

# Approach to the concept of employability and its indicators. An Emple-AP case project

*Enfoque del concepto de empleabilidad y sus indicadores.  
Un proyecto de caso Emple-AP*

*Abordagem ao conceito de empregabilidade e seus indicadores.  
Um projeto de caso Emple-AP*

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## Abstract

*Introduction:* This review article is the product of the research project Observatory for Labor Insertion and Strengthening of Employability in Countries of the Alliance of the Pacific (Emple-AP), developed at the Universidad Distrital Francisco José de Caldas in 2019. The aim of the project is to contribute to improving employability rates and the creation of a regional observatory.

*Problem:* Employability is a complex social construct [1] [2], which varies depending on factors such as the actors involved and the focus emphasis.

*Objective:* Build the concept of employability for the Emple-AP project, and, according to this, derive the indicators following the guidelines established for the creation of the employability observatory.

*Methodology:* The construction of the concept is supported in the ontology design and validation of the results is performed by a panel of experts.

*Results:* The results of the literature review regarding the concepts and employability rates are presented, followed by the design of the ontology and the employability construct that branches from it. Finally, employability indicators are designed and verified by the expert panel.

*Conclusion:* Employability is defined according to the context in which it is immersed.

*Originality:* Construct development under ontology design facilitates semantic heterogeneity problems, because it provides a conceptually shared language to represent information.

*Limitations:* The construct is so complex and wide that it is necessary to perform several iterations under specialized methodologies until it is perfected.

**Keywords:** Employability, labor insertion, indicators, graduates, complexity

## Resumen

*Introducción:* el presente artículo de revisión es producto del proyecto de investigación Observatorio para la inserción laboral y fortalecimiento de la empleabilidad en países de la alianza del pacífico Emple-AP, desarrollada en la Universidad Distrital Francisco José de Caldas en el año 2019. El objetivo del proyecto es contribuir al mejoramiento de los índices de empleabilidad y la creación de un observatorio regional.

*Problema:* la empleabilidad es un constructo social complejo [1][2], que cambia en función de aspectos como los actores involucrados, el campo de conocimiento que lo aborde y el énfasis que se quiera dar.

*Objetivo:* construir el concepto de empleabilidad del proyecto Emple-AP, y en función de este derivar los indicadores de acuerdo a los lineamientos establecidos por el observatorio de empleabilidad.

*Metodología:* la construcción del concepto se soporta en el diseño de ontologías, y la validación de los resultados se realiza a partir de panel de expertos

*Resultados:* se presentan los resultados de la revisión de literatura respecto a los conceptos e índices de empleabilidad; seguidamente el diseño de la ontología y el constructo de empleabilidad que de allí se deriva, por último se diseñan los indicadores de empleabilidad y su verificación mediante panel de expertos.

*Conclusión:* la empleabilidad se define según el contexto en el que se encuentre inmerso.

*Originalidad:* la elaboración de constructo bajo el diseño de ontología facilitando los problemas de heterogeneidad semántica.

*Limitaciones:* el constructo es tan complejo y amplio, que es necesario realizar varias iteraciones bajo metodologías especializadas hasta llegar a perfeccionarlo.

**Palabras Clave:** Empleabilidad, inserción laboral, indicadores, egresados, complejidad.

## Resumo

*Introdução:* Este artigo de revisão é produto do projeto de pesquisa Observatório para a Inserção Laboral e Fortalecimento da Empregabilidade nos Países da Aliança do Pacífico (Emple-AP), desenvolvido na Universidade Distrital Francisco José de Caldas em 2019. O objetivo do O projeto visa contribuir para a melhoria das taxas de empregabilidade e a criação de um observatório regional.

*Problema:* Empregabilidade é uma construção social complexa [1] [2], que varia dependendo de fatores como os atores envolvidos e a ênfase do foco.

*Objetivo:* Construir o conceito de empregabilidade para o projeto Emple-AP, e, a partir dele, derivar os indicadores seguindo as diretrizes estabelecidas para a criação do observatório de empregabilidade.

*Metodologia:* A construção do conceito está apoiada no desenho da ontologia e a validação dos resultados é realizada por um painel de especialistas.

*Resultados:* são apresentados os resultados da revisão da literatura sobre os conceitos e taxas de empregabilidade, seguidos do desenho da ontologia e do construto de empregabilidade que dela se ramifica. Finalmente, os indicadores de empregabilidade são elaborados e verificados pelo painel de especialistas.

*Conclusão:* A empregabilidade é definida de acordo com o contexto em que está inserida.

*Originalidade:* o desenvolvimento de construções sob o design de ontologias facilita os problemas de heterogeneidade semântica, porque fornece uma linguagem conceitualmente compartilhada para representar informações.

*Limitações:* A construção é tão complexa e ampla que é necessário realizar várias iterações sob metodologias especializadas até que seja aperfeