# Competencias académicas de los egresados universitarios y su predicción de ocupación laboral

## *College graduates' academic skills and their occupational employment projection*

## *Habilidades acadêmicas de universitários e sua previsão de ocupação*

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## Resumen

El objetivo del presente estudio es identificar la frecuencia, jerarquía y relación entre las competencias académicas requeridas por los empleadores para poder predecir la empleabilidad de los egresados.

Para ello se utilizó un diseño no experimental, de corte transversal, en campo, evaluación por encuesta y con estadística de tipo descriptiva e inferencial, en una población de 12 718 egresados y una muestra de 1 125 egresados con información personal y laboral completa y actualizada, provenientes de veintiún facultades y diecisiete empresas registradas en la zona metropolitana. Asimismo se utilizó material y cuestionarios para egresados y para empleadores.

El análisis algorítmico muestra que los empresarios requieren empleados con competencias sobre conocimientos y desarrollo personal, mientras que los egresados consideran solo las competencias de conocimiento teórico y práctico. Se llevó a cabo un análisis de correlación para conocer la posibilidad de que sean contratados los egresados de Medicina, Química, Ingeniería, Ciencias Administrativas y Odontología.

Palabras clave: competencias académicas, contratación de egresados, ocupación laboral.

## Abstract

The objective of the present study is identify the frequency, hierarchy and relationship between the academic skills required by the employer to be able to predict the graduates employability.

This was a non-experimental design, cross-sectional, on-site, assessment by survey and with statistics of type descriptive and inferential, in a population of 12 718 graduates and a sample of 1 125 graduates with work and personal information complete and up-to-date, coming of twenty-one faculties and seventeen companies registered in the Metropolitan area. We also used material and questionnaires for graduates and employers.

The algorithmic analysis shows that those entrepreneurs require employees with skills on knowledge and personal development, while those graduates considered only the skills of theoretical and practical knowledge. A correlation analysis was conducted to know the possibility that are hired graduates of Medicine, Chemistry, Engineering, Administrative Sciences and Dentistry.

Key Words: academic skills, hiring of graduates, occupational employment.

## Resumo

O objetivo deste estudo é identificar a frequência, a hierarquia eo relacionamento entre as competências académicas exigidas pelos empregadores para prever a empregabilidade dos diplomados.

Isto requer um desenho não-experimental, cross-section, em pesquisa de avaliação de campo e tipo descritiva e inferencial estatística foi utilizado em uma população de 12,718 graduados e uma amostra de 1125 formandos com informações pessoais e profissionais completo e atualizado , de vinte faculdades e dezessete anos nas empresas região metropolitana registados. foi também utilizado materiais e questionários para os graduados e empregadores.

A análise algorítmica mostra que os empregadores exigem que os empregados com conhecimentos e habilidades para o desenvolvimento pessoal, enquanto que os licenciados considerar apenas as habilidades de conhecimento teórico e prático. É realizada uma análise de correlação para determinar a possibilidade de ser graduados contratados de Medicina, Química, Engenharia, Ciências Administrativas e Odontologia.

Palavras-chave: competições acadêmicas, a contratação de graduados ocupação.

**Fecha recepción:** Diciembre 2015 **Fecha aceptación:** Julio 2016

## Introduction

The slowdown of the levels of growth of the economy world has State affecting the rhythm of productivity and the creation of new jobs for the economically active population, causing to people wishing to insert within the labour market do not find work, mainly universities graduates. The higher Open Unemployment Rate (TDA) is made up of young professionals who do not reach 30 years of age, indicating a serious problem of efficiency in the placement of newly graduates in the workplace (ENOE, 2015).

According to data of the second quarter of the 2015 of the National Survey of Occupation and Employment (ENOE), the number of professionals employed in the country is 7.6 million people, figure that represents so only to the 15.1% of the population occupied.

Facing this labour conflict, the institutions of higher education ask: what factors should improve so their graduates meet with the demands of the labor market? and what professional areas requires the labour market in the medium and long term? (Valenti and Varela, 2004).

This can be a conflict macro that affects all institutions of higher education, here we analyze on real basis to what happens to their graduates regarding obtaining employment.

Delimit the factors that are affecting the entry and the permanence labor of those graduates is difficult since such factors socio-economic, educational, contextual and personal, among others, constitute an intricate multifactorial network. For this reason shown below some are factors with more extensive reference documentation.

### Socio-economic factors

The labor market of the professionist in Mexico, object of study, began to suffer some modifications in the mid-1970s, and then it affected significantly the population behavior during the nineties. These changes are based on: 1) the school-age population growth and 2) the 1.8% growth

by year in the productive age population (INEGI, 2014). The scarcity of employment (estimated at 17.6% per year) was for professionals (INEGI 2010, Migration).

The labor market has been modified mainly by: a) reducing the dynamism of the population in age to receive education, and b) the increased growth of the economically active population (EAP).

Regarding the increase in the PEA, in 2013 they increased participation rates of the population aged 15 years and over, especially due to the increase in female participation rates. Unemployment recorded a decrease in the month of January 2016, with a rate of 4.2% of the PEA, and in the same month of 2015 reached a rate of 4.5%, so now registers the lowest rate since the crisis 2009 (INEGI 2016 demography and population indicators).

"This resulted in little more than one million new entrants each year into the labor market of the country, of which a fraction (approximately one out of four) are professionals, ie, those who graduate from universities and educational institutions upper country "(Hernandez, 2012, p.100).

Educational factors

Continue with indices of educational quality, ie parameters that frequently use various educational institutions to raise competitiveness. One of the indicators for measuring educational quality is regularly evaluate the performance of its graduates in the labor market, which allows us to observe the impact of this institution in the economically active society (Valenti and Varela, 2004).

Another educational aspect is the increase in the number of graduates. According to information from SEP-ANUIES, the number of graduates of higher level in Mexico increased from 268,000 in 2000 to over 305,000 in 2015. Therefore, college-age young people who accessed the system higher education increased from 20 to 38.8%, focusing on public institutions and higher average level. In graduate school, private institutions of higher education (IES) advanced from 16.7 to 47.7%, so the number of its graduates and graduate students grew from 80,279 to 203,375, thus ranking the private education institutions increasingly the education market (ANUIES, 2015).

We should also mention the increased participation of women, who in 2010 was 219,359 graduates, which amounted to 303,191 graduates in 2015 (ANUIES, 2015).

However, we can say that the number of graduates grew 3.1% annually while the Mexican economy by 2.3% in 2015, thus offering graduates faced a labor market able to offer some job opportunities.

Personal factors

Personal factors also affect income and job retention of graduates, such as: "high levels of stress, perceived poor social support as well as impairment of communication skills and assertiveness" (Roman, 2007, p 6). ; on the other hand, we have "satisfaction with the teaching received," which is closely related to the acquisition of highly applicable skills in the labor market (Fernandez, Alvarez and Martinez, 2007, pp 212-213.); as well as the teaching-learning adjusted to the program to encourage the development of specific and transversal competences that adhere to reality, in order to motivate students and make them improve their performance after learning they will be able apply their knowledge in their future careers (Cano, 2008, pp. 14-15).

Contextual factors

4) Continuing with the above, the growth of professionals has been 6.1% annual accentuating more in females than in males and remembering that our economy grew 2.3% in 2015 (INEGI, 2015). The above indices show that growth exceeds labor supply.

It is also important to note how the professionals are positioned in the labor market according to their income and areas of knowledge. This item shows that engineering and technology are reaching higher incomes and greater growth in the number of graduates (ENOE, 2015).

The future employment is closely linked to the study area. The areas with the highest number of employed are: Economic and Administrative, Engineering and Education. These three areas together reach nearly 5 million employed professionals. However, the research covers two areas: Social Sciences and Health Sciences, totaling nearly 7 million busy professionals.

information obtained from the Questionnaire for graduates (interns or graduates) belonging to a state university and Questionnaire employers belonging to the same economically active area, in order to know the level of integration in the labor market is analyzed. Both questionnaires measure academic skills that are closely linked to economic, educational, personal and contextual factors.

Investigation questions

The percentage of income in the labor market is proportional to the significant relationships between items of academic skills evaluated by questionnaires for graduates and employers?

