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# Accounting Training Received in College vs. Labor Market Demands: The case of Mexico

## Abstract

The aim of this paper is to analyze the differences that exist in the field of accounting in Mexico between competences training offered by universities and demands concerning the labor market, focused on knowledge, skills and values. The results obtained in this study show a significant degree of separation between competences training received by the accountants newly graduated from the universities and the current demands of the labor market. It is important to note that other education environment variables could be taken into account to be included in future studies following this paper.

**Keywords:** *accounting, competences, knowledge, skills, values*

## Introduction

The increasing globalization and technological development have led to fundamental changes in education and training systems, in terms of organization and financing and also in the content of programs and teaching methods. The challenge is to achieve greater adaptation and response to changing needs, raising the quality and relevance of programs and improving the link of training with the transformations of the productive structure (Argüelles, 2007).

Focusing the subject on the accounting discipline, the debate in education increased markedly in the past decade when studies began to question the competences required of graduates of university accounting programs in order to take on the challenges in the future (Swinney, et al., 1999; Russell, et al., 2000; Vanger-

meersch, 2001). In this situation, the University Academy, college administrators, the organized accounting profession, employers and, of course, the economic environment were involved. However, the accounting profession and employers turned toward the University, demanding a thorough examination of the curriculum in accounting, which for teachers was a serious reflection on their way of imparting education in accounting.

In the effort to address this situation, the aim of this paper is to analyze the differences that exist in the field of accounting in Mexico between competences training offered by universities and demands concerning the labor market, focused on knowledge, skills and values. The results obtained in this study show a significant degree of separation between competences training received by the accountants newly graduated from the universities and the current demands of the labor market.

It is important to note that in addition to the variables related to competences in the curriculum and the labor market training considered in this paper, other significant national and international education environment variables should be taken into account, such as the mobility of students and teachers, the link with the community, the economic situation of the country or the needs of different economic sectors. These variables should be included in any study of a wider scope that gives continuity to the purpose of the presented paper.

## Theoretical framework

The International Federation of Accountants (IFAC, 2010) defines the term competence as "a person's ability to run a job fulfilling a certain standard in real working environments". On its part, the American Institute of Certified Public Accountants (AICPA, 1999 and 2000) defines five general competences for the accounting profession: communication and leadership, critical thinking and strategic approach to the market, interpretation of complex and convergent information and access to technology and customer. In addition, it defines three groups of specific competences: functional, personal and business. All of these definitions are the starting point for the development of competences in accounting education in the United States and other countries, but perhaps it is not the case of Mexico, which therefore justifies the development of this research.

Delving deep into the definition of competence, capacity is defined as "the whole formed by the professional knowledge, skills and values, ethics and professional attitudes required to demonstrate competence" (IFAC, 2010). As noted, the task

of training the students of accounting should be observed from three different perspectives: (1st) a cognitive aspect, linked to learning to know; (2nd) a procedural aspect, associated with learning to do; and (3rd) a slope attitudinal, linked to learning to be and stay. This classification agrees with some of the most prominent ones in education theoretical references (Delors, 1997).

As in the American context (Burnett, 2003) and in the European one (Hassall, et al., 2005), the research in this line has been mainly focused on study skills, leaving aside more outside expertise and the values. The results of these investigations reveal that employers highlight how important some of the skills included in the framework of IFAC and the AICPA are, although many of them are not being sufficiently developed in the universities' accounting programs (Kavanagh and Drennan, 2008). Thus, for example, for the particular case of Spain, Arquero (2000) provides evidence of some training shortcomings in several non-technical skills identified as very important in the professional profile of accountants, especially oral and written communication and problem solving. This result is reproduced in more recent studies (Arquero, et al., 2009), indicating that being able to communicate orally and in writing, e.g., are skills that are highly valued by university graduates in terms of their importance for the proper performance of professional duties. However, it is also revealed that they are considered, along with the resolution of problems, to be the greatest training needs.

The paper presented here aims to contribute to this line of research by presenting the differences that exist between employers, teachers and university students in Mexico on the degree of importance of the knowledge, skills and values required by the accounting profession in accordance with the regulations of IFAC and the AICPA today. In this way, the research questions that arise are as follows:

1. Are there differences in the accountant formation of knowledge in the universities due to the current demands of Mexico's labor market?
2. Are there differences in the accountant formation of skills in the universities due to the current demands of Mexico's labor market?
3. Are there differences in the accountant formation of values in the universities due to the current demands of Mexico's labor market?

