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## Two instruments to measure perceptions of the dual model in entrepreneurs and graduates: A Colombian perspective

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Sección: EDUCATION

Scientific and technological research article

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Dos instrumentos para medir percepciones del modelo dual en empresarios y en egresados. Una perspectiva colombiana

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Dois instrumentos para medir as percepções do modelo duplo em empresários e graduados. Uma perspectiva colombiana

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Deux instruments pour mesurer les perceptions du modèle dual chez les entrepreneurs et les diplômés. Une perspective colombienne

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**Abstract.** Two instruments are proposed to survey the perceptions of the dual model of entrepreneurs and Uniempresarial graduates. The design and validation of these instruments were conceived as a methodological tool for the study and improvement of the model, in a Latin American context. The results show that these perceptions enable the understanding of the model's educational impact, as an option for bridging gaps between the academy and business. It is concluded that the instrument is a valuable tool to evaluate the entrepreneurs' perceptions of how dual education contributes to attaining the required human talent, and the perceptions of graduates on the relevance of their training and the benefits and the advantages it affords to enter the business sector. These measurement instruments could be useful for new and comparative studies that lead to relevant conclusions to improve the dual model and redound in the learning of trainees.

**Keywords:** dual education; entrepreneurs; graduates; measurement instrument; perceptions.

**Resumen.** Se proponen dos instrumentos para la medición de percepciones del modelo dual, de empresarios y egresados de Uniempresarial. El diseño y validación de dichos instrumentos se concibieron como una herramienta metodológica para la investigación y mejoramiento del modelo, en un contexto latinoamericano. Se constató que las percepciones permiten comprender el impacto de formación del modelo, como opción para el cierre de brechas entre la academia y la empresa. Se concluye que el instrumento, en su conjunto, permite evaluar percepciones de empresarios de cómo la formación dual les aporta para tener el talento humano requerido y percepciones de egresados sobre la pertinencia de su formación y el beneficio que representa para vincularse al sector empresarial. Se espera que los instrumentos de medición sirvan para nuevas investigaciones y estudios comparativos que lleven a conclusiones relevantes para mejorar el modelo dual y que redunden en el aprendizaje de las personas en formación.

**Palabras claves:** egresados; empresarios; formación dual; instrumento de medición; percepciones.

**Resumo.** São propostos dois instrumentos para a medição das percepções do modelo dual, dos empresários e graduados da Uniempresarial. O design e a validação desses instrumentos foram concebidos como uma ferramenta metodológica para a investigação e melhoria do modelo, em um contexto latino-americano. Verificou-se que as percepções nos permitem compreender o impacto da formação do modelo, como uma opção para fechar lacunas entre a academia e a empresa. Conclui-se que o instrumento, como um todo, permite avaliar as percepções dos negócios de como a formação dual de educação contribui para ter o talento humano exigido e as percepções dos graduados sobre a relevância de sua formação e o benefício que representa para ser vinculado ao sector empresarial. Espera-se que os instrumentos de medição sirvam para novas pesquisas e estudos comparativos que conduzam a conclusões relevantes para melhorar o modelo duplo e redundar na aprendizagem de estagiários.

**Palavras-chave:** empresários; graduados; instrumento de medição; percepções; treinamento duplo.

**Résumé.** Deux instruments sont proposés pour la mesure des perceptions du modèle dual, des entrepreneurs et diplômés de Uniempresarial. La conception et la validation de ces instruments ont été conçues comme un outil méthodologique pour la recherche et l'amélioration du modèle, dans un contexte latino-américain. On constate que les perceptions nous permettent de comprendre l'impact de la formation du modèle comme une option pour combler les lacunes entre l'académie et l'entreprise. On conclut que, dans l'ensemble, l'instrument permet d'évaluer les perceptions des entrepreneurs sur la façon dont l'éducation en alternance contribue à atteindre le talent humain requis et la perception des diplômés quant à la pertinence de leur formation et aux bénéfices et avantages qu'elle procure lors d'entrer dans le secteur des entreprises. Ces instruments de mesure pourraient être utiles pour des études nouvelles et comparatives qui conduisent à des conclusions pertinentes pour améliorer le modèle dual et améliorer l'apprentissage des stagiaires.