## METHODOLOGY

OBJECTIVES

The overall objective of this research is to identify the frequency, hierarchy and relationship between academic skills required by employers to predict the employability of graduates from a state university.

Specific objectives:

1. Know the frequency and the hierarchy of academic competitions to determine the representative of each of the academic areas to investigate characteristics.
2. Know the statistically significant relationships between the two databases to find out the requirements of employability measured through three levels (instrumental, interpersonal and systemic) skills that impact on employment.
3. Establish statistical predictions according to the incidences of significant relationships between the Alumni Questionnaire (interns or graduates) Questionnaire for Employers.
4. Make proposals for improvement plans, programs and / or educational policies that benefit the population of graduates for entry and support in the job market.

The design used is not experimental, transversal, field format descriptive and analytical survey to 21 graduates of university faculties and 17 companies. The population is 12,718 graduates registered in the platform Alumni- University graduates from the generation of 2011. And the sample of 1125 graduates, who have their full personal and work-date information recorded within the platform Alumni- universities and 17 companies in the metropolitan area.

Material:

Graduates Questionnaire (interns or graduates) and Questionnaire for Employers (Gonzalez and Suarez. 2016).

Data sheet:

The questionnaires were based on the Tuning project, considering the development in competitions. Educational efforts focus on the individual learner, who is committed to the level of learning and its continuity as it must continually adapt to their environment. This evokes the

need for quality and increase access to employment of responsible citizenship (González and Wagenaar, 2006).

Are measured: academic competitions divided into a) instrumental skills that assess skills cognitive and methodological skills as technological and language skills, b) interpersonal skills that assess skills of criticism and self-criticism as social and ethical skills, c) Systemic competences, They are the union of the previous two, measuring the updating and permanent adaptation (González and Wagenaar, 2006).

The questionnaire was piloted in 516 graduates and 24 companies in the industrial area of Lerma, State of Mexico. It presents employment data and a Likert scale for 15 reagents in order to know their opinion as to the level of importance: a) Very important b) Important, c) Regular, d) Unimportant, e) Not important (González and Suarez, 2016).

Adaptation, validation and standardization of Questionnaires for Graduates contains 11 items of educational and employment context and Employer Questionnaires contains 5 items of work context. Both questionnaires have 5 Instrumental Competitions 5 5 Skills and Interpersonal Skills Systemic. Concurrent validity of items in the questionnaire was 89 Alumni 92%, while the questionnaire was 81.66 % Employers (González y Suárez, 2016).

**PROCESS**

1. Development signed a letter of responsibility that expose the confidential use of the data issued by the questionnaires.
2. Preparation of the samples through the selection of alumni who have their complete data and updated until July 2015.
3. Obtain descriptive statistics of the Questionnaire for interns or graduates and employers Questionnaire.

Considerations for implementing the questionnaires

Before applying the following aspects were considered:

a) The relationship between explanatory variables in the conceptual model employability assessment (and permanence).

b) The ratio of the explanatory variables with dependent variable should be linear, ie, proportional.

c) Identification of the metric of each of the variables of the questionnaires (graduates and employers) regarding: nominal variables, dichotomous and continuous to implement the corresponding correlation analysis: biserial Point and Pearson.

d) Application of factor analysis in questions to determine if the scales are unidimensional instruments (Herrera, Garcia and Perez Monroy, 2010, pp. 52-68) so you can exclude questions had factor loadings because the model did not fit conceptual underpinning the scale.

4. Preparation of the samples through the selection of alumni and employers with complete and updated data until July 2015.

Statistical procedure

1. Survey data in the statistical program SPSS-17.

a) Application of descriptive statistical analyzes to determine the characteristics of the sample.

b) Application of Cluster Analysis for sorting into homogeneous groups, using Method nonhierarchical seeking density Typographical approaches through a Modal Analysis Wishart (algorithms) and determine the performance characteristics of each of the university faculties (Pérez, 2007).

1. Application of inferential statistical analysis in:

c) Pearson correlation test ($r^2 \geq 0.75$) to meet the significant correlations between variables Questionnaire interns or graduates and employers Questionnaire variables.

