capacity of the Municipality of Sucre is in a medium-high degree, this means that this Institution makes its Annual Operational Plan (POA) in a reasonable time and that there is coherence between the POA and other instruments. medium and long term planning. But in reality, planning is not widely used to carry out the operations (activities) of the Municipality, such is the case in the prioritization of projects, unfinished projects, it is worth mentioning on the other hand that many projects are carried out by policy according to mention the majority of the presidents of Barrio.

The study doubts that these are the only causes for non-compliance with the planning process, and suspects that they are rather the result of the influence of the National Government, although it recommends the preparation of a specific study to clear up any doubts. Therefore, the Municipal planning is not coordinated and is not very compatible with the other planning of the different instances. A rule requires that the Municipal Government certify to the National Government the coherence between the Departmental and National plans, but this rule is not complied with.

On the other hand, it was verified that in the Municipality there is no specific person responsible for monitoring and evaluating the project management cycle.

#### Management capacity (internal functioning).-

The Municipal Government of Sucre currently and according to its institutional strategic plan works based on:

#### Strategic management

Planned execution of municipal and institutional development.

#### **Political management**

 Promotion of the participation of the actors of the municipality in the management and execution of municipal public policies – Strengthening of work in municipal institutional networks.

 Maintenance of permanent communication with social actors and institutions relevant to the development of the municipality.

#### **Institutional development management**

- Maintenance of a decentralized organizational structure in accordance with the strategic objectives of the Municipal Government, with criteria of efficiency, effectiveness and equity.
- Continuous improvement of institutional efficiency and effectiveness, achieving modernity and greater proximity to the population.
- Development of a timely information and communication system for officials and at the different levels of the organization.

#### Financial management

- Reorganization of municipal finances.
- Permanent updating of the assets of the Mayor's Office.
- Increase in the capacity to collect own resources.
- Increase in financial resources for investment.
- Management of resources with efficiency, transparency and social equity.

#### Infrastructure investment management

- Permanent improvement of technical capacities for the design and execution of public investment projects.
- Total execution of the public investment budgets of the annual procedures.

#### Management of programs and services

#### General

 Permanent improvement of the quality of provision of municipal services based on the needs of the users.

- Modernization of technical processes and technological innovation.
- Deconcentration of services.
- Transparency in service management
- Complementarity of actions of the Major Officials, (PEI, institutional strategic plan, 2010-2014).

Despite the fact that the Municipality of Sucre has its management strategies well established and planned: these are not respected or applied, although they apply they are a minimal part, which is why there are projects that are not in operation and that do not meet their objectives, therefore they do not manage to satisfy the needs of the beneficiaries, on the other hand, the participation of the population in the different planning is very fragile, in this way the real needs are not prioritized and even less solved.

What is necessary to implement in the Municipality of Sucre, is the Management of monitoring and evaluation of projects to have a clear description of the procedures necessary to have an adequate diagnosis of the problems faced by the target population of a project, its characteristics, causes and effects, in order to identify potential solutions.

#### Organizational analysis

From the Political Constitution of the State, organic law of Municipalities, law 1178 and Supreme Decree, internal regulations of debates, manual of functions that allows delineating the area of work of officials.

The organizational structure of the Municipal Mayor's Office is made up of two large government instances; the Municipal Council and the Municipal Executive. The former is constituted as the deliberative, regulatory and supervisory entity, and the latter as the executing entity for policies and actions in accordance with its legal mandate. (PEI; Institutional Strategic Plan of the Municipality of Sucre 2010-2014). The organizational structure of the Municipal Government of Sucre is presented below.

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The Institutional Strategic Plan 2010-2014 among the various formulated objectives, raised one referred to the evaluation and followup. Said objective points out the need to apply monitoring and evaluation systems of the effects of its management and accountability, as emerging actions during this period the municipality managed to train officials in monitoring and evaluation strategies, methodologies and instruments. Likewise, the Mayor's Office had the support of PADEP-GTZ carry out training in **Participatory** Management and Accountability, the effect of which is translated into transparent processes and actions and management results.

Although the Municipality of Sucre has personnel to execute projects, this is not enough to achieve the objectives of the subject under investigation, for that reason the planning of personnel lacks coordination with the POA, in addition it does not contain an analysis of the dimensioning of the workload by organizational unit, and from the internal supply of personnel to match the quantified demand for personnel.

There is no position evaluation proposal that supports the current salary scale, and the budget allocation for some specific levels and positions responds to the person's profile and not to the position's profile.

Due to budgetary limitations, the organic structure does not reflect the minimum requirement of human resources for the operation of the different functional areas, causing a movement of people that translates into the existence of a formal and a real (informal) staff payroll.

#### Analysis of the results and discussion

In order to meet the objectives of this research topic and to demonstrate the hypothesis, the data obtained from the interviews, surveys and bibliographical studies are analyzed:

### Current process - limiting phases of the project cycle

The municipality of Sucre at present, for the development of the projects, has been carrying out based on the plans, it is worth mentioning the POA, PEI, PDM, of which some limiting phases of the project management cycle are noticed.

### Methodology of the qualified demand approach

The challenge is not only to start from a demand, it is about maintaining an "attachment" and link to it throughout the duration of a project. It is about the interested group or community having tools and instruments to verify the permanence of the genuineness of their demand.

Answer	Quantity	Percentage
And It Is	71	35%
No	130	65%
Total	201	100%

**Table 1** Knowledge about the methodology (EDC)

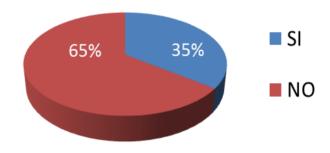


Figure 1

Taking into account that in the Municipality of Sucre, the project management methodology (Qualified Demand Approach) has been institutionalized through a resolution, the majority of the population does not know and it is not applied, resulting in a lack of knowledge of 65%. in the District representatives and officials only know 57%.

Answer	Quantity	Percentage
And It Is	4	57%
No	3	43%
Tosuch	7	100%

Table 2 Knowledge about the methodology (edc) of officials

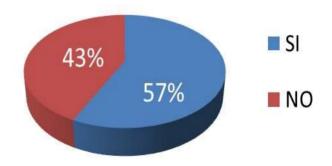


Figure 2

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This reflects that the Municipality does not make known about its different resolutions that are for the benefit of the population for its active participation, it also does not have a good coordination between authorities and population being the direct beneficiaries.

### **Execution of social projects in the municipality of sucre**

According to data obtained from the surveys, since the promulgation of the Popular Participation Law in the Sucre Municipality, on average between 3 and 4 projects have been executed per District with Municipal resources according to data obtained from the direct beneficiaries. This reflects the current situation of project executions, qualified at a minimal conclusion of projects in the municipality, since various limitations such as: scarce economic resources, lack of prioritization of projects, poor coordination of authorities with beneficiaries, weak participation of the population, insufficient human resources, among others.

### Phases or stages of the project management cycle

Answer	Quantit	Percenta
And It Is	30	10%
No	180	90%
Tosuch	201	100%

**Table 3** Knowledge of the project management cycle of district representatives

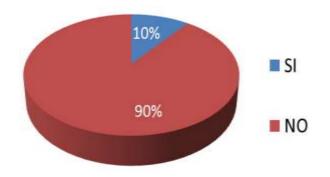


Figure 4

From the table and graph, as a result of the entire population surveyed, 10% affirm that they DO have knowledge about the phases or stages of the Project Management Cycle and 90% do not know. But of the 10%, on average they only know between 3 and 4 of the 6 phases or stages.

Answer	Quantity	Percentage
And It Is	3	43%
No	4	57%
Tosuch	7	100%

Table 4 Knowledge of the project management cycle of officials

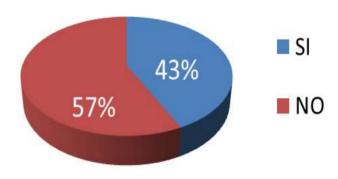


Figure 4

Therefore, it is concluded that the population shows little interest in internalizing the phases or stages of the Project Management Cycle and, as can be seen, even the directly related officials do not have knowledge as expected, showing only 43% of knowledge, a situation which is detrimental to the development of the Municipality.

### Distribution of economic resources in the municipality of Sucre

Answer	Quantity	Percentage
And It Is	41	20%
No	160	80%
Tosuch	201	100%

**Table 5** Adequate distribution of state resources in the municipality of Sucre

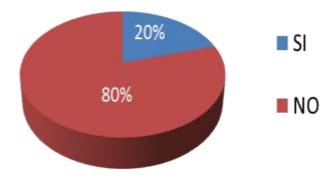


Figure 5

20% of the entire population surveyed affirm that the distribution of economic resources is correct and 80% believe that the distribution is inadequate, among the most relevant reasons of the interview are:

There is no good participation of the population, difference in the execution of projects from one neighborhood to another due to political preference, lack of coordination between the mayor and the community, poor administration of resources by the authorities, some projects are just paper, inadequate distribution of economic resources to the districts, lack of prioritization of projects by the authorities, there is no equity, inadequate planning.

This indicates that in the Municipality of Sucre, the authorities are not performing a good function in their work, they maintain the political color, in addition they are not complying with what the regulations that regulate the operation of public sector entities say, even more so when we talk about the transparency, fairness, efficiency, effectiveness, good faith, etc.

### Causes and effects of non-compliance with the objectives of an executed project

171 of 201 respondents (85%), believe that the design objectives of the projects that are executed in the Municipality of Sucre, do NOT achieve their objectives by 100%, due to the fact that timely follow-up is not carried out, there is neglect of the Municipal Authorities and at the same time at the level of the district diligence, everything is political, lack of socialization and compliance, lack of an adequate study, little participation of the beneficiaries, inadequate prioritization of needs, lack of urbanization, the projects are not adapted to the needs of the population, delay in the execution, bad administration, there is no good technical study, little participation of the population of the beneficiaries, they are not concluded, due to the delivery of unfinished works, due to the constant change of authorities.

On the other hand, it is attributed that the projects in the design stage have not carried out a correct survey of the data, which means that there is little participation of the beneficiary population in said stage.

Another factor is the limited knowledge, interest, training and constant changes of the authorities during the execution of projects, they lack knowledge and information on the part of the beneficiaries.