## Research Methodology

The procedure used to carry out this research, step by step, was the following:

1. Regulations and previous literature review. During the period of January to June 2012 the collection and analysis of the legislation of the IFAC (2010)

and the AICPA (1999, 2000) was conducted, as well as the prior literature related to the subject.

2. Research instrument elaboration. During the period of July and August of 2012, questionnaires used to collect information were developed, which were revised with the observations made by some accountants in duty, teachers and students in the piloted instrument. The final questionnaire was made up of a total of four blocks: the first includes a series of questions relating to the academic, professional and personal characteristics of respondents; the second includes a total of 24 relevant areas of expertise in the field of accounting; in the third a total of 30 professional skills; and in the fourth 7 relating to the field of study values.
3. Call for participants and permissions request. In the month of September 2012, a videoconference was conducted through the accounting community and business of the national network for education and research of the University Corporation for the development of Internet (CUDI) to present the research project and invite the institutions forming the CUDI network to participate. Care, monitoring and training was subsequently given the teachers interested in collaborating as responsible for each of its institutions. Also during the month of September contacts began with the directors of the Mexican Institute of Public Accountants (IMCP) for the distribution of the instrument among its membership, as well as the appropriate permissions for this distribution.
4. Instrument construction and on line distribution. At the same time of the call and the request for permission, during the months of September and October, construction began of the instrument for distribution on the Internet. It was made with the technical support from the CUDI network for this task, as well as for the definition of the corresponding links for employers, teachers and students. There were technical tests necessary to validate the functioning of links, the appropriate presentation of the instrument and the compilation of the data in the corresponding application.
5. Instrument application. During the last two weeks of October and the first three weeks of November, 2012 the application of the instrument by employers and universities took place. In addition, two more universities were given an opportunity for its application during the month of February 2013.
6. Data Analysis. During application there was follow-up on the collection of data, to validate the correct tab. The statistical analysis of data was carried out during the months of January to April 2013 with the support of the statistical package SPSS.

Collaborative work in academic networks, through the community of accounting and business of the CUDI network, made possible convening and participation of various institutions of higher education, both public and private, in this research project. There were three conditions for participation: (1st) those that will count towards the academic degree in accounting, (2nd) a program that was committed to distributing the tool between teachers in full-time and part-time, which developed their chair in this degree, as well as between the second half of the undergraduate students, and (3rd) it could monitor the implementation of the instrument by the teacher in charge of the study.

In total there were 134 teachers and 693 students from 12 universities from all over Mexico: Universidad de La Salle (ULS), Instituto Tecnológico de Celaya (ITC), Universidad Iberoamericana (UI), Universidad Veracruzana (UV), Universidad Anahuac (UA), Universidad Autónoma de Tamaulipas (UAT), Universidad de Guadalajara (UG), Universidad Autónoma de Coahuila (UAC), Universidad de Colima (UC), Universidad Autónoma del Estado de Morelos (UAEM) Universidad Autónoma de Yucatán (UAY) and Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM). The percentage distribution of the teachers and students for each university is presented in Figures 1 and 2.