## RESULTS

Application of descriptive statistical analysis

Frequency characteristics of graduates surveyed: 57.7% is entitled and earned his degree in the first three years after their graduation, while 67.02% 46.31% unemployed and working in their field of study (see Table I).

**Table I.** Sample characteristics of graduates

| Variable socio-laborables | n=1 125 Estudiantes | | | |
|---|---|---|---|---|
| **Variables** | Total | Pasantes | Titulados | |
| Condición académica | 1125 | 475 | 650 | |
| | | un mes a un año | un año a tres años | tres años a cinco años |
| Tiempo de obtención de título | 650 | 101 | 395 | 154 |
| Actualmente tiene empleo | 754 | 167 | 306 | 281 |
| Tiempo de obtención de empleo en su área de conocimiento | 521 | 56 | 220 | 245 |

Source: propia, 2016.

Frequency characteristics surveyed companies

They are small private companies dedicated to community service (see Table II).

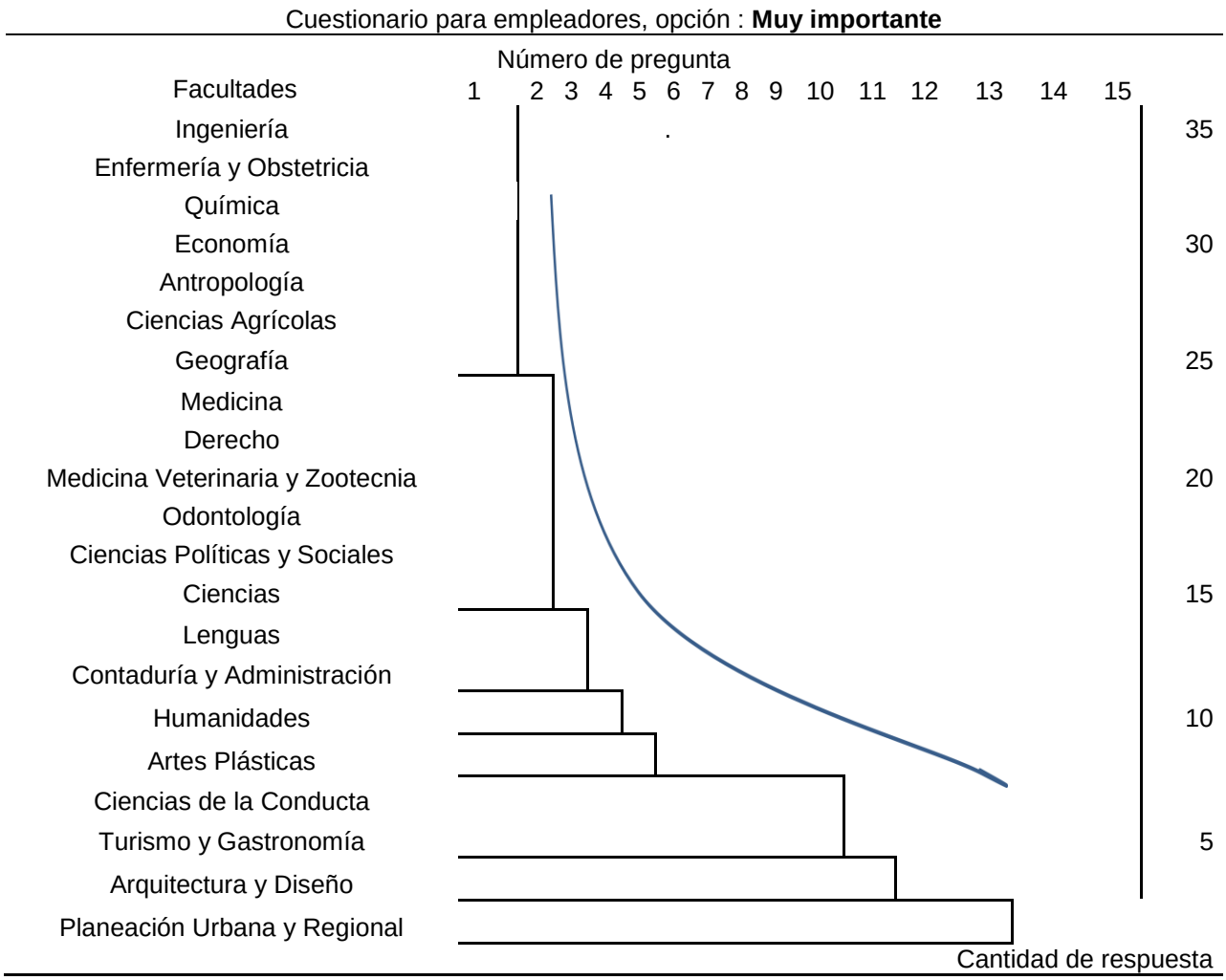
Table II. Characteristics of the sample of companies