### Importance of compliance efficiency throughout the project management cycle

Each stage of the cycle has its reason for being and, therefore, it should not be limited to a more detailed repetition of the tasks carried out in previous stages.

To achieve project efficiency, it is important to involve the different actors interested or involved in the project from the beginning of the project cycle, so that they collaborate jointly in its idea, design, evaluation and execution.

A flexible cycle structure is needed that can be easily adapted to various types of projects. The cycle should not be perceived as a linear straitjacket but as a logic of progression of a project. The stages constitute a chronological order of development of the project, in which progress is made on the formulation, execution and evaluation of the same.

### Participation of the beneficiaries in the elaboration of projects

Answer	Quantity	Percentage
And It Is	58	29%
No	143	71%
Tosuch	201	100%

Table 6 Verification of participation

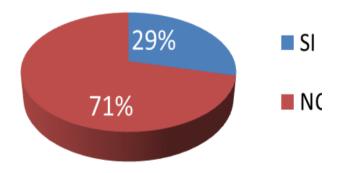


Figure 6

From the table and graph it can be seen that 29% of the surveyed population affirms the participation of the population of their District in the elaboration of projects, and 71% indicates that they do not participate. Therefore, it is concluded that the projects that are executed in the Municipality are more of a technical nature, with minimal planning involving the direct beneficiaries, which is why the projects do not have the expected success and do not achieve the desired impacts in the design of objectives.

### Participation of the population in the elaboration of projects

Answer	Quantity	Percentage
And It Is	198	99%
No	3	1%
Tosuch	201	100%

Table 7 Importance of participation

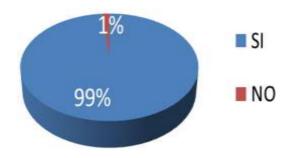


Figure 7

From the table and graph it can be seen that 99% of the surveyed population believes that the participation of the population in the development of projects is important and 1% believes that it is NOT, and according to the officials:

Answer	Quantit	Percenta
Very	1	14%
Good	2	29%
Regular	4	57%
Bad	0	0%
Very Bad	0	0%
Tosuch	7	100%

Table 8

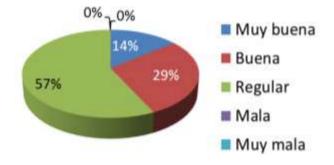


Figure 8

The participation of the population in the elaboration of projects is of vital importance so that the project is in accordance with the direct beneficiaries, they know what is being done and why it is being done, they can support control, thus really satisfying their needs that wants to achieve with a social project, in this way to improve the quality of life of each beneficiary and achieve the development of the Municipality.

Impact of executed projects

Answer	Quantity	Percentage
And it is	47	23%
No	154	77%
Tosuch	201	100%

**Table 9** Satisfaction of the needs of the population with executed projects

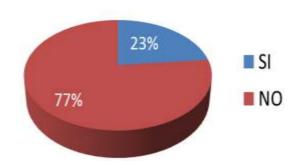


Figure 9

It is observed that 23% affirm the satisfaction of the needs of the population with the executed projects and 77% indicate that the needs are not satisfied. Among the most important reasons for participation are: they can make their prioritized needs known, they are part of social control, they make their participation rights prevail in the different stages of the project cycle.

It can be concluded that the projects that were executed in the different communities are still insufficient to be able to satisfy the multiple basic needs of the population, therefore the authorities should worry more about ensuring the well-being, satisfying the needs of the population and executing more projects. impactful and sustainable.

Full compliance with project objectives

Answer	Quantity	Percentage
And It Is	43	Twenty-One%
No	158	79%
Tosuch	201	100%

**Table 10** Projects without achievement of objectives according to district representatives

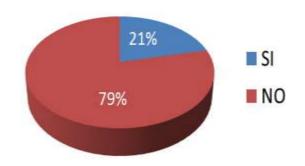


Figure 10

21% of the population is aware of projects that do not fully meet their objectives, such as education, health, micro-irrigation, agricultural, production projects (Poteos, closed parks, Olympic pool, market, pavements) and 79% do not know projects that do not achieve their objectives.

Among the reasons for non-compliance, they indicated that: non-compliance with the project management cycle, when it is not completed until its operation pass where the inadequate projects begin to function, projects. prioritization of the lack coordination the beneficiaries, with the objectives are not well defined.

With the data obtained, it is concluded that there is misinformation about the projects that were executed and that are executed in the Municipality, since there are unfinished projects or those that have not reached their objectives due to the fact that the project management cycle for its execution. According to officials on the importance of compliance with the cycle:

Answer	Quantity	Percentage
And It Is	7	100%
No	0	0%
Tosuch	7	100%

Table 11

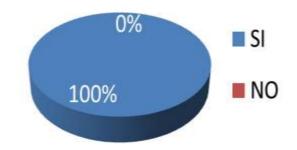


Figure 11

Among the most important aspects that were evidenced: The project must be executed in cycles, to achieve compliance with the project cycle, because it is participatory, responds to public policies and is transparent, for a better development of the Municipality, only in this way are they visualized results.

### Body responsible for monitoring and evaluating the project management cycle

For the achievement of the objectives set forth in the subject, the importance of incorporating the monitoring and evaluation unit of the project management cycle and the fulfillment of the hypothesis becomes evident.

### **Body** responsible for monitoring the execution of projects

Answer	Quantity	Percentage
And It Is	50	25%
No	151	75%
Tosuch	201	100%

Table 12 Identification of the person in charge

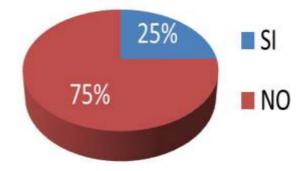


Figure 12

25% of the population surveyed affirm that they know the entity responsible for monitoring the projects but they do not state exactly and specifically a person in charge, among them (Works Supervisor, Neighborhood Boards, Surveillance Committee, social control, Planning Department, technicians of the Municipality, Senior Administrative Officer, district council) and 75% do not know said person in charge. Which indicates that specifically there is no said person in charge. On the other hand, the officials mention the following instances:

General Coordination, Planning Directorate and the Institutional Follow-up Headquarters, complementing the interview with the highest Executive Authority, the lack of knowledge and the non-existence of this unit is clearly noted, in addition to the concern.

Due to the lack of a specific instance responsible for the project management cycle (monitoring and evaluation), many projects are not fully complying with the management cycle, in addition to the fact that there is a lack of knowledge of the conditions in which the projects that are executed are found. in the Municipality and is detrimental to a good administration of Municipal resources by the Authorities. Therefore, it is necessary to look for alternatives to have a specific technician in the area.

### Monitoring and evaluation of executed projects

Answer	Quantity	Percentage
And It Is	3.4	17%
No	167	83%
Tosuch	201	100%

Table 13

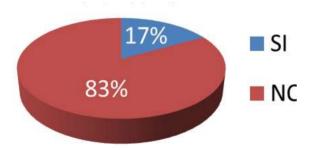


Figure 13

From the table and graph it can be seen that 17% of the entire population surveyed affirms that monitoring and evaluation of the projects is carried out and 83% indicate that it is not being carried out. It is concluded that the executed projects are not being evaluated nor is real and legal timely monitoring being carried out, non-compliance with the project management cycle can be verified in its last stage (evaluation).

### Responsible for the monitoring and evaluation of projects:

Answer	Quantity	Percentage
strongly agree	107	53%
In agreement	77	38%
unwilling	50	7%
In disagreement	2	1%
strongly disagree	0	0%
Tosuch	201	100%

Table 14 Incorporation of the person in charge



Figure 14

From the table and graph it can be seen that 53% of the surveyed population strongly agree that there is an exclusive technician to monitor the different phases or stages of the projects, 38% agree and of the officials it is evident:

Answer	Quantit	Percenta
And It Is	6	90%
No	1	10%
Tosuch	7	100%

Table 15

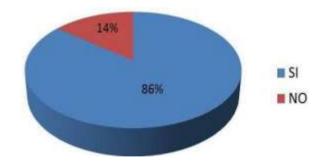


Figure 15

From which it is concluded that it is vitally important to have a person in charge specifically assigned to follow up the different phases or stages of the projects, that is, monitoring and evaluation, for a good elaboration, administration, control and fulfillment of the objectives that are raised in the projects.

Becoming even more effective in the interview with the executive of the Municipality, he is very much in agreement with the insertion of the unit.

#### **Proposal**

According to the information obtained and studies carried out, for a better administration of the Municipal resources granted by the State, it is proposed to make the adjustments and application of policies according to the following order:

- As soon as possible, a body responsible for compliance with the project management cycle, monitoring and evaluation should be incorporated into the organic structure of the Municipality, which will allow economic resources to be properly channeled into the projects proposed in the POA, PDM, for the development of the Municipality.
- It has been found factors to consider that determine the success of project management from the direct beneficiaries, officials, bibliographic study, analysis of the regulations that govern the country.
- Avoid the constant change of staff by strengthening their functions in terms of monitoring and evaluation of the project cycle in order to achieve their specialization.
- Implement mechanisms that allow the involvement of social actors in local economic development, optimizing administrative management systems, through the fulfillment of institutional roles, and grassroots organizations.
- Organize and consolidate the interinstitutional coordination instance, between the Municipal Government, grassroots organizations, public and private development institutions for the fulfillment of the project management cycle and achieve an adequate follow-up, monitoring and evaluation of the execution.

#### **Project Management Manager**

For the best functioning of the municipal administration, it is of vital importance to incorporate into the organic structure of the Municipality an instance specifically responsible for monitoring the management of projects, whose activities to be developed are detailed below:

#### **Activities**

- Gathering of information related to the municipal demand (project ideas).
- Prepare project profiles based on the demand of the population. Prepare terms of reference and technical specifications for contracting consulting services, in the Final Design stage.
- Monitor the execution of consulting services and project execution.
- Participate in the contracting processes for goods and services.
- Operate in constant monitoring of the execution of projects, for the proper functioning and compliance of the project management cycle.
- Carry out the evaluation with the participation of the beneficiaries to fulfill the objectives of the projects.
- Organize participatory planning processes for the registration of projects in the Annual Operational Programming and Municipal Development Plan.
- Receive all the projects to be executed in the management, for their monitoring, control and filing.
- Preparation of consolidated reports on the progress of the execution of the project to the authorities and beneficiary society based on an evaluation.
- Preparation of final report on the conclusion of each project, for delivery to higher authorities.