**Figure 1.** Teacher distribution by University

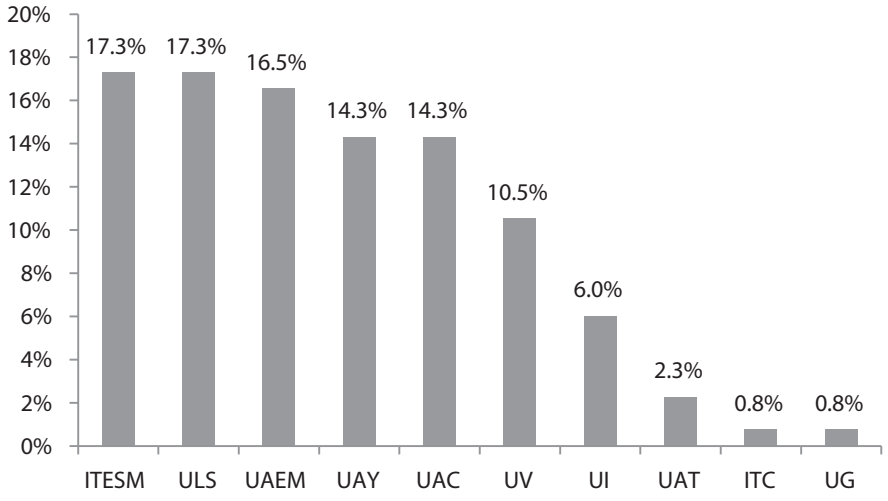
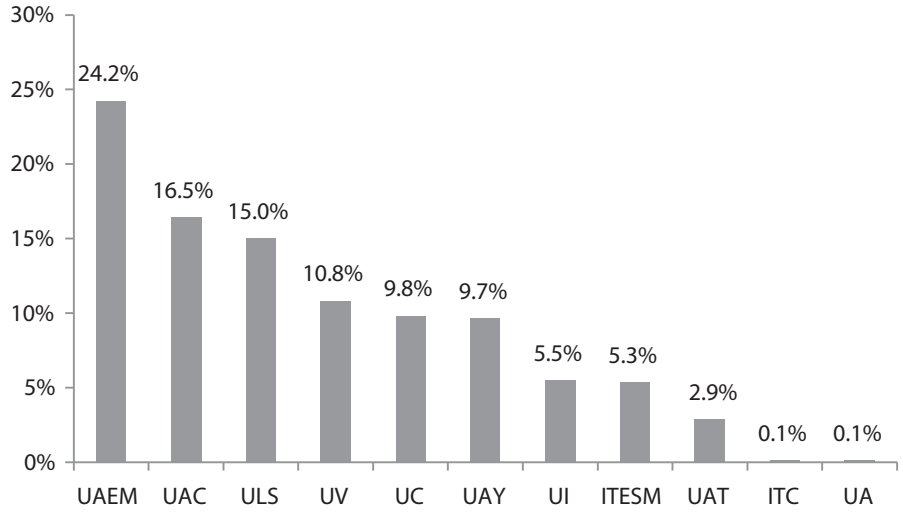


**Figure 2.** Student distribution by University




As for employers, in the framework of the agreement of academic cooperation of the ITESM with the IMCP (2012), they requested the instrument of research to be distributed in electronic form among its members. More specifically, the IMCP sent the first e-mail invitation to launch the application, a week afterwards a reminder had been sent and in the last week of the application process the final invitation to participate in the study was sent. In total, 899 employers' responses were received.

Below are some relevant data that are used to describe the profile of the three collective participants in the study:

- Employers. The majority are men (73.7%); 50.4% have undergraduate studies, 13.6% have a specialty, 34.3% have a Master's degree and 1.8% have reached doctoral studies; most work in the private sector (85.6%) and work independently (74.2%).
- Teachers. Most are men as well (60.4%); 17.2% have undergraduate studies, 9.7% have a specialty, 61.2% have a Master's degree and 11.9% have reached doctoral studies. In this case, the majority work in universities in the public sector (59%); 59% have over 15 years of academic experience; 81.3% have teaching as their main avenue of development, 13.4% consulting and extension and only 5.2% research avenues.
- Students. In this case, the majority are women (59.2%); 74.2% study at a public university; and 76.8% have professional experience of some kind.

The research instrument was designed using international regulatory frameworks of education in accounting (IFAC, 2010; AICPA, 1999, 2000), considering three distinct sections, one for each category: knowledge, skills and values. Each section contains a list of variables or indicators for those requesting participants to give their opinion about the degree of importance of each of them, using a five-point Likert scale from "1: Total disagreement" up to "5: Total agreement".

Although the same instrument was used for the categories and indicators, three versions were made for each of the three groups of participants, which only had the following differences: students were questioned about the training they had received, professors were asked about the training they had given and employers were asked about the training they required.

As already indicated, the instrument was previously tested with 5 practicing accountants, 10 professors of accounting academics and 20 students in their last third of their degree. The observations made allowed to clarify the instructions, as well as the terms used in the indicators. The data of the test were processed using the Excel spread sheet package in order to have a preliminary assessment of the research instrument.

The results of reliability or internal consistency of each category were measured in hindsight through Cronbach's Alpha, obtaining the following results. At the group level, this indicator stands at 0.956 for knowledge, 0.974 for skills and 0.937 for values. In this way, according to Nunnally (1978) and Segars (1997), it shows elevated reliability levels on the instrument, since the Alpha Index is greater than 0.70 in all three cases.

The analysis of the results presented below is descriptive. In particular, it is based on the study of middle values and standard deviations obtained in each variable or pointer (24) knowledge, skills (30) and values (7), as well as consideration of possible differences in each one of them according to the group of subject respondents. To do so, an analysis of variance (ANOVA) was performed using as a factor of the variable market/university segmentation, being employer subjects referred to the market and the group formed by professors and students the subjects relating to the University. To carry out this analysis, a program, the Statistical Package for the Social Sciences (SPSS) version 21, was used.