| | n=17 | |
|---|---|---|
| Tipo de organización | Pública | 29 % |
| | Privada | 62 % |
| | Otros | 9 % |
| Tamaño de la organización | Grande | 21 % |
| | Mediana | 33 % |
| | Pequeña | 46 % |
| Sector de producción | Primario | 13 % |
| | Secundario | 18 % |
| | Terciario | 48 % |
| | Cuaternario | 12 % |
| | Quinario | 9 % |

Source: propia, 2016.

Application of Cluster Analysis to identify homogeneous groupings in the level of Very important for employers. It is noted that the distance between values of 7 and 32, while the amplitude of distances Agglomeration is 1.8 and 13.4 = 11.6, considering a wide gap in skills requirements. Employers considered very important to Instrumentales skills, then Systemic Competencies and finally Interpersonal skills (see Figure 1).

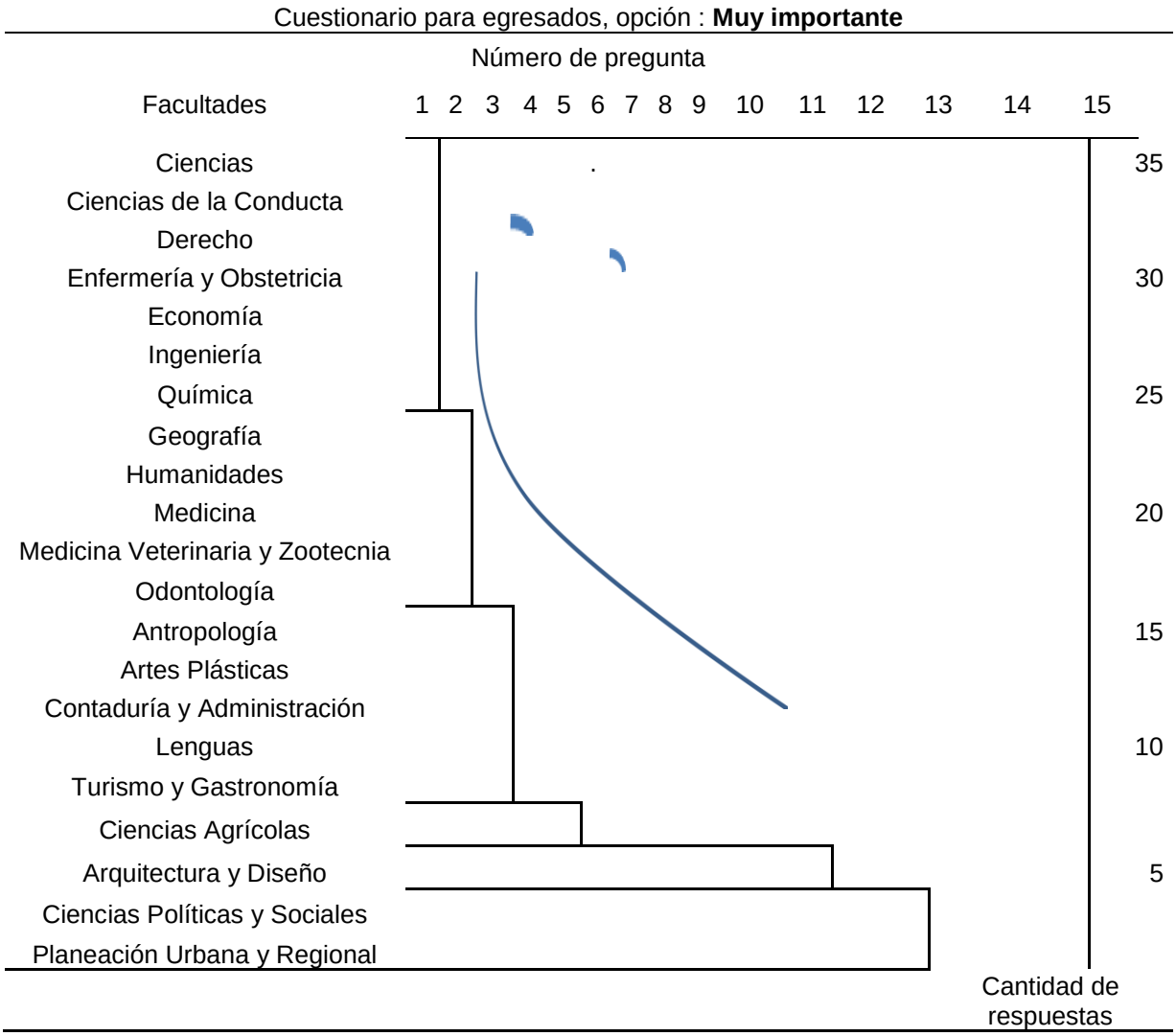
Figure 1: Method used dendrogram Modal Analysis Wishart