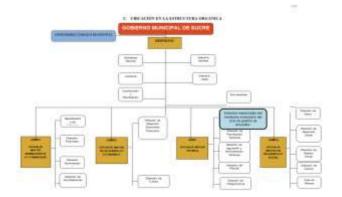
 Carry out an ex-post evaluation of each executed project, Archive and printed record of the documentation of each project for the creation of a data bank.

#### Should be able to:

- Identify and formulate social projects, in participatory dynamics with work teams and groups of beneficiaries.
- Coordinate the execution of projects.
- Advise civil society on aspects related to its field of action.
- Will have an organizational, creative and constructive mentality.
- Show a disciplined, innovative and creative behavior at work.

#### **Professional profile**

- Title in National provision at the bachelor's level in Public Management.
- Professional experience minimum one year in Municipalities
- Extensive knowledge of the Laws: Government Administration and Control Law (SAFCO) No. 1178, Popular Participation Law No. 1551, Municipalities Law No. 2028, autonomy framework law No. 031, municipal charter.
- Ease of relationship with the urban and rural population, Teamwork Capacity.
- Management of computer packages (Word, Excel, Power Point, Access, Internet).



Factors to consider for success in project management:



Figure 16

#### **Evaluation**

Among the preponderant factors for the achievement of success or objectives of a project, the following should be considered:

- All people have the right to representation and participation.
- Good and careful planning: Planning must be based on the needs of the population and with their participation.
- The project must cover the real problems of the target groups: For which the responsible body must be able to identify the problems based on their demands from the beneficiaries.
- The interested parties respect their commitments: The beneficiaries comply with their proposed contributions for the achievement of the project's objectives.
- Beneficiaries are clearly divided by gender and socioeconomic group
- Sufficient organizational capacity: The organization must be able to respond to what is required by each project, for a transparent and total fulfillment of each objective proposed in the projects.
- Equitable allocation of costs and benefits between men and women
- Competent and motivated team: The work team must like what they are doing, they must have an adequate degree of training for the responsible body.
- Effective project management: Project development process.

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 Ex-post evaluation: Stage of the project that shows the results achieved from the execution of the projects and their impact on the target population.

What will allow a direct relationship between beneficiaries who are the main actors of the administration, good execution and fulfillment of the project cycle, in addition to maximizing resources through sustainable and sustainable projects, which is pursued by the new public management.

#### **Conclusions and recommendations**

According to the study carried out and based on documents, research methods and the information available, the following is noted:

- In the development of the investigation, it was identified that there is no staff specifically assigned to monitor the process of project execution.
- It was possible to show that the authorities and administrative personnel lack knowledge about the project management cycle, there is no coordination of activities, lack of internal communication, no information is provided on the results achieved with the projects that are executed, for this reason reason there is discontent in society and it is detrimental to the development of the municipality.
- Doing an analysis concludes that it is vitally important to fully comply with the project management cycle, since this process marks the path to follow (where we are going to go and how we are going to get where we want to go), on the other hand it allows the compliance with the objectives set out in the project, thus reaching a good administration of resources and therefore the satisfaction of the needs of society and also have accurate information on the destination of State resources.

- In the Municipality of Sucre, despite the fact that there is a resolution that establishes a process to follow in the preparation of projects, there is no timely monitoring of project management, since neither the authorities, and even less the population, are aware of said process. process.
- According to the diagnosis, it can be seen that the project management cycle is not applied 100% in the Municipality, therefore the projects take a long time, they do not meet 100% of their objectives, the beneficiaries do not take ownership of the project, it generates dissatisfaction towards society.
- The evaluation is a very important stage in the management of projects, since it shows the results that are achieved with the execution of the projects, a situation that the authorities and the population are unaware of, it is worth mentioning that this stage is not fulfilled in the Municipality of Sucre.
- It was also realized that the projects carried out since the promulgation of the popular participation law, despite the fact that all the neighborhoods have carried out at least one project, these did not really satisfy the needs of society, having been carried out with political purposes, due to the little participation of the direct beneficiaries, due to the realization of the projects only from the technical part, due to the weak coordination of the authorities and society and other aspects that went against a good administration and distribution of resources with different projects.
- In general, there is carelessness, carelessness, little interest, initiatives, management capacity on the part of the authorities and little participation of civil society to contribute to the development and growth of the Municipality.

- Ex-post evaluation, since it is the last stage of the project management cycle, its fulfillment is very important, something that is not applied in the Municipality and therefore there is no information regarding the results and impacts that are achieved or simply the fulfillment of the objectives outlined in the projects is not known.
- The misinformation that exists due to non-compliance with the project management cycle is also due to the lack of a database or files of the executed projects.

#### Recommendations

Framed in the search for the development and growth of the Sucre Municipality, the following recommendations arise based on the results obtained in this investigation:

- The authorities as legal representatives, in compliance with the regulations for hiring personnel, it is suggested to approve and put into practice the proposal of this research topic, which is to hire as soon as possible a responsible body specifically for the monitoring and evaluation of projects, since it is based on the needs of the population.
- Consider the application of the activities, Professional Profile and the incorporation of the Official in the organizational structure according to this research topic, which will allow to contribute to the efficient administration of the use and management of public resources of the Municipality of Sucre.
- The Municipality must adopt strategies or alternatives to enhance the skills of public officials around the administration of the goods that are in its custody and in this way a better execution of economic resources can be carried out.
- In order to undertake an efficient administration process, it is essential that there is good coordination between all the personnel of the Municipality, in addition to updating the personnel, so that good results can be achieved in this way.

- For a better administration of state resources, it is suggested that the administrative staff receive training in relation to the project management cycle so that they can contribute to the step-by-step monitoring of the execution of projects, by an external professional (public manager ), since the optimal quality of the administration depends on them.
- Develop policies that respond to the needs of the population.

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## Implementation of Scrum Methodology in the construction of the intelligent system Acerkte of Academic tutorials

#### Implementación de Metodología Scrum en la construcción del sistema inteligente Acerkte de tutorías Académicas

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#### **Abstract**

This paper describes the automation of processes tutorials based on a feasibility study on the HEIs. just as agile SCRUM methodologies are implemented in the construction of Acerkte system that will strengthen the support of the student during his tutorial session, as well as manage and manage activities to optimize time and resources in the school, tutor-tutored for it, the web system is made up of 10 well defined in the Sprint Backlog and assigned priorities Sprints. For agile methodology which will allow deliveries to functional and developed with cutting-edge technologies applied development as PHP 5.5 [6] [7], HTML 5, CSS3, ¡Query Mobile, Phonegap, Corel Draw, Arrowchat, Bootstrap, Senchatouch.

## SCRUM, Acerkate, Tutorship, System, Methodology

#### Resumen

El presente trabajo describe la automatización de procesos tutoriales a partir de un estudio de factibilidad realizado en la IES, de igual manera se implementan metodologías ágiles SCRUM en la construcción del sistema Acerkte que permitirá fortalecer el acompañamiento del estudiante durante su sesión tutorial, así como como administrar y gestionar las actividades del tutor-tutoría para la optimización de tiempo y recursos en la institución educativa, para ello el sistema web está conformado por 10 Sprints bien definidos en el Sprint Backlog y con prioridades asignadas. Para lo cual la metodología ágil permite entregas funcionales desarrolladas con tecnologías de punta aplicadas al desarrollo web como PHP 5.5[6][7], HTML 5, CSS3, jQuery mobile, Phonegap, Corel Draw, Arrowchat, Boostrap, Senchatouch.

SCRUM, Arkate, Tutoría, Sistema, Metodología

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#### Introduction

One of the main emerging trends observed in this field is marked by the use of ICTs, and due to their usefulness, they require the use of development methodologies capable of adapting to the situations of this modern world and constant changes, which do not involve wasted time and excessive costs during development. Hence the use of the agile SRCUM methodology in the development of an intelligent system that allows the automation of various procedures and activities that start from a tutorial process in HEIs

SCRUM is a process in which they are applied on a regular basisa set of good practicesto work collaboratively, as a team, and obtainandhe best possible resultof a project. These practices support each other and their selection originates from aandstudy of the way work in highly productive teams[one].

This allows the application of the SCRUM methodology in the Acerkte project to be very useful, due to the needs that every organization or institution currently has to achieve its objectives in the demand for the construction of large and complex software systems that require of the combination of different technologies and hardware software platforms to achieve an operation according to said needs. The foregoing requires professionals dedicated to software development to pay special attention and care to the design of the architecture, under which the operation of their systems will be supported and without any doubt of a SCRUM team for the execution of the various tasks.

Process and equipment management is one of the most complicated parts for any company. It's not just about resources. Time optimization, team coordination, protocol definition and task assignment is a weighty issue that requires knowledge, good judgment and a lot of time for its implementation [2].

Although a software architecture is deficient in its concept or design, or in the worst case, we do not have the architecture of the system that we develop, we will have great possibilities of building a system that will not reach the total of the established requirements.

However, in the present project this is no longer a headache, due to the division and categorization of requirements carried out by the SCRUM team and the project representative, who in this case is the representative of an institution appointed as Product Owner.

One of the principles of modern software development methodologies is to prioritize the definition, design, implementation and evaluation of the software architecture, which is what the skeleton or structure of the system is known as. From the point of view of what the software should do, the architecture is defined from a set of critical functional, performance, or quality requirements.

The structure of this work is made up of five sections, firstly in the State of the Art a current panorama of the problem is shown, later the proposed development methodology is shown, then the development of the intelligent system is presented together with a brief description of the layers that make up this prototype is divided into two important parts: architectural design (also known as high-level design) and detailed design, and finally the Conclusions and Future Work of the project are presented.

It should be noted and added that the design of the software architecture occurs immediately after the specification of the software requirements and considers the following as the main elements: software components, properties of said components and the communication between them. Detailed design is done just before coding, and is part of the developer's first tasks; describes logic, hierarchical control, data structure, component soaking, etc.

#### State of the art

The Acerkte intelligent system is designed to be to be implemented in all IES, and the Instituto being the Instituto Tecnológico Superior de Comalcalco the Comalcalco being the SITE of this project and in which registered tutors of the registered tutors of the educational institution as well as the institution will have access to it, as well as the tutored students.