**Mots-clés :** diplômés ; entrepreneurs ; formation en alternance ; instrument de mesure ; perceptions.

## Introduction

In Latin America, and Colombia is not the exception, the gap between the academy and business has been a topic of deep reflection. Many efforts have been made by governments and the private sector to narrow this gap. Thus, initiatives emerge such as the German dual model, which the Chamber of Commerce of Bogotá puts into context, creating Uniempresarial. This higher education institution's model is based on the German dual education model adapted to Latin America, to provide a relevant alternative to the development of human talent at a higher education level.

Since its inception, Uniempresarial has consolidated a culture of strategic management, based on measurements that promote the continuous improvement of its quality educational system. After a few years of operation and contribution to the training of young adults to develop the talent required by companies, the institution's organizational development required the creation of instruments to measure the perceptions of entrepreneurs and graduates to verify whether the model satisfied expectations that brought about its creation, and under which programs were adopted at a professional university level, obtaining the endorsement of the Ministry of National Education.

The two measuring instruments were developed for Uniempresarial within the framework of a doctoral thesis in pedagogy (Rojas, 2014), in compliance with the scientific rigor required for the design of this type of measurement tools. The tools were tested with appropriate samples of information using statistical software, applied to a database of graduates and entrepreneurs linked to Uniempresarial.

A descriptive statistical analysis was completed based on the implementation of these instruments, and on the information obtained, as well as a univariate analysis using contingency tables and a multivariate analysis, through exploratory factor analysis.

The designed instruments were validated in two pilot tests that yielded a Cronbach's Alpha greater than 0.8 (Rojas, 2015). The instrument for entrepreneurs consists of 58 items and 48 items for graduates, grouped in dimensions that, in turn, consist of different categories with their respective indicator.

Perception measurements in graduates and entrepreneurs are becoming increasingly important in higher education institutions to measure the impact of their pedagogical model. However, these instruments are mostly not shared, which makes it challenging to compare instruments of this nature. The specialized literature on dual education shows that the idea of *perception* has been the object of psychology, and focuses on what happens in people's minds according to an experience previously lived by their senses; however, in qualitative research of a social nature, it is the basis to determine the perception of a service (Gallo, 2001). Thus, our instruments have been designed to measure the perceptions of students and entrepreneurs from the quality of service. This approach allows discovering trends of professional performance; therefore, foreseeing the scope of its design and validity is essential, through the use of relevant parameters of specific software, as well as the designation of suitable samples.

## Methodology

The selected sociological neo-institutionalism approach prompts qualitative research that uses documentary research with a hermeneutical approach. This strategy is accompanied by interviews with experts to qualify the view on the limits and possibilities from the current normative framework, in parallel, the information delivered and its assessment allows defining the existing capacities and the lines of development of institutional capacities.

The sources considered are the rules and regulations, information systems, and members of the Army, including professional reserve officers, as well as documents and studies associated with the topic of disasters or with the very role of the army in disasters.

The processes of institutional change start, in general, from an evaluation of the existing, then, the formulation of the changes to be introduced; in this case, as adjustments in regulations and abilities. Subsequently, the changes are adopted and implemented, requiring a process of organizational communication and innovation in the technologies that make institutional knowledge management operational<sup>1</sup>. This approach of continuity and institutional change is present throughout the study.

### Questionnaire addressed to graduates

Table 1 shows the dimensions and indicators used to create the tool for graduates.

**Table 1.** Dimensions and indicators-survey for graduates

Dimensions	Category	Indicator
Pedagogical model-Training	Training (dual model)	The theory-practice education is a competitive advantage in your training
	Relevance (meaningful learning)	The acquired knowledge has helped you to solve problems in real situations (whether in practice or work situations if you are an employee)
	Satisfaction	How well you agree with the intensity of the program, which was shorter than the traditional University program
	Training	The acquired training was comprehensive (values, knowledge, personal development)
	Satisfaction	They are satisfied with the level of the Uniempresarial program
	Satisfaction	Would you recommend a Uniempresarial friend or family member for professional training

Table continues...

1 Siguiendo a Peter Senge (1990) y Kurt Lewin (citado por Garzón, M. 2005, 41-42).

<b>Dimensions</b>	<b>Category</b>	<b>Indicator</b>
Pedagogical model-Training	Training	What observations would you make to improve the quality of training in Uniempresarial
	Statistical	You studied or completed another program, besides your undergraduate, at Uniempresarial.
	Relevance	You are currently employed
	Satisfaction	If you are employed, are you working in the co-training company? Where did you complete your internship?
	Satisfaction	How long did it take for you to get a job after graduating from Uniempresarial?
	Relevance	What type of contract do you have?
Labor market - Dual model	Statistics	Indicate the type of organization in which you work
	Relevance	Have you been promoted during your career in the company?
	Statistical	Indicate your salary range
	Satisfaction	You consider that your income corresponds to the quality of your training.
	Training	Indicate the type of job you perform.
	Statistics	Indicate the size of the company where you work.
Improvement opportunities	Satisfaction	How would you rate your level of satisfaction with your current job
	Relevance	Why do you believe that you are not employed
	Satisfaction	How long have you been unemployed
	Statistical	What means do you use to seek job opportunities?
	Relevance (meaningful learning)	Academic work experience
Applications in the workplace - meaningful learning	Statistical	What was your selection of graduate project?
	Relevance (meaningful learning)	If your option was a project for the company, was it implemented?
	Relevance (meaningful learning)	If employed, is your current occupation related to the professional program you completed.
	Relevance (meaningful learning)	You plan and use time effectively to achieve the objectives set.

Table continues...

<b>Dimensions</b>	<b>Category</b>	<b>Indicator</b>
Applications in the workplace - meaningful learning	Relevance (meaningful learning)	You use specialized computer tools (statistics packages, design software, etc.).
	Relevance (dual model)	You work as a team to achieve common goals.
	Relevance (meaningful learning)	You work independently without permanent supervision.
	Relevance (meaningful learning)	You apply values and professional ethics in your work performance.
	Relevance (meaningful learning)	You adapt to the changes (work in new and diverse contexts).
	Relevance (meaningful learning)	You work under pressure.
	Relevance (dual model)	You have adequate relationship skills
	Relevance (dual model)	You innovate in the workplace and develop innovative ideas
Entrepreneurship - Meaningful learning	Relevance (meaningful learning)	You use English skills adequately in labor issues
	Statistical	The company created is self or family-owned
	Statistical	How long ago did you create it?
	Statistical	Which sector does it belong to?
	Statistical	How many employees does your company have?
	Satisfaction	You received advice on the creation of your company by Uniempresarial?
	Relevance	The training you received at Uniempresarial supported the creation of your company. If already in existence, did it help to strengthen it?
	Statistical	Are there more entrepreneurs in your family?
	Statistical	You are the first professional in your family

Source: Research-La formación dual de Uniempresarial en la percepción de egresados y empresarios-2014.

### **Validation of the instrument for graduates:**

A pilot test of 19 individuals was carried out for graduates to test the suitability of the instruments. The questions, based on Likert, yielded a Cronbach's Alpha of .966 (considering that the minimum required is .6, according to the Cronbach's Alpha theory), which proved its reliability to be applied later to the group of graduates by disposition.

The tabulated Likert-type data were uploaded to the SPSS software, version 21, to obtain the different statistical data and thus proceed with the respective analysis.

The individual surveys to validate the instrument were completed either via the Internet or in person.

#### **Implementation:**

Once the instrument for graduates was validated, these surveys were made available through the Institution's area for graduates some through surveys available in free Internet software and others in events for graduates, without detecting difficulties or hesitations in the target public for its completion.

### **Questionnaire addressed to entrepreneurs:**

A questionnaire was designed using Likert questions for a directed interview, complemented by closed questions (dichotomous and with several response alternatives), and a minimum percentage of open questions (Hernández, Fernández, and Baptista, 1991).

The questionnaire consists of 58 items, 45 in the Likert scale. The answers, according to the questions, were designed as follows:

- 1. Totally disagree; 2. Disagree; 3. Agree nor disagree (indifferent); 4. Agree; 5. Totally agree
- 1. Not at all important; 2. Unimportant; 3. Indifferent 4. Important; 5. Very important
- 1. Very inferior; 2. Inferior; 3. Superior nor inferior (indifferent); 4. Superior; 5. Much superior

Complemented with 11 closed questions, which also provided valuable information for this work; and two open questions that were codified at the time of the tabulation if similarities in the answers were found, which usually happens with these questions.

For its operationalization, the questionnaire was grouped by dimensions (Abreu, 2012) as shown in Table 2.

**Table 2.** Dimensions and indicators survey for entrepreneurs

<b>Dimensions</b>	<b>Category</b>	<b>Indicator</b>
Pedagogical model	Education (dual model)	Theory and practice education is a competitive advantage for Uniempresarial students
	Relevance (meaningful learning)	The students' knowledge has been useful to solve real situations
	Satisfaction	Do you agree with the program length? Which is shorter than traditional university (3 years and a half) but only has 15 days off
	Education	The education acquired was comprehensive (values, knowledge, personal development)
	Satisfaction	Are you satisfied with the Uniempresarial students in internship?
	Education	What comments would you make to improve the quality of Uniempresarial education?
	Satisfaction	Do you think it has been helpful to have Uniempresarial interns in your company?
Applications in the workplace	Satisfaction	Is your company willing to have more internship students?
	Relevance (meaningful learning)	Have the internship students presented projects for the company?
	Relevance (meaningful learning)	Were any of them implemented in your company?
	Relevance (meaningful learning)	Do you consider that the UNIEMPRESARIAL interns have contributed to the development or positive results of the company in the areas in which they have performed?
	Satisfaction	Will the company contract or hire the graduate at the end of the UNIEMPRESARIAL training program?

Table continues...

Dimensions	Category	Indicator
Competitive advantage	Statistics	Do you have or have had students of other institutions of education?
	Relevance	Comparing the technicians and/or technologists in internship with Uniempresarial students, Uniempresarial students are:
	Relevance	Comparing the professionals in practice from traditional universities, with Uniempresarial students, the Uniempresarial students are:
	Satisfaction	What has been the most positive aspect generated in your company by the presence of UNIEMPRESARIAL students in internship:
Image of Uniempresarial	Relevance	Education is an issue of social responsibility for which the Chamber de Commerce of Bogotá decided to create Uniempresarial
	Relevance	Why did your company decide to have Uniempresarial students (indicate the two most important)
	Satisfaction	The Uniempresarial dual model should be promoted within the companies of Bogota and its region
	Relevance	The social contribution of Uniempresarial is reflected in:

Source: Prepared by the author.

### **Validation of the instrument for entrepreneurs:**

The tabulated Likert data was uploaded to the SPSS software, version 21, to extract the different statistical data and then proceed with the respective analysis.

To test the suitability of the instruments, a pilot test for entrepreneurs was conducted with 20 individuals, which yielded in the questions based on Likert, a Cronbach's alpha of .850 (considering that the minimum required is .6, according to the Cronbach's Alpha theory), which proved its reliability to be applied later to the group of entrepreneurs.

#### **Implementation:**

After the validation of the pilot test for entrepreneurs, the survey was made available through a specialized research company (Global Research) who were provided with instructions and training to the surveyors. No difficulties or hesitations were detected in the target public for its completion.

## Instruments

### Entrepreneur Survey

Perception of the dual model in the training of students who have implemented these skills during past or present internships in your company.

This information will serve to bolster the research that Uniempresarial (Ue) has been conducting on its pedagogical model.

Basic information	
Company name	How long have you supported Ue internships?
Phone	Less than 1 year    Between 1 and 3 years    Between 4 and 6 years    More than 6 years
No. of employees	
Company type	Currently have Ue students in practice?
Commerce	Yes    If "yes" How many? _____
Industry	No
Services	Which program?
	Admin.    Finance    Both    Other

Pedagogical Model						
1	Would you recommend another entrepreneur to have Uniempresarial students in internship?	Yes	No			
	Mark with an X according to your perception	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
2	Theory and practice education is a competitive advantage for Ue students					
3	The students' knowledge has been useful to solve real situations					
4	Do you agree with the program length? Which is shorter than traditional university (3 years and a half) but only has 15 days vacation					
5	The education acquired was comprehensive (values, knowledge, personal development)					
6	Are you satisfied with the level of Ue students in internship?					
7	What comments would you make to improve the quality of Ue education?					

Table continues...

Mark with an X according to your perception		Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
8	Have you found any benefits to having Ue students practicing at your company?	Yes	No	If "yes", what are the benefits?		
9	How would you rate the benefits to your company by Ue students? 5=very high, 1=very low	5	4	3	2	1
10	Would your company consider having more student interns?		Yes	No	If "yes", how many?	
11	If the previous answer is "no", why?					
<b>Applications in the workplace</b>						
12	The internship students have presented projects for the company				Yes	No
13	If the previous answer was "yes", they were beneficial to your company	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
14	Were any of these projects implemented in your company?				Yes	No
15	If "yes", in what percentage?			100-70%	70-40%	40-5%
16	Do you consider that the Ue interns have contributed to the development or positive results of the company in the areas in which they have performed?	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
17	Will the company contract or hire the graduate at the end of the Ue training program?	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
<b>Competitive advantage</b>						
18	Do you have or have had students from other educational institutions? (If "no", skip to question 54)				Yes	No
19	If "yes", from what program?	Technician or technologist from el SENA (go to question 20)				
		Technician or technologist from another institution (go to question 20)				
		Professionals from traditional universities (go to question 37)				

Table continues...

Compared to technicians or technologists in practice, the Uniempresarial students are:		Very Superior	Superior	Same	Inferior	Very inferior
20	In general					
21	Teamwork					
22	Ability to assimilate new knowledge					
23	Assimilate roles in new areas					
24	Ability to innovate in processes					
25	Flexibility to change					
26	Contribute constructive criticism					
27	Commitment to the company					
28	Find new business opportunities for the company					
29	Goal achievement					
30	Analysis ability					
31	Ability to exercise lessons learned in the classroom					
32	Autonomy					
33	Relationship skills					
34	English skills					
35	Computer skills					
36	Management skills					
Compared to professionals in practice from traditional universities, the Uniempresarial students are:		Very Superior	Superior	Same	Inferior	Very inferior
37	In general					
38	Teamwork					
39	Ability to assimilate new knowledge					
40	Assimilate roles in new areas					
41	Ability to innovate in processes					
42	Flexibility to change					
43	Contribute constructive criticism					
44	Commitment to the company					
45	Find new business opportunities for the company					
46	Goal achievement					
47	Analysis ability					

Table continues...

Compared to professionals in practice from traditional universities, the Uniempresarial students are:		Very Superior	Superior	Same	Inferior	Very inferior
48	Ability to exercise lessons learned in the classroom					
49	Autonomy					
50	Relationship skills					
51	English skills					
52	Computer skills					
53	Management skills					
54	What has been the most positive aspect generated in your company by the presence of Ue students in internship:	Greater responsibility in assigned tasks				
		Completion of tasks in a shorter time				
		Continuous contribution to improvement of process				
		The students are an example to others				
<b>Uniempresarial image</b>						
55	Education is an issue of social responsibility for which the Chamber de Commerce of Bogotá decided to create Ue	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
56	Why did your company decide to use Ue students? (Indicate the two most important)					
	To support the Chamber of Commerce of Bogotá's program					
	Referred by other entrepreneurs with successful experiences					
	To support Uniempresarial's pedagogical model					
	To comply with the social responsibility aspects of the company					
	To improve the educational level of the company's employees					
	Reduce personnel costs					
	Others (which?)					
57	The Ue dual model should be promoted within the companies of Bogota and its region	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
58	The social contribution of Ue is reflected in:	Support productive community projects				
		Creation of companies				
		Articulation of the productive and education sectors				
		Improvement of the quality of life of the graduates				

### Graduate Survey

Perception of the dual model in your training

This information will serve to bolster the research that Uniempresarial (Ue) has been conducting on its pedagogical model.

Basic information			
Age:	_____	Gender	Female <input type="checkbox"/> Male <input type="checkbox"/>
Marital status	_____		
Residence stratum	_____		
Academic level	_____	Graduated	_____

Pedagogical Model						
1	Would you recommend a Uniempresarial friend or family member for professional training			Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Mark with an X according to your perception		Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
2	Has your theory and practical education been a competitive advantage?					
3	The knowledge acquired has been useful in solving real situations (whether practical or occupational, if you are employed)					
4	Do you agree with the program length, which is shorter than traditional university					
5	The education acquired was comprehensive (values, knowledge, personal development)					
6	Are you satisfied with the level of the Uniempresarial program?					
7	What comments would you make to improve the quality of Uniempresarial education?					
8	Have you studied or completed another program, besides your undergraduate, at Ue?	Yes	No	If "yes", which program and where?		
Labor market						
9	What is your present occupation?	Employed				
		Work and study				
		Unemployed (skip to question 21)				
		Only study (skip to question 25)				
		Entrepreneur (skip to question 24)				

Table continues...

Labor market						
10	If you are employed, are you working for the co-training company? Where did you complete your internship?	Yes		No		
11	If your answer was "no", mark with an X why.	Salary				
		Better employment opportunities				
		There were no vacancies				
		Other, which?				
12	How long did it take for you to get a job after graduating from Uniempresarial?	Less than a month				
		Between 3 and 6 months				
		Between 7 and 12 months				
		More than a year				
13	What type of contract do you have?	Indefinite employment				
		Fixed term				
		By project				
		Services rendered				
14	Indicate with an X the type of organization in which you work	Public				
		Private				
		Mixed				
		NGO - Foundation				
		Multinational				
15	Have you been promoted during your career in the company?	Yes		No		
16	Indicate your salary range	Between 1 and 2 minimum legal salaries				
		Between 3 and 4 minimum legal salaries				
		Between 5 and 6 minimum legal salaries				
		More than 7 minimum legal salaries				
17	You consider that your income corresponds to the quality of your training.	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
18	Indicate the type of job you perform.	Assistant				
		Analyst				
		Area manager/coordinator				
		Director				
		Manager				
		Other, which?				

Table continues...

<b>Labor market</b>						
19	Indicate the size of the company where you work.	Large				
		Medium				
		Small				
		Micro business				
20	You are satisfied with your current employment	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
<b>Improvement opportunities - answer only if you are unemployed</b>						
21	Why do you believe that you are not employed	Lack of the required experience				
		Insufficient salary				
		No job opportunities in your field of interest				
		Other, which?				
22	How long have you been unemployed	Less than two months				
		Between 3 and 6 months				
		Between 7 and 12 months				
		More than a year				
23	What means do you use to seek job opportunities?	Use labor intermediation service				
		Internet (sites like empleo.com)				
		Specialized labor intermediation companies				
		Other, which?				
<b>Applications in the workplace</b>						
24	You have been working in academic fields	Teacher				
		Researcher				
		Other				
		For what institution?				
25	What was your selection of graduate project?	Mission				
		Graduate project applied to a company				
		Certificate program				
		Entrepreneurship				
26	If your option was a project for the company, was it implemented?	Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
27	If your previous answer was "Totally agree", in what % was it implemented?	100-70%				
		70-40%				
		40-5%				
28	If employed, your current occupation is related in what % to the professional program you completed?	100-70%				
		70-40%				
		40-5%				

Table continues...

Answer according to your perception of the training received at Ue and how it has aided your work		Totally agree	Agree	Agree nor disagree	Disagree	Totally disagree
29	Planning and using time effectively to achieve the objectives set.					
30	Using specialized computer tools (statistics packages, design software, etc.).					
31	Working as a team to achieve common goals.					
32	Working independently without permanent supervision.					
33	Applying values and professional ethics in your work performance.					
34	Adapting to change (work in new and diverse contexts).					
35	Working under pressure					
36	Having adequate relationship skills					
37	Innovating in the workplace and developing innovative ideas					
38	Use of English skills in labor issues					
39	Your income corresponds to the quality of your training				Yes	No
<b>Entrepreneurship - answer only if you are currently involved with entrepreneurship</b>						
40	The company created is	Self-owned				
		Family-owned				
41	How long ago was it created?	Less than two months				
		Between 3 and 6 months				
		Between 7 and 12 months				
		Over a year				
42	What sector does it belong to?	Industry				
		Commerce				
		Services				
		Specify activity				
43	How many employees does it have?	0 to 5				
		6 to 10				
		11 or more				
44	You received advice on the creation of your company by Uniempresarial?				Yes	No
45	The training you received at Uniempresarial supported the creation of your company. If already in existence, did it help to strengthen it?					
46	Are there more entrepreneurs in your family?					
47	If the previous answer was "yes", what is your relationship?					
48	You are the first professional in your family					
49	If the previous answer was "no", which family members are professionals?	Grandparents				
		Father				
		Mother				
		Brothers/Sisters				

## Conclusions

In the design of these instruments to measure the perception of entrepreneurs and graduates, regarding the pedagogical models of education and with the intention that they could be validated using statistical software, that would provide certainty of their reliability it was necessary to have a majority percentage of Likert questions.

Likewise, it was found that grouping each of the questions that represent an indicator within the research, in dimensions and categories, made it easier to design these tools, which would respond to the main objectives of the research for which they were designed.

On the other hand, the validation of the instruments in pilot tests, before their final implementation to the representative samples, ensured the reliability and ease of the application of the same.

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