## Research Results

Table 1 presents the results obtained in relation to the level of knowledge that a university graduate in accounting must have on a total of 24 subjects to be able to adequately perform their professional activity in Mexico. The data are divided into

the market opinion (employers) or the university (professors and students), and are sorted from the highest to the lowest average difference between both groups.

**Table 1.** Differences of knowledge

| KNOWLEDGE | MARKET | | UNIVERSITY | | Difference of averages |
|---|---|---|---|---|---|
| | Average | Dev. stand. | Average | Dev. stand. | |
| Governmental Accounting | 4.48 | 0.781 | 3.76 | 1.029 | 0.71*** |
| Control of information systems based on technology | 4.11 | 0.874 | 3.43 | 0.996 | 0.68*** |
| Risks associated with information systems based on technology | 3.92 | 0.915 | 3.25 | 1.062 | 0.67*** |
| Taxes | 4.62 | 0.694 | 3.96 | 1.022 | 0.66*** |
| Structure and organization of information systems based on technology | 4.05 | 0.898 | 3.44 | 0.945 | 0.61*** |
| Professional values and ethics | 4.68 | 0.752 | 4.08 | 0.972 | 0.60*** |
| Company ethics | 4.40 | 0.895 | 3.81 | 1.022 | 0.58*** |
| Auditing | 4.31 | 0.831 | 3.73 | 1.081 | 0.58*** |
| Financial accounting and financial reporting | 4.59 | 0.717 | 4.02 | 0.902 | 0.56*** |
| Finance and financial management | 4.42 | 0.776 | 3.90 | 0.988 | 0.53*** |
| Corporate Government | 3.66 | 0.992 | 3.15 | 1.129 | 0.50*** |
| Commercial and corporate law | 4.06 | 0.894 | 3.59 | 0.970 | 0.48*** |
| Accounting for nonprofit organizations | 4.30 | 0.834 | 3.88 | 1.006 | 0.42*** |
| International business and globalization | 3.74 | 0.931 | 3.35 | 1.046 | 0.40*** |
| Management and strategic decision making | 4.15 | 0.888 | 3.77 | 0.966 | 0.38*** |
| Business Environment | 3.87 | 0.915 | 3.49 | 1.026 | 0.38*** |
| Internal Control | 3.58 | 1.102 | 3.23 | 1.160 | 0.34*** |
| Cost and management accounting | 3.64 | 1.046 | 3.30 | 1.152 | 0.34*** |
| Quantitative methods | 3.79 | 0.893 | 3.46 | 0.946 | 0.33*** |
| Administrative control and management | 4.02 | 0.864 | 3.71 | 0.940 | 0.30*** |
| Financial markets | 3.77 | 0.982 | 3.49 | 1.033 | 0.27*** |
| Organizational behavior | 3.87 | 0.879 | 3.65 | 0.971 | 0.22*** |
| Economy | 3.58 | 0.922 | 3.37 | 0.966 | 0.21*** |
| Marketing | 3.27 | 0.990 | 3.29 | 1.066 | -0.01 |

Difference of significant averages of: 1% (***); 5% (**) y 10% (*)

As can be seen, only "Marketing" gets a similar level of knowledge from the point of view of the market and the University. In addition, this subject is the least valued by the market and the fourth less valued by the University in the formation of accountants. Therefore, of the 24 subjects integrated into this study, 23 are statistically significant at 1% between the level of market demand and the level of preparation offered by the University. In addition, the average values obtained for the 23 subjects are in all cases higher within the scope of the market than in the University. This is indicative of some formative weakness in accounting within Mexican universities today. In particular, major insufficiencies of the training in terms of knowledge are located in subjects such as "Governmental accounting", "Control of information systems based on technology", "Risks associated with information systems based on technology" and "Taxes", but also in other areas such as "Professional values and ethics", "Auditing", "Financial accounting and financial reporting" and "Finance and financial administration".

Furthermore, it also should be noted that when ordering the average values of each subject in both groups, the rankings obtained show very similar positions for all of them. If anything, this could highlight a major departure in two areas in particular, such as "Control of information systems based on technology" and "Risks associated with information systems based on technology", which occupy higher positions in the ranking of the market (10$^{th}$ and 14$^{th}$, respectively) than in the University (17$^{th}$ and 22$^{nd}$, respectively).

Table 2 shows results obtained in relation to the level of ability that a university graduate in accounting must have on a total of 30 skills to be able to adequately perform their professional activity in Mexico. The data are divided as they are the opinions of the market (employers) or the University (professors and students), and sorted from the highest to lowest average difference between both groups.

**Table 2.** Differences in skills

| SKILLS | MARKET | | UNIVERSITY | | Difference of averages |
|---|---|---|---|---|---|
| | Ave. | Dev. stand. | Ave. | Dev. stand. | |
| Dominance of the Spanish and English languages | 4.27 | 0.818 | 3.43 | 1.127 | 0.84*** |
| Dominance of Spanish, English and any other language | 4.14 | 0.864 | 3.37 | 1.141 | 0.77*** |
| Written communication | 4.44 | 0.731 | 3.70 | 0.997 | 0.74*** |
| Time management | 4.48 | 0.730 | 3.81 | 1.024 | 0.67*** |

| SKILLS | MARKET | | UNIVERSITY | | Difference of averages |
|---|---|---|---|---|---|
| | Ave. | Dev. stand. | Ave. | Dev. stand. | |
| Lifelong learning | 4.54 | 0.719 | 3.87 | 0.976 | 0.67*** |
| Use of technology to solve problems | 4.53 | 0.724 | 3.86 | 1.013 | 0.67*** |
| Logical reasoning | 4.59 | 0.654 | 3.92 | 0.886 | 0.67*** |
| Troubleshooting | 4.61 | 0.675 | 3.95 | 0.919 | 0.66*** |
| Creativity and innovation | 4.36 | 0.767 | 3.70 | 0.992 | 0.66*** |
| Oral communication | 4.42 | 0.734 | 3.78 | 0.991 | 0.65*** |
| Teamwork | 4.65 | 0.645 | 4.00 | 0.964 | 0.65*** |
| Analysis of information | 4.54 | 0.696 | 3.92 | 0.937 | 0.62*** |
| Decision making | 4.44 | 0.768 | 3.86 | 0.944 | 0.58*** |
| Adaptation to changes | 4.43 | 0.744 | 3.85 | 0.968 | 0.58*** |
| Search and information retrieval | 4.47 | 0.715 | 3.90 | 0.940 | 0.57*** |
| Use of technology to learn | 4.17 | 0.869 | 3.61 | 1.159 | 0.56*** |
| Initiative and entrepreneurship | 4.52 | 0.708 | 3.98 | 0.930 | 0.54*** |
| Customer service | 4.46 | 0.774 | 3.93 | 0.971 | 0.54*** |
| Critical thinking | 4.49 | 0.720 | 3.96 | 0.930 | 0.54*** |
| Argumentation | 4.10 | 0.823 | 3.58 | 0.973 | 0.52*** |
| Planning | 4.38 | 0.744 | 3.87 | 0.937 | 0.51*** |
| Interdisciplinary | 4.19 | 0.789 | 3.72 | 0.983 | 0.48*** |
| Self-improvement | 4.57 | 0.701 | 4.11 | 0.884 | 0.47*** |
| Self-improvement | 4.17 | 0.826 | 3.74 | 0.962 | 0.43*** |
| Organization | 4.27 | 0.778 | 3.85 | 0.918 | 0.43*** |
| Negotiation and establishment of agreements | 4.13 | 0.874 | 3.73 | 0.931 | 0.40*** |
| Self-Administration | 4.35 | 0.759 | 4.00 | 0.897 | 0.35*** |
| International perspective | 3.94 | 0.854 | 3.60 | 0.997 | 0.33*** |
| Collaboration with people from other cultures | 3.91 | 0.928 | 3.66 | 1.057 | 0.25*** |
| Use of technology to communicate | 4.03 | 0.984 | 4.39 | 0.909 | -0.36*** |

Difference of significant averages of: 1% (***); 5% (**) y 10% (*)

As can be observed, 30 skills integrated in the study prove statistically significant to 1% between the level of market demand and the level of preparation offered by the University. In addition, except for the "Use of technology to communicate", the average values obtained for all these skills are higher within the scope of the market than in the University. This again is indicative of some formative weakness in accounting from Mexican universities today. Especially true, in fact, for the case of the "Use of technology to communicate", which is the most valued ability by the University, but the fourth less valued by the market, which gives greater relevance, for example, to the "Use of technology to solve problems". However, the skills which identify a greater distance between the market and the University are the following: "Dominance of the Spanish and English languages", "Dominance of Spanish, English and some other language", "Written communication", "Time management", "Continuous learning throughout life" and "Logical reasoning".