In addition, this institution will be the first instance where the implementation and testing of each and testing of each one of the Sprints Backlog. Regarding the Scrum development methodology Scrum development methodology, partial and regular and regular deliveries of the final product will be made, prioritized by the benefit they bring to the recipient of the project.

For this reason, Scrum is especially suitable for projects in complex environments, where results need to be obtained quickly, where the requirements are changing or poorly defined, where innovation, competitiveness, flexibility and productivity are fundamental [3]. It should be noted that the use of a methodology to develop software ensures that a quality product that meets the characteristics of functionality, usability and reliability is produced from its early stages.

On the other hand, it is important to point out that there are traditional or classic methodologies, which are those that are guided by strong planning throughout the development process, where an intense stage of analysis and design is carried out before the construction of the system and these They necessarily require extended documentation and where the final product can be seen until its conclusion after the scheduled time. Regularly these methodologies were applied to large projects [4]. Among them we find:

- The Waterfall Model and in which it is necessary to complete a set of tasks in the form of a phase and then continue with the next phase, it can be used when the project requirements are clearly defined and are not forced to future modifications.
- The Spiral Modelis based on the continuous need to refine the requirements for a given project, it is effective when used for the rapid development of very small projects.

We clearly observe that these methodologies are not adaptable to the change that companies and institutions suffer today, but with the emergence of Agile Methodologies, we stopped worrying about last-minute changes in software development and the cost that this implied in your update.

ISSN-On line: 2524-2067 RINOE® All rights reserved. A process is agile when software development is incremental and most of the projects of our era are of this type, in the case of Acerkte it is defined by 10 Sprints that are delivered within the time established by the SCRUM process which is based on build the highest value functionality for the customer first and on the principles of continuous inspection, adaptation, self-management and innovation.

#### **Iproposed development methodology**

Fig. 1 shows the proposed development methodology, which aims to be endowed with a standard character to be implemented in different architectures that will allow optimizing the services of availability, connectivity, recognition and monitoring of information to users.

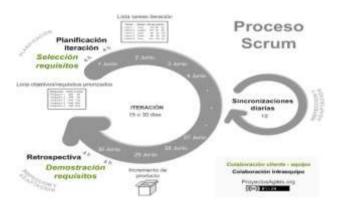


Figure 1 SCRUM Methodology

In Scrum a project is executed in short and fixed time blocks (iterationsde one calendar month and up to two weeks, if so required).

Each iteration has to provide a complete result, an increment of the final product that can be delivered with the minimum effort to the client when requested. The advantages of working with this methodology begin with the role play established by it, which are:

- Scrum Master
- Product owner
- Scrum Team

Development times and iterations are defined by the Sprints. A Sprint is the duration of a job itself.

The process starts from list of objectives/requirements prioritized of the product, which acts as the project plan.

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In this list thecclientprioritizes the objectives balancing the value they provide with respect to their cost and they are divided into iterations and deliveries. On a regular basis the client canmaximize the utility of what is developand thereinvestment latheIbefore thereplanning of objectives of the product, which it performs during the iteration with a view to the following iterations.

The activities carried out in Scrum are the following:

- Iteration planning.
- Execution of the iteration.
- Iinspection and adaptation.

The Sprints are defined by the work team made up of the teams and stakeholders, in the particular case of the development of the "Acerkte" system, the duration of these is two weeks, after which a Sprint meeting is established with a duration maximum of 15 minutes in which all the difficulties and advances of the system are presented, in this way a group feedback is carried out. At the meeting, each team member answers three questions:

- Do What have I done since the last synchronization meeting?
- Do What am I going to do from this moment?
- Do What impediments do I have or will I have?

During the iteration thefactilliterate (Scrum Master)He ensures that the team can fulfill its commitment and that its productivity is not reduced. It removes obstacles that the team cannot solve on its own and protects the team from external interruptions that could affect their engagement or productivity.

Thes software development methodologies are, without a doubt, one of the greatest tools that exist in supporting the development of technological applications. With the current advancement of technologies, new techniques and procedures have been demanded and that is where the Scrum development methodology comes into play, which belongs to the classification of agile development methodologies.

As mentioned, this methodology was selected to carry out the development of the "Acerkte" academic tutoring system.

#### **Intelligent System Development**

Acerkt is an integral system that allows the tutor to have control of their mentees and a diagnosis of their history in the system that will allow them to follow up and take preventive measures at the right time, likewise, they will be able to make use of tools that contribute to the detection of needs through automated techniques, validated by the psychology area of the Higher Technological Institute of Comalcalco.

It is worth mentioning that more often there are problems in time and attention, taking into consideration that many teachers do not coincide in class schedules during the semester with their tutors and for which they are unaware of their curricular status, therefore, it makes it impossible to know their needs and therefore Consequently, the appropriate detection mechanisms are not applied, in some instances the tutor uses somewhat outdated and inefficient methods by not using ICT tools such as websites, forums, content managers, e-mail, among others, and In the same way, there are new detection methods such as those based on searches and heuristic knowledge. These ways of detecting needs will help the tutor to obtain a more detailed profile of the tutor, thus gaining access to information such as their state of mind,psychological and social in which the tutored is.

In addition to this, another of the problems that the tutor finds is when managing and keeping control of his tutorials since he does not have an information system where he has the data of his tutors and where he can manage the time of attention of each one, and that is the importance for which they will be covered in this research for analysis and subsequent automation. And in this area, attend to the possible decrease as a prevention of the dropout and failure rate, which is perhaps one of the main problems that gave guidelines for the implementation of the ideas of the current tutoring systems as well as school and personal improvement projects in HEI students.

Using the SCRUM methodology, the following 10 fundamental requirements were defined:

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- Intelligent system architecture.
- Tutor-Tutorado system registration system.
- Systems from request toAppointment control session.
- Mobile registration and appointment system for tutorial activities.
- 16FP test automation.
- MMPI test automation.
- Test automation 8 colors.
- Automation of identification of profiles through AVATAR.
- Tutored monitoring system.
- Materials and Resources.

In fig. 2 shows the main interface of the system where, when entering the Acerkte system, the user will see the following welcome screen in which they can select the option to enter as a teacher or student validated by username and password.



**Figure 2** Main System Interface. Source: Acerkte Mobile Application

In the final product of this research, which will be an online system that allows the management and control of tutorials as well as strengthening communication between the tutor and tutored, a mobile application will be obtained that allows the registration of appointments as well as queries of schedules and availability of the tutors, the platforms on which the app will work are android, IOS and BlackBerry, covering a wide range of users and placing all accessibility to those involved in the tutoring process as seen in figure 3. On this screen, the user will select one of the services that they wish to use. Clicking on any of the options will send to a system module.



Figure 3 Pstart screen

Figure 4 shows the registration process as an example for teachers:



Figure 4 Teachers registry

Figure 5 shows the psychological tests to which the registered student will have access. That is to say, the system will have a module with the capacity to carry out psychological profiles of the tutors autonomously, basing its knowledge base on intelligent agents that allow a heuristic search to be carried out that serves as the main data for the tutors and thus way to have the most important information about their mentee, thus avoiding having to apply any document to obtain this type of information and at the same time knowing what sentimental or psychological condition the mentee is in.

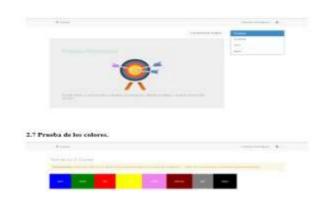


Figure 5 Integration of psychological tests

#### **Conclusions**

With the development of the Intelligent Tutoring System, this philosophy of accompanying the student will be contributed to a great extent and at the same time this serves as feedback to the teacher who finds new experiences every day that will later help to reinforce the academic support towards the student.

Applying new technological trends in the tutorial field is for us to contribute with what to do academically, because the student population has grown by leaps and bounds and with it also the problems between them [5].

So it can be said that all kinds of tools that are developed in order to help the student will be seen in a good way as long as it allows combating the main red lights of the student community such as desertion, failure and some more problems which were mentioned in the document. As a final point, we add that the topic of tutoring has grown a lot and has been strengthened in such a way that it is no longer just guiding the student, but also being with him until he resolves or corrects a specific situation, if possible, or in its effect, channels it. corresponding and in the best way applying the use of ICTs in this process. In order to generate less costs related to time and much more productivity in the sense of results, in addition to the communication that would be strengthened more and more.

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## Academic achievement product of socioeconomic and demographic conditions: LAM CU Texcoco case

# Aprovechamiento académico producto de las condiciones socioeconómicas y demográficas: Caso LAM CU Texcoco

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#### **Abstract**

This research was carried out to know the socioeconomic and demographic conditions of the students from the LAM (Management BA) UAEM Texcoco, as well as to recognize their influence in their academic progress. A stratified sample was used and 146 students were selected among them 110 women and 36 men. A survey, to determine their economic and demographic situation was carried out, as well as their academic progress, according to their grade average for each student was evaluated, and finally the relation among such variables was determined. We found that there was no direct relation among the socioeconomic and demographic conditions and the academic progress of the students. Women outstood with a 64.39%. It was also stated that 64.37% of the students family earns between 1 and 3 wages as total month income. The survey also mentions that 34% of surveyed students live in other municipalities of the Mexican State different from Texcoco and from these the 21.23% are from indigenous communities, and another 45.19% receive 300 or 500 pesos per week for their school expenses, and that 62.31% spend about 40 pesos daily in transportation. Distance and time to get to school are not relevant for the student academic progress.

Socioeconomic Conditions, Demographic Conditions, Academic Progress, Income, School Expenses

#### Resumen

Esta investigación se realizó para conocer las condiciones socioeconómicas y demográficas de los estudiantes de la LAM (Licenciatura en Administración) UAEM Texcoco, así como reconocer su influencia en su progreso académico. Se utilizó un muestreo estratificado y se seleccionaron 146 estudiantes entre ellos 110 mujeres y 36 hombres. Se realizó una encuesta, para determinar su situación económica y demográfica, así como se evaluó su avance académico, de acuerdo a su promedio de calificaciones de cada alumno, y finalmente se determinó la relación entre dichas variables. Se encontró que no existe una relación directa entre las condiciones socioeconómicas y demográficas y el avance académico de los alumnos. Las mujeres destacaron con un 64,39%. También se constató que el 64,37% de las familias de los estudiantes ganan entre 1 y 3 sueldos como ingreso total del mes. La encuesta también menciona que el 34% de los estudiantes encuestados viven en otros municipios del Estado de México diferentes a Texcoco y de estos el 21.23% son de comunidades indígenas, y otro 45.19% recibe 300 o 500 pesos semanales para sus gastos escolares, y que el 62.31% gasta alrededor de 40 pesos diarios en transporte. La distancia y el tiempo para llegar a la escuela no son relevantes para el progreso académico de los estudiantes.

Condiciones socioeconómicas, Condiciones demográficas, Progreso académico, Ingresos, Gastos escolares

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<sup>†</sup> Researcher contributing first author.

#### Introduction

LThe acquisition of knowledge by individuals is directly related to the conditions or situations that the individual goes through, access to education is also involved. At present, the study of the socioeconomic and demographic conditions that intervene in academic achievement is of vital importance.

education Access to due to socioeconomic conditions in the country still represents a challenge, the National Survey of Occupation and Employment (ENOE, 2007) indicates that there is still a significant number of children and adolescents between 5 and 17 years of age who do not attend school (about 1.7 million boys and 1.4 million girls). The United Nations International Children's Emergency Fund (UNICEF) estimated for 2013, that of the population aged 6 to 11, national level, still not attending school between 1 and 2% for reasons of agricultural work or due to physical handicaps.

UNICEF in 2013, mentioned that the reality of strong disparities and social exclusión social exclusion in the country is reflected in unequal levels of primary education of coverage in primary education, with significant significant gaps at the preschool level, and fundamentally in and, fundamentally, in secondary and high school education, where a significant proportion of the por significant proportion of the poor or most vulnerable and many of those who manage to enter the system are unable to those who manage to enter are unable to complete their studies. In addition, there is inequality in the supply of services of the service provided in the different states in rural and in rural and urban areas, as well as in private schools urban areas, as well as in private schools, public schools and within the latter: general, indigenous, community schools. indigenous schools. education and education community migrants.

Thes socioeconomic and demographic conditions globally condition access to the educational process, a condition that is not new, but has gained strength over the years.

The problem of disparity in access to education affects all of Mexico and it is logical to interpret that education between each state of the Mexican Republic occurs under different conditions, generating uneven results.

ISSN-On line: 2524-2067 RINOE® All rights reserved. This problem affects the municipality of Texcoco, which is located in the state of Mexico, which is why Table 1 shows that the figures for education in 2011 varied according to the level of study, reflecting that at the preschool, primary and Secondary school retention rates were mostly favored being between 75.00% and 100.00% permanence, while for the high school and undergraduate level they ranged between 86.00% and 99.00% retention.

Ubicación/Nivel	Deserción escolar*	Índice de Retención	
	(Alumnos)	(%)	
Total	-766.00	100.00	
Modalidad Escolarizada	2,031.00	97.52	
Preescolar	-192.00	101.97	
Preescolar CENDI	0.00	0.00	
Preescolar General	-204.00	102.16	
Preescolar Indigena	13.00	95.37	
Preescolar CONAFE	-1.00	125.00	
Primaria	1.00	100.00	
Primaria General	-3.00	100.01	
Primaria Indígena	2.00	98.98	
Primaria CONAFE	2.00	75.00	
Secundaria	359.00	97.65	
Secundaria General	267.00	97.79	
Secundaria Técnica	79.00	96.48	
Telesecundaria	13.00	98.64	
Media Superior	1,860.00	87.53	
Profesional Técnico	80.00	92.09	
Bachillerato General	1,413.00	86.72	
Bachillerato Tecnológico	367.00	88.76	
Educación Superior	3.00	99.97	
Licenciatura en educación	3.00	96.30	
Licenciatura técnica y universitaria	0.00	100.00	
Posgrado universitario y técnico	0.00	100.00	

**Table 1** Dropout and retention rate in the municipality of Texcoco, State of Mexico, 2011

Within the State of Mexico, in the municipality of Texcoco, the UAEM Texcoco University Center is located, in which the Bachelor of Administration degree is taught; where the socioeconomic and demographic conditions of the student population are uneven and therefore decisive for a good academic development, that is why the relationship between the socioeconomic and demographic conditions with the academic achievement of the students was studied.

#### **General Objective**

Determine the socioeconomic and demographic conditions that intervene in the academic achievement of students in the 3rd, 5th and 7th years of the Administration degree at CU UAEM Texcoco.

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### **Specific objectives**

- Know family spending among the student population.
- Infer the amount of money given to the and Bachelor of Business Administration students.
- Review the academic records of the students and establish the existing correlation with their income and their academic achievement.
- Establish the correlation between the distance of the home-school journey and academic achievement; the time it takes for students to get to CU UAEM Texcoco, the cost of the trip and its influence on academic achievement.

### **Hypothesis**

socioeconomic Thes and demographic conditions directly affect academic the achievement of the students of the Bachelor of Administration of the UAEM Texcoco University Center.

### Methodology

The present investigation was carried out at the UAEM Texcoco University Center dependent on the Autonomous University of the State of Mexico, taking as study population students in the 3rd, 5th and 7th semesters of the Administration career 4 phases were carried out:

- 1. Documentary information: It consisted of searching for secondary information in books, magazines, the redalyc system, scielo, among other sources.
- 2. The method used was cross-sectional, according to Méndez (1993). The independent variables to be evaluated were: family income, daily spending, housing qualities, distance from home to school and vice versa, the time it takes the students to reach their destination and the cost of the trip that the students make daily.

3. The study methodology was based on the statistical information that was collected through a quantitative instrument. The source of statistical information for the socioeconomic study was the characterization survey of students in the and 7th semesters Administration of the CU UAEM Texcoco of the Autonomous University of the State of Mexico.

The survey was conducted from a sample made up of selected students.

For the design of the statistical sample, random stratified sampling was used, which is applied when the population is divided into subpopulations with characteristics of interest, such as: gender, profession, and socioeconomic status, among others; For this, the equation was applied:

$$\bar{x}_{ab} = (Wa * \overline{Xa}) + (Wb * \overline{Xb}) \tag{1}$$

It is assumed that within each population there is homogeneity, although between subpopulations there is heterogeneity. It was determined under a reliability of 95.00% and a maximum permissible error of 10.00%.

The universe of study is the students of the higher level and the study population includes students of both sexes, of 7th, 5th and 3rd semester of the Bachelor of Administration of the CU UAEM Texcoco. 4) For the investigation and collection of the data required for this study, a questionnaire was developed in order to know the socioeconomic and demographic stratum, and the records of the students selected for the study were requested saber andhe grado from toacademic achievement for each semester of higher level. With the information collected through the questionnaires applied to the students. the information was captured, processed and analyzed through andhe ptoquete andstatistical Statistical Package for the Social Sciences(SPSS) version 15.0, and to Yes fromend up the correlationships between the association variables.

### **General features**

Lhe Bachelor of Administration has been taught since 1995 at the UAEM Texcoco University Center, for the year 2013 it has a total of 369 students studying.

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And Figure 1 shows the distribution of the student population, representing 20.00% the 71 students of the 7th semester, 22.00% the 78 students of the 5th semester, 31.00% the 116 students of the 3rd semester and 27.00% the 104 students of 1st semester. In addition to the above, Table 2 presents the general distribution of men and women in the study population (7th, 5th and 3rd semesters) of LAM, highlighting that the female sex represents 64.39% of the population, placing the male sex with 35.60% in 2013.

Dates	Frecuencia	Porcentaje
Femenino	170.00	64.39
Masculino	94.00	35.60
Total	264.00	100.00

**Table 2** Distribution by gender within the degree program in Administration CU UAEM Texcoco, 2013

Based on the above, table 3 presents the total distribution by gender in each semester, showing that in the three semesters there is a constant majority of the female sex, it also shows that the total number of surveys applied to women were 110 and 36 applied to men.

Genero	Semestre	Alumnos	Encuestas
Femenino	7	48	32
Masculino	7	23	8
Femenino	5	50	31
Masculino	5	28	12
Femenino	3	72	47
Masculino	3	43	16
Total		264	146

**Table 3** Distribution by gender within the semesters of LAM and surveys conducted, 2013

Table 4 shows the respective percentage of the place of origin of the population studied, it was indicated that 41.07% of the students come from municipalities far from Texcoco and the remaining 58.90% come from the municipalities of Texcoco, Tepetlaoxtoc, Papalotla, Chiconcuac , Chicoloapan, Chiautla and Atenco.

Lugar	Frecuencia	Porcentaje
Distrito Federal	8.00	5.47
Municipios: Texcoco, Tepetlaoxtoc, Papalotla, Chiconcuac, Chicoloapan, Chiautla, Atenco.	86.00	58.90
Otro Municipio del Edo Mex.	50.00	34.24
Otro Estado de la Republica	2.00	1.36
Total	146.00	100.00

Table 4 Place of origin of LAM students, 2013

Table 4 shows the respective percentage of the place of origin of the population studied, indicating that 41.07% of the students come from municipalities far from Texcoco and 58.90%.

The rest comes from the municipalities of Texcoco, Tepetlaoxtoc, Papalotla, Chiconcuac, Chicoloapan, Chiautla and Atenco.

Table 5 shows that the general average of the Bachelor of Administration is 8.60, the averages per semester are 8.50, 8.50 and 8.70 for the 7th, 5th and 3rd semesters respectively and the average of the individuals surveyed is: 8.50 the mode in 7th semester students, 8.60 the mode in 5th semester students and 8.80 the mode in 3rd semester students.

The 7th semester GPA result is due to the fact that 82.00% of the semester is due to the fact that 82.00% of the surveyed population surveyed had an average between 7.90 and 8.90 and 8.90 while 18.00% have an average between 9.00 and 9.30, between 9.00 and 9.30.

In the case of the 5th semester, 62.00% of the surveyed population has an average between 7.90 and 8.90. of the surveyed population has an average between 7.40 and 8.90, which reflects that 38.00% of the remaining 38.00% of the remaining population has an average between 9.00 and 9.60.

In the case of the 3rd semester, the result of the survey showed that 46.00% of the population has an average between 7.50 and 8.90, while 54.00% of the population has an average between 9.00 and 9.70.

Datos	Promedio general	Promedio por semestre	Promedio general de individuos encuestados
Total de la Población	8.60		100000000000000000000000000000000000000
7mo semestre		8.50	8.50
5to semestre		8.50	8.60
3er semestre		8.70	8.80

**Table 5** Overall average LAM, average by semester and average by individual semester and average by individual respondents, 2013

# Social aspects of the students of the Bachelor of Administration

Among the most important social aspects of the students of the career in Administration include:

- Type of dwelling in which they live
- Essential housing services such as: drainage, water and electricity
- Possession of household appliances such as: refrigerator, stove, boiler, television, landline telephone and internet.

The type of housing of LAM students is presented in Table 6 where it was found that 78.08% of the students live in their own home, 9.58% rent the place where they live and 12.34% of the population is paying for their house, living at a borrowed house or in another situation.

Tipos	Frecuencia	Porcentaje
Propia	114.00	78.08
Rentada	14.00	9.58
Se está pagando	9.00	6.16
Está en otra situación	2.00	1.36
Prestada	7.00	4.79
Total	146.00	100.00

Table 6 Type of housing of LAM students, 2013

Basic household services are presented in Table 7, where 100.00% of the population is located as beneficiaries of electricity and water services and 98.64% as beneficiaries of drainage services. From the above, it should be noted that most of the the services available in the homes of LAM students are similar, since most are connected to the public network.

Servicio	Porcentaje de la población	Frecuencia
Con medidor	84.93	124.00
Sin medidor	15.06	22,00
Total luz	100.00	146.00
Red pública, entubada dentro de la casa	86,98	127.00
Red pública, fuera de la vivienda,		
dentro del terreno	8.90	13.00
Pipa	0.68	1.00
Pozo	3.42	5.00
Total agua	100.00	146.00
Conectado a la red publica	90.41	132.00
Conectado a fosa séptica	6.84	10.00
Conectado a barranca, rio, lago o		
equivalente	1.36	2.00
No poseen drenaje	1.36	2.00
Total drenaje	100.00	146.00

**Table 7** Services: electricity, water and sewage in the homes of LAM students, 2013

For the development of daily activities at home, the presence of devices that facilitate and speed up activities is necessary, for this reason in table 8 the possession of electrical appliances by LAM students is represented, highlighting that 5.4%, 3.42%, 28.76%, 1.36%, 32.87%, 34.93% of the population do not have a refrigerator, stove, boiler, television, fixed telephone and computer, respectively.

Aparato	Porcentaje	Frecuencia
Refrigerador	ne Re	100,585,00
Si	94.52	138.00
No	5.47	8.00
Total refrigerador	100.00	146.00
Estufa		
Si	96.57	141.00
No	3.42	5.00
Total estufa	100.00	146.00
Boiler		
Si	71.23	104.00
No	28.76	42.00
Total boiler	100.00	146.00
Televisión		
Si	98.63	144.00
No	1.36	2.00
Total televisión	100.00	146.00
Teléfono fijo		
Si	67.12	98.00
No	32.87	48.00
Total tel. fijo	100.00	146.00
Computadora		
Si	65.06	95.00
No	34.93	51.00
Total computadora	100.00	146.00

**Table 8** Ownership of household appliances students of LAM of LAM, 2013

### **Economic aspects of LAM students**

Among the most outstanding economic aspects of the students of the Administration career, the following were investigated:

- Family income level
- Contribution and occupation of the partner of the head of the family to the family income
- Someone else's contribution to family income
- Monthly expense for rent or house payment (as the case may be)
- Spending monthlytohe andn tofood and/ or pantry
- Monthly expense in fuel and/or transportation
- Monthly expense in tuition and supplies
- Monthly spending on recreation
- Ohfinancial aid from the government
- Weekly amount received by the student for school aspects
- Daily expenditure of the Home-School trajectory and viceversa
- Scholarships (number of scholarship students and type of scholarships)
- Employment situation of the student, contribution of this to the family expense or payment of tuition.

As a first point, the income range of the heads of families of the students surveyed was addressed, this can be seen in table 9, which indicated that 64.37% of the population receives between 1 and 3 minimum wages as total monthly family income., followed by 17.11% of the population that receives between 4 and 5 minimum wages and showing that only 18.40% exceed 6 monthly minimum wages.

Ingreso	Porcentaje	Frecuencia
Hasta \$ 1,942.00	5.47	8.00
De \$ 1,943.00 a \$ 3,885.00	32.19	47.00
De \$ 3,886.00 a \$ 5,828.00	26.71	39.00
De \$ 5,829.00 a \$ 7,770.00	12.32	18.00
De \$ 7,771.00 a \$ 9,713.00	4.79	7.00
De \$ 9,714.00 a \$ 11,656.00	9.58	14.00
De \$ 11,657.00 a \$ 13,598.00	3.42	5.00
De \$13,599.00 a \$ 15,541.00	4.10	6.00
Más de \$ 15,542.00	1.36	2.00
Total	100.00	146.00

**Table 9** Total monthly family income of LAM students, 2013

Regarding the partner of the head of the family in table 10, it was observed that 56.84% do not contribute to the monthly family income and the main occupation is "dedication to the home", it was also highlighted that 14.38% of the partners of the heads of family contribute with 1 minimum wage to the monthly family income, having in second place the occupation of trader.

Lastly, 11.64% contribute 1 or 2 minimum wages to the monthly family income, with the occupation of teacher occupying third place.

Concepto	Porcentaje	Frecuencia
Ingreso mensual de la pareja jefe d	le familia	1915-500
No tiene ingresos	56.84	83.00
Hasta \$ 1,942.00	14.38	21.00
De \$ 1,943.00 a \$ 3,885.00	11.64	17.00
De \$ 3,886.00 a \$ 5,828.00	6.84	10.00
De \$ 5,829.00 a \$ 7,770.00	2.05	3.00
De \$ 7,771.00 a \$ 9,713.00	2.73	4.00
De \$ 9,714.00 a \$ 11,656.00	2.73	4.00
De \$ 11,657.00 a \$ 13,598.00	2.05	3.00
De \$13,599.00 a \$ 15,541.00	0.68	1.00
Más de \$ 15,542.00	0.00	0.00
Total	100.00	146.00
Ocupación de la pareja del jefe de	familia	
Profesor	6.16	9.00
Comerciante, vendedor	17.80	26.00
Oficinista	5.01	6.00
Artesano u obrero	4.13	7.00
Trabajador (a) domestica	5.47	8.00
Trabajador agropecuario	0.68	1.00
Pensionado, jubilado	4.11	6.00
No trabaja, se dedica a hogar	56.84	83.00
Total	100.00	146.06

**Table 10** Contribution to family income and occupation of the head of household's partner partner of the head of household of LAM students, 2013

Within the family context in the box 11 it was highlighted that 9.58% of the population answered affirmatively to the existence of an extra income to the monthly family expense and it is pointed out that the highest percentage that is perceived as extra is that of 1 minimum wage. It also shows that 90.41% of the population indicated that no one else contributes to the family's monthly income.

Contribución	Porcentaje	Frecuencia
Si	9.58	14.00
No	90.41	132.00
Total	100.00	146.00
Monto		
Nadie más contribuye	89.72	131.00
Hasta \$ 1,942.00	5.47	8.00
De \$ 1,943.00 a \$ 3,885.00	2.73	4.00
De \$ 3,886.00 a \$ 5,828.00	1.36	2.00
De \$ 5,829.00 a \$ 7,770.00	0.68	1.00
Total	100.00	146.00

**Table 11** Extra contribution to total monthly family income family income of LAM students, 2013

Its Monthly family expenses for rent or house payment, food, school fees, transportation and recreation are represented in Table 12, combining the most relevant data, for example, 17.10% of the population spends between 1 and 3 minimum wages on rent or payment of house, now the expenditure on food monthly is from 1 to 2 minimum wages according to 64.37% of the population, in the same way 86.29% of the families of the respondents spend from 1 to 2 minimum wages on school fees and supplies, now in the case of fuel and transportation, 91.77% of the population spends 1 to 2 minimum wages on it and finally the survey showed that 41.78% of the families of the students spend 1 minimum wage on recreation monthly.

Gastos	Porcentaje	Frecuencia
Gasto en renta o pago de casa		
Hasta \$ 1,942.00	6.16	9.00
De \$ 1,943.00 a \$ 3,885.00	9.58	14.00
De \$ 3,886.00 a \$ 5,828.00	1.36	2.00
No pagan renta	82.87	121.00
Total	100.00	146.00
Gasto en alimentos		
Hasta \$ 1,942.00	38.35	56.00
De \$ 1,943.00 a \$ 3,885.00	26.02	38.00
De \$ 3,886.00 a \$ 5,828.00	21.91	32.00
De \$ 5,829.00 a \$ 7,770.00	4.79	7.00
De \$ 7,771.00 a \$ 9,713.00	6.16	9.00
De \$ 9,714.00 a \$ 11,656.00	1.36	2.00
De \$ 11,657.00 a \$ 13,598.00	1.36	2.00
Total	100.00	146.00
Gastos en útiles y colegiaturas	100.00	140.00
Hasta \$ 1.942.00	65.75	96.00
De \$ 1,943.00 a \$ 3,885.00	20.54	30.00
De \$ 3,886.00 a \$ 5,828.00	4.10	6.00
De \$ 5,829.00 a \$ 7,770.00	4.10	
De \$ 7,771.00 a \$ 9,713.00	2.73	4.00
De \$ 9,714.00 a \$ 11,656.00	1.36	2.00
De \$ 11.657.00 a \$ 13.598.00	1.36	2.00
Total	100.00	146.00
Gastos en combustible y transporte		120000000
Hasta \$ 1.942.00	71.91	105.00
De \$ 1,943.00 a \$ 3,885.00	19.86	29.00
De \$ 3,886.00 a \$ 5,828.00	5.47	8.00
De \$ 5,829.00 a \$ 7,770.00	1.36	2.00
De \$ 7,771.00 a \$ 9,713.00	0.68	1.00
De \$ 9,714.00 a \$ 11,656.00	0.68	1.00
Total	100.00	146.00
Gastos en recreación (cine, comidas, mus	eos, etc.)	
SO SO	47.94	70.00
Hasta \$ 1,942.00	41.78	61,00
De \$ 1,943.00 a \$ 3,885.00	5.47	8.00
De \$ 3,886.00 a \$ 5,828.00	2.05	3.00
De \$ 5,829.00 a \$ 7,770.00	0.68	1.00
De \$ 7,771.00 a \$ 9,713.00	1.36	2.00
De \$ 9,714.00 a \$ 11,656.00	0.68	1,00
Total	100.00	146.00

**Table 12** Monthly expenses made by LAM students in: rent or house payment, food, school fees, transportation and recreation, 2013

Regarding economic aid from the Government, table 13 shows that only 8.21% of the students surveyed answered stating that they receive government aid, while 91.78% of the remaining students denied being financially supported by the government.

Reciben ayuda por parte del gobierno	Porcentaje	Frecuencia
Si	8.21	12.00
No	91.78	134.00
Total	100.00	146.00

**Table 13** Financial aid to LAM students from the government, 2013 by the government, 2013

Table 14 shows the level of income received by students per week for school activities school activities, showing that 40.40% of the of the population is given a weekly amount of between \$100 and \$200 for school between \$100 and \$200 per week for school expenses including transportation, following this range are the students who receive between \$300 and \$500, representing 45.19% of the population from \$300 to \$500, representing 45.19% of the population.

ISSN-On line: 2524-2067 RINOE® All rights reserved. In addition, 62.31% of the students spend an average of \$1 to students spend an average of \$1 to \$40 on their home-school and vice-versa daily, placing 36.97% of the population in a range of daily population in a daily spending range of between \$41 and \$149, showing that between \$41 and \$149, showing that only 0.68% of the population spends more than \$150 of the population exceeds \$150 in daily spending.

Cantidad	Porcentaje	Frecuencia
Monto semanal	10201938	640490
\$100	8.90	13.00
\$200	31.50	46.00
\$300	28.76	42.00
\$500	16.43	24.00
Otra Cantidad	14.38	21.00
Total	100.00	146.00
Gasto diario		
Menos de \$20	10.95	16.00
\$21-\$40	51.36	75.00
\$41 - \$70	32.87	48.00
\$71 - \$100	3.42	5.00
\$101 - \$149	0.68	1.00
Más de \$150	0.68	1.00
Total	100.00	146.00

**Table 14** Weekly amount and daily expenditure of LAM students of LAM, 2013

Within the UAEM there are scholarships that are granted to enrolled students according to their situation, average and needs, as well as talks that inform the student of the different scholarships that are granted by the government, in table 15 it is presented the index of possession of scholarships and the most outstanding type of them, showing that 26.02% of the surveyed population does not have any type of scholarship, leaving 73.97% of the remaining population as scholarship holders, of this percentage the type of The most significant scholarship that students have is the institutional scholarship granted by the UAEM in its different modalities (economic, schooling, transportation, single mothers, etc.) representing 43.83%, in second place is the PRONABES government scholarship representing The 26.02% and in last place the scholarships granted by the Federal government represented 4.10%.

Becas	Porcentaje	Frecuencia
Alumnos becados	73.97	108.00
Alumnos no becados	26.02	38.00
Total	100.00	146.00
Tipo de becas		
Institucional	43.83	64.00
Gobiemo (PRONABES)	26.02	38.00
Gobierno (Federal)	4.10	6.00
No tengo ninguna	26.02	38.00
Total	100.00	146.00

**Table 15** Scholarships in LAM students (number and type), 2013

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Table 16 shows the employment situation of the students, placing 25.34% within the employment and student profile, leaving 74.65% of the surveyed population as individuals who dedicate themselves to study and therefore do not obtain their own income to pay their tuition., on the other hand, 14.38% of working students contribute to family spending, while the remaining 10.95% of working students pay tuition from their salary.

Trabaja	Porcentaje	Frecuencia
Si	25.34	37.00
No	74.65	109.00
Total	100.00	146.00
Contribución al gasto familiar		
Si, contribuye al gasto familiar	14.38	21.00
No, gasta el salario en sus necesidades	10.95	16.00
No percibe ingresos	74.65	109.00
Total	100.00	146.00
Pago de colegiatura		
Si paga su colegiatura	15.75	23.00
No paga su colegiatura	9.58	14.00
No paga porque no tiene ingresos	74.65	109.00
Total	100.00	146.00

Table 16 Employment status of LAM students, 2013

### **Demographics of LAM students**

With respect to the demographics of the population of the Bachelor of Administration, the most relevant aspects to be discussed are:

- Origin
- Indigenous communities
- Travel time Home-School
- Kilometers traveled
- Car accidents on the home-school homeschool commute
- Assaults and/or insecurity on the homeschool route and viceversa home-school and vice versa
- Transportation used to go to school school

Regarding the origin of the surveyed population, Figure 2 shows that 59.00% of the students come from the municipalities near the Autonomous University of the State of Mexico, followed by 34.00% who come from another municipality in the State of Mexico, leaving 6.00% as coming from the Federal District and finally 1.00% representing students who come from other states of the republic. Regarding the origin of students from indigenous communities, table 17 indicates that 21.23% of them answered affirmatively, indicating that they are members of an indigenous community.

This places 78.76% of the remaining population that answered negatively outside the population that answered in the negative outside indigenous communities.

Alumno procedente de comunidad indigena	Porcentaje	Frecuencia
Si	21.23	31.00
No	78.76	115.00
Total	100.00	146.00

**Table 17** LAM students from indigenous communities, 2013

Table 18 measured the journey that the students made in time and kilometers to go to school. The above indicated that 55.47% of the students take between 30 minutes and 1 hour to get to school and 21.91% take up to 2 hours to get there, in addition to the above, it was noted that 69.17% of the population travels from 5 to 19 kilometers from his home to CU UAEM Texcoco. It was also mentioned that 30.82% of the remaining population travels more than 20 kilometers, taking between 1:30 and 2:00 hours.

Tiempo (Horas)	Porcentaje	Frecuencia
Menos de 0.5	22.60	33.00
0.5 - 1	55.47	81.00
1.5 - 2	21.91	32.00
Total	100.00	146.00
Kilómetros		
5 o menos	26.71	39.00
De 10 a 19	42.46	62.00
Más de 20	30.82	45.00
Total	100.00	146.00

**Table 18** Time and kilometers traveled in the commute LAM students' home-school, 2013

In addition to the daily commute of the students, situations such as accidents, assaults or insecurity occur within the students' journey, which is why Table 19 shows that 81.43% of the students have encountered or witnessed a car accident on their journey. from home to school and that 42.44% of the students surveyed have been victims of an assault and/or insecurity during the same journey.

Situación	Porcentaje	Frecuencia
Accidentes	- 8	
Todos los días	1.36	2.00
1 vez a la semana	26.02	38.00
3 veces al mes	28.08	41.00
2 veces al año	27.39	40.00
Nunca	17.12	25.00
Total	100.00	146.00
Asalto y/o inseguridad		
2 veces	33.56	49.00
4 veces	5.47	8.00
6 veces	2.73	4.00
Más de 10 veces	0.68	1.00
Nunca	57.53	84.00
Total	100.00	146.00

**Table 19** Accidents, assaults and/or insecurity during the home-to-school Home-School commute of LAM students, 2013

As a last point, the type of transport by which the students go to the university center was investigated, considering public transport, their own car, motorcycle and on foot as possible options, indicating in table 20 that 94.52% of the population travels from their home to school by public transport, leaving in second place 3.42% of the students who travel by their own car, followed by 1.36% of the students who travel on foot to the CU UAEM Texcoco, placing 0.68% of the remaining population as motorcyclists.

Medio	Porcentaje	Frecuencia
Transporte publico	94.52	138.00
Carro propio	3.42	5.00
Moto	0.68	1.00
Caminando	1.36	2.00
Total	100.00	146.00

Table 20 Means of transportation of LAM students, 2013

### **Mcorrelation matrix**

For the present study, the following correlations were taken into account:

- Correrelationship between income and average theto LAM students from CU Texcoco
- Correlation of the distance of the home-school journey and vice versa, the time it takes for students to get to school, and the cost of the daily home-school trip of the LAM students of the CU UAEM Texcoco.

Table 21 shows that there is a negative correlation of -0.16 between income and the average and that this correlation has a significance of 4.00%, which indicated that while income increases a range in salary, the average decreases 0.16 tenths.

Dato	Correlación	Ingreso	Promedio
	Correlación de		
Ingreso	Pearson	1.00	-0.16
	Sig. (bilateral)		0.04
	N	146.00	146.00
	Correlación de		
Promedio	Pearson	-0.16	1.00
	Sig. (bilateral)	0.04	
	N	146.00	146.00

**Table 21** Correlation of the income and average of the LAM students, 2013

Table 22 shows that the correlation between the distance of the home-school route and the student's average is negative and they are not directly related since it has a significance of 6.90% and therefore it is not decisive for a good academic achievement.

Dato	Correlación	Promedio	Distancia (km)
int. each	Correlación de	5276	J1000615
Promedio	Pearson	1.00	-0.03
	Sig. (bilateral)		0.69
	N	146.00	146.00
	Correlación de		
Distancia (km)	Pearson	-0.03	1.00
1 10 10 10 10 10 10 10 10 10 10 10 10 10	Sig. (bilateral)	0.69	
	N	146.00	146.00

**Table 22** Correlation between the distance of the homeschool and the average number of LAM students, 2013

Table 23 indicates that the correlation between the average and the cost of the homeschool journey of the LAM students of the CU UAEM Texcoco is not decisive for good academic achievement since it represents 9.80% significance.

Date	Correlación	Promedio	Costo del trayecto hogar-escuela
La se	Correlación de	2.2556	
Promedio	Pearson	1.00	0.00
	Sig. (bilateral)		0.98
	N	146.00	146.00
Costo del			
trayecto hogar-	Correlación de		
escuela	Pearson	0.00	1.00
	Sig. (bilateral)	0.98	
	N	146.00	146.00

**Table 23** Correlation between the average and the cost of the home-to-school home-school journey of LAM students, 2013

Table 24 shows that the correlation between the time it takes for students to get to school and the average is not decisive for good academic achievement, since it has a significance of 6.60%.

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Dato	Correlación	Promedio	Tiempo que tarda el alumno en llegar a la escuela
	Correlación de	20.35513	20040.0
Promedio	Pearson	1.00	0.03
	Sig. (bilateral)		0.66
	N	146.00	146.00
Tiempo que tarda el alumno en llegar a la	Correlación de Pearson		
escuela		0.03	1.00
	Sig. (bilateral)	0.66	
	N	146.00	146.00

**Table 24** Correlation between the time it takes a student to get to school and his or her GPA, 2013.

### **Conclusions**

The following is concluded from this investigation:

- 1. Thes socioeconomic and demographic conditions do not determine the academic achievement of the students of the degree in Administration of the CU UAEM Texcoco.
- 2. Among the surveyed population there is a similar family expenditure, represented by 64.37% of the population that receives between 1 and 3 monthly minimum wages.
- 3. That 45.19% of the students received a weekly amount for school expenses of \$300 to \$500, followed by 40.40% allocated between \$100 and \$200 and the remaining 14.38% allocated an amount greater than \$500, in addition to this it was discovered that 73.97% of the student population receives some type of scholarship to support educational expenses.
- 4. The correlation between the variables of higher income and academic achievement are negative and have a significance of 4.00%, therefore, the higher the income, the average decreases.
- 5. The correlation between the variables of distance, time, cost and academic achievement was not decisive for a good academic result since 6.90%, 6.60% and 9.80% of significance were obtained, respectively.

6. Therefore, the hypothesis that academic achievement is the product of csocioeconomic and demographic conditions of LAM students from CU UAEM Texcoco is rejected.

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Stay through the Mexico - Shanghai student mobility project at Universidad Tecnológica Fidel Velázquez

Estadía a través del proyecto de movilidad estudiantil México – Shanghái en la Universidad Tecnológica Fidel Velázquez

VARGAS-GUTIERREZ, Luis Daniel\*†, HERNANDEZ-CRUZ, Maria Guadalupe, RAMOS-CERDA, Carlos Jair and BLAS-GARCIA, Patricia

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### **Abstract**

# The aim of this paper is to show the protocol used by the UTFV operation for the selection of students who were part of the proposed student mobility Mexico - Shanghai for their internship process. This consisted on the creation of a multidisciplinary committee to determine a profile of desirable competencies in students, from follow-up to the culmination of their internship program. Students were selected by transnational corporations as WTA, Cityhomesh and Trepantech, in which they developed projects oriented to digital marketing implementation and establishment of trade relationships Asia - Latin America

# Internships, Students exchange, Professional competence

### Resumen

El objetivo de este trabajo es mostrar el protocolo de operación usado por la UTFV, para la selección de alumnos que formaron parte del proyecto de movilidad estudiantil México - Shanghai para la realización de la estadia. Este proceso consistio desde la conformación de un comité multidisciplinario para la determinación de un perfil de competencias profesionales deseable en los alumnos, hasta el seguimiento y terminación de la estadia. Los alumnos que fueron seleccionados se integraron a empresas transnacionales com WTA, Cityhomesh Trepantech, donde desarrollaron proyectos dirigidos a la implementación de digital marketing y establecimiento de relaciones comerciales Asia -America Latina

Estadia, Movilidad estudiantil, Competencias profesionales

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### Introduction

Since the emergence of the Technological Universities in the nineties, their objective has been to train professionals who respond to the needs of human capital required by Mexican industry, In order to reach this goal, the study plan contemplates the realization of a cycle of internships, which is the process that includes activities in the sixth and eleventh semesters of the study plans of Higher Technical University (TSU) and Engineering respectively, in which the student will stay in a company or in a public or private organization, under the supervision of one of its members and with the advice of the UTFV.

During this period, students develop a technological research project that translates into a contribution by the student to the public or private organization where he/she is inserted, and its purpose is that the student puts into practice the theoretical and practical knowledge acquired during the first five semesters of TSU and the ten semesters of the engineering plan (Gaceta UTFV Year X, No. 16, 2005), so that upon completion, he/she is qualified for the successful exercise of his/her profession.

The personnel of the public or private organization that assumes the tutelage of the student is called industrial advisor, whose function is to tutor and evaluate the student's performance in situ, as well as the project so that the student can apply and obtain knowledge, discipline, personal presentation, initiative and interpersonal relations. His function is closely linked to that of the academic advisor who is a full time professor of the university and whose efforts will be directed to evaluate the progress of the project by reviewing objectives, strategies, actions and proposed goals. The internship is an obligatory process and a requirement to obtain the degree of Técnico Superior Universitario and later the degree of Engineering.

The need to innovate in the internship cycle derives from the notorious changes in the economic and socio-cultural panorama of the country, but also to the institutional strengthening of the UTFV, which after twenty years of existence, has achieved that the academic development directs the efforts and goals that favor the achievement of professional competencies in the students.

This international mobility project had precedents, such as the regional and national mobility internships. In the globalized world, knowledge has become a constitutive factor of any organization and, of course, of the production of scientific knowledge that has to be translated into technological improvements in all fields; highly qualified human resources, according to Reich (1993) are a very valuable part in the construction of competitive and dynamic advantages and the basis for this is undergraduate and graduate university education.

Currently, one way to achieve this is to combine academic training with student mobility, a concept that according to Pablo and Pittelli (2009) essentially refers to a process designed to facilitate the stay of students in other institutions of higher education in Mexico and abroad in order to cover a certain number of credits, either by taking individual subjects, a full semester or to carry out professional or laboratory internships, or even to participate in research projects; It is in this last category where the internship can be categorized since the academic guide is provided by UTFV, while the host organization provides a natural scenario where the student must put into practice their professional skills, from the diagnosis or understanding of the problem, intervention design, implementation and evaluation of the results.

The UTFV students' stay in Shanghai, China, was part of a project sponsored by ANUIES, whose objective was to promote international mobility during the stay, since it was an invaluable experience for the student in terms of professional development, application of the knowledge obtained during their university education in a cultural and technological context completely different from that which exists in Mexico, and collaterally would allow the evaluation of the professional competencies of a UTFV graduate.

- The professional and socio-cultural competencies that the student has, have allowed him/her to reach the category of autonomous in learning.
- The student has the theoretical and practical knowledge necessary to carry out the technical activities of his or her field of training,

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- The student has an intermediate level B1 or higher in the English language.
- Their personality profile, social and emotional skills will allow them to adapt to the cultural conditions and professional demands required.

In order to develop this process, a In order to develop this process, a protocol was created for the selection of students to be incorporated into this project, multinational companies based in Shanghai, China were contacted, and academic follow-up during this cycle. In itself, it constituted a challenge of innovation for the processes usually used for the assignment and follow-up of internships.

### Methodology to be developed

The protocol used for the project:

Creation of the multidisciplinary committee of the Universidad Tecnológica Fidel Velázquez for the Mexico - Shanghai Student Mobility project.

This stage consisted of convening a group of professionals in different disciplines, mostly managers, professors or administrative staff of the UTFV, who by their professional training or experience in the processes and procedures related to the cycle of stay that provided the necessary standards and professional skills with which a student should have to be selected for this project, derived from the work of this committee it was determined that:

### Planning phase of the selection process

In this phase, the UTFV's multidisciplinary committee conducted a detailed analysis of the activities that students carry out on a daily basis during their stay and those that, due to the nature of the project, should be considered, resulting in standards on which the selection of students should be based:

In the academic competencies, the student had to be a regular student with a general average of excellence of at least 9.5 and that professors of the area in which he/she was trained, after an evaluation, endorsed his/her autonomy in the professional competencies of the TSU or Engineering level.

English language proficiency at intermediate level B1 or higher, as determined by the TOIC exam, as well as proof of communication skills through interviews conducted by the language department.

In the sociocultural competencies, a desirable personality profile was proposed in which the student would socialize with ease and with high levels of adaptability, but would be considerate of institutional and social rules and norms; proactive, proactive, as well as logical judgment and analytical skills.

### **Selection Phase (Evaluation)**

This phase included from the publication of the call for applications and registration of applicants, to the determination of the preselected candidates. The first evaluation filter was the English language proficiency test, followed by the academic and psychological concluded evaluation. which with preparation of the applicants' files and their purging based on the standards determined by the Multidisciplinary Committee, where 30 applicants were selected 30 applicants were selected and after a thorough evaluation of their academic competencies, 12 applicants were preselected to move on to the next phase.

### **Selection Phase (Preparatory)**

This phase consisted of preparing them integrally for the successful development of their stay abroad, including a series of activities, such as a workshop on "Identidad mexiquense" to strengthen their global knowledge about the geographical entity where they live; personal coaching workshop that included training in skills, self-esteem and emotional management strategies; and technical English classes and conversational practice. After these preparation activities. the candidates had a video conference interview with representatives of the companies WTA, Cityhomesh and Trepantech, this was the last selection filter.

Meetings were organized with the professor who acted as academic advisor to generate the analysis of possible industrial scenarios and develop a strategic work agenda during their stay in Shanghai.

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### Cycle of stay

It lasted 12 weeks between the months of June and August 2014, being inserted in the following companies: WTA, Cityhomesh and Trepantech, where they developed projects aimed at establishing trade relations between Asia and Latin America and the implementation of digital marketing (Annex 1), which is described in detail in the reports of the stay, which although not an institutional requirement, are written in Spanish and English.

### Results

Continuous evaluation of the students, video conference sessions were held between the industrial and academic advisor and the student to guide their project. They received one psychological coaching session per week and permanent counseling on technical English through video conference.

### **Thanks**

To the UTFV employees, directors, teachers and administrative staff, whose joint work was fundamental for the development and successful conclusion of the project.

To ANUIES for funding the project, always seeking excellence in higher education.

### **Conclusions**

The project was considered highly successful, since institutionally it added the work and talent of UTFV personnel for the design and evaluation of the effectiveness of a protocol for the selection of students that can be used for subsequent projects. In the professional development of the students who were in the engineering cycle, it showed effectiveness since they are currently working for transnational companies such as FedEx and Chanel; those who were in the TSU cycle have developed related projects inside and outside this house of studies.

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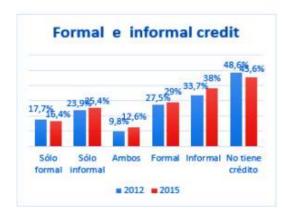
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