Source: propia, 2016.

Application of Cluster Analysis to identify homogeneous level Very important for alumni groups. It is noted that the distance between values of 12 and 30, while the range of distances Agglomeration is 2.7 and 10.9 = 8.2, considering a regular distance between the requirements in competences that graduates think they need to be hired. They assign greater importance to instrumental skills (see Figure 2).

**Figure 2.** Method used dendrogram Modal Analysis Wishart




Source: propia, 2016.

Application of statistical analysis of inferential Test Pearson Correlation ($r^2 \geq 0.80$) to meet the significant correlations between variables Alumni Questionnaire (interns or graduates) and Employer Questionnaire variables. It is observed that the highest correlation in the very important aspect was the knowledge of the area or field of study, expressed by the medical career and their employers with r = 0.92 and Chemistry, Veterinary and Animal Husbandry and their employers with r = 0.88, the Regularly following important is the degree, expressed by the medical career and their employers with r = 0.89 (see table III).

**Table III.** Correlation between employers and graduates as skills required for recruitment.

| | Aspectos de contratación, V.D. | | | | | |
|---|---|---|---|---|---|---|
| Competencias, V.I. | Aspecto muy importante | $r^2$ | Aspecto importante | $r^2$ | Regularmente importante | $r^2$ |
| 1. Conocimiento del área o campo de estudio. | Ingeniería<br>Enfermería y Obstetricia<br>Química<br>Economía<br>Medicina<br>Veterinaria y Zootecnia | r=0.85<br>r=-0.86<br>r=0.88<br>r=-0.82<br>r=0.92<br>r=0.88 | Medicina<br>Medicina Veterinaria y Zootecnia<br>Odontología<br>Planeación Urbana y Regional<br>Enfermería y Obstetricia<br>Contaduría y Administración | r=0.83<br>r=0.88<br>r=0.81<br>r=0.81<br>r=0.82<br>r=0.82 | | |
| 2. Titulación | Odontología<br>Contaduría y Administración | r=0.83<br>r=0.81 | Economía | r=0.81 | Medicina | r=0.89 |
| 3. Experiencia Laboral/práctica (antes de egresar | Lenguas | r=0.81 | Ingeniería<br>Química<br>Geografía | r=0.81<br>r=0.82<br>r=0.82 | Odontología<br>Ciencias | r=0.82<br>r=0.92 |
| 4. Habilidades cognitivas (conocimiento del área) | | | | | Derecho<br>Ingeniería<br>Química | r=0.83<br>r=0.82<br>r=0.82 |
| 6. Conocimiento de idiomas extranjeros | | | Lenguas | r=0.87 | | |
| 10. Habilidad de relaciones personales (trabajo en equipo y capacidad de negociación) | | | | | Contaduría y Administración | r=0.81 |
| 11. Habilidad para resolver problemas, capacidad de análisis y creatividad | Arquitectura y Diseño | | | | | |
| 13, Poseer motivación, iniciativa y persistencia | Planeación Urbana y Regional | | | | Geografía | r=0.81 |

Source: propia, 2016.