When ordering the average values of each skill in both groups, the rankings obtained showed similar positions between most of them. Notably, this means a greater departure in two skills in particular, such as the "Use of technology to communicate (Messenger, Skype, Facebook, Twitter)" and "Managing yourself", which occupy higher positions in the ranking of the University (1st and 4th, respectively) in the market (28th and 19th, respectively). In addition, it is striking that the market attaches greater importance than the University to the "Written communication" (14th and 24th, respectively), even producing a reverse situation to consider the "Oral communication" (16th and 19th).

Table 3 presents the results obtained in relation to the level of consciousness that a newly graduated university student in accounting must have on a total of 7 values to be able to adequately perform their professional activity in Mexico. The data are divided due to the market opinion (employers) or the University (professors and students), and sorted from the highest to the lowest average difference between both groups.

**Table 3.** Differences on values

| VALUES | MARKET | | UNIVERSITY | | Difference of averages |
|---|---|---|---|---|---|
| | Average | Dev. stand. | Average | Dev. stand. | |
| Compliance with laws, regulations, and standards | 4.76 | 0.561 | 4.04 | 0.902 | 0.71*** |
| Objectivity and independence | 4.74 | 0.591 | 4.08 | 0.973 | 0.67*** |
| Commitment to sustainable development | 4.43 | 0.741 | 3.88 | 0.941 | 0.55*** |

| VALUES | MARKET | | UNIVERSITY | | Difference of averages |
|---|---|---|---|---|---|
| | Average | Dev. stand. | Average | Dev. stand. | |
| Socially responsible behavior | 4.52 | 0.714 | 3.99 | 0.957 | 0.53*** |
| Tolerance for differences between people | 4.49 | 0.732 | 4.01 | 0.968 | 0.48*** |
| Public interest defense | 4.33 | 0.800 | 3.85 | 0.960 | 0.48*** |
| Respect for the institutions and public rules | 4.54 | 0.726 | 4.07 | 0.933 | 0.46*** |

Difference of significant averages of: 1% (***); 5% (**) y 10% (*)

In the same way as for the skills, the 7 values integrated in the study are statistically significant to 1% between the level of market demand and the level of preparation offered by the University. In addition, the average values obtained for all these values are higher within the scope of the market than in the University. This means that currently there is an additional element to the formative weakness in accounting from Mexican universities. Specifically, the values where there is a greater distance between the market and the University are "Laws, regulations, and standards compliance" and the "Objectivity and independence".

## Conclusions

The results obtained in this study show a significant degree of separation between skills training received by the accounting students recently graduated from universities and the current demands of the labor market in Mexico. In other words, employers are more demanding in terms of the level of knowledge of certain subjects than the level of development of some skills and the awareness of certain values than the real training that currently exists in Mexican universities.

On the other hand, certain subjects related to technology-based information systems play an important role in the reality of the work of the CPA, which is not properly covered by the universities. On the contrary, some skills such as the use of technology to communicate and self-regulation play an important role in the educational reality of the accountants in the universities that does not properly correspond to the needs of the labor market.

In the light of these results, the situation seems to require a greater rapprochement of the universities to the world of business in order to achieve a better understanding of their needs in human resources competence and thus proceeds to adequately restructure their curricula and teaching-learning strategies.

The interpretation of the results of this study must be made with proper precautions. There are some limitations, such as the following: the sample may not be completely representative of the population in Mexico since it was made only for the members (employers) of the IMCP, professors and students from 12 universities around the country. On the other hand, this paper has not analyzed the differences that can arise when taking into account the characteristics of each group, such as gender, age, the field of work or study, or the university. In addition, the perspective of the University has been taken from the set of professors' and students' points of view, but without making any distinction between them, and there may be different perceptions of the skills and training offered and received, respectively, at the university.

Future studies carried out in this line of research could take into account other groups, such as Certified Public Accountants (CPAs), other groups of employers not belonging to the IMCP or responsible for the preparation of curricula in universities. It would be interesting, in order to generalize the results, to contrast the consistency in geographic contexts that are different from the one included in this paper, and to consider other significant variables of the educational environment, national and international, such as the mobility of students and teachers, the link with the community, the economic situation of the country or the needs of different economic sectors.

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