## DISCUSSION

In the last year it has decreased the unemployment rate; however, working conditions and wages have also declined, a situation that directly affects the insertion of new generations of professionals in the labor market.

The minimum wage in 2016 is $ 73.04, increasing 4% compared to 2015 which was 70.10 pesos, while inflation in the first quarter of 2016 is 2.27%, coupled with the depreciation of the peso at 0.88%, as the Board points of Governors of Banco de Mexico (Banxico) (World Bank, 2015).

It would be good to reflect on the type of college graduates required by the labor market.

Our study revealed through the application of Cluster Analysis that very important representative instrumental capabilities are similar both graduates and employers, but their frequency in the latter is dispersed, while its frequency graduates are clumped (Pérez, 2007). This means that employers require diverse skills to consider entering the applicant in the labor market, while graduates believe that they need to be hired is mainly knowledge in the area of study, be qualified and have had work experience and / or professional practice. This might be because it is taught and measured in universities. But what entrepreneurs need is that the graduate is completely instrumental, systemic capabilities and, finally, personal. They want to hire staff with high levels of knowledge, adaptable, creative and leader. These are the characteristics that require large Mexican companies like America Movil (125 overall), a company with revenues of 3,500 million dollars (mdd), on revenues of 63,700 million. The other national companies within the first 1,000 of the globe are FEMSA (379), Banorte Group (519), Grupo Mexico (556), Grupo Inbursa (794) and Cemex (846) (Forbes, 2015).

Compared with the great Mexican emporiums, the National Survey of Occupation and Employment 2015 reports that the races have the highest occupancy rates are: Medicine with 95.2%, Training for basic education primary level with 94.3%, law 79.9% Administration and management of companies with 68.6%, and industrial engineering, mechanics, electronics and technology with 63.5%.

The university study presents a state coverage of 31.4% and 39.2% nationally. It is a university that has quality programs according to various national certification bodies, with an enrollment of 55,227 students enrolled in 2015 and located in 24 mexiquenses municipalities. Besides their plans and program are also incorporated in 14 universities with 8,334 students enrolled in 2015,

located in 38 municipalities mexiquenses. Therefore, it is present in 62 municipalities State of Mexico (UAEM, 2015).

In our study significant correlations between graduates and employers questionnaires were presented: considering the same level of importance the different competences (instrumental, interpersonal and systemic) required by employers. First is the medical career with a correlation of r = 0.92, followed by the race of Chemistry with a correlation of r = 0.88, then the Engineering with a correlation of r = 0.85, the Dentistry with a correlation of r = 0.83 and finally, the career of Accounting and Business Administration with a correlation of r = 0.81. For all these reasons, the university studied has an impact at the national level that sets the standard for understanding what is happening in hiring graduates in Mexico.

Our young people aspire to have more and better knowledge to enjoy a better economic level in the future. This is the desire of most young people around the world, where the problem of low recruitment of graduates is also evident.

It is known that the growth of Mexican finances is lower than the graduates. The concern of universities is to prepare professionals who need our country. intelligent professionals, who know their stuff, efficient, disciplined and with a desire to be leaders in their work area.

However, the above features but also the systemic skills for adaptation and continuous updating, without losing sight of personal skills that facilitate the processes of social interaction, cooperation and ethics are not only necessary.

All this will help them adapt to the transformation of the labor market, either small or large enterprises. Because they all receive the impact of new technologies that reduce unskilled work, but they also allow the possibility of self-employed including telecommuting or work at home. in the US and Europe alone there are currently over 50 million teleworkers.

The concept of employee (relationship) tends to disappear, because the remuneration wage per working day is declining. If we change the concept employment by occupation, the paradigm of the economic relationship will be different and the young may be another idea of economic development.

It is essential to academic and government continue implementing projects that encourage self-employment and the generation of new projects, with decent pay and benefits to support the new labor paradigm. It should also support human capital through multiple and varied technical skills,

entrepreneurship and community vision; ensuring an optimum business environment for occupation, to disseminate investment in small or large projects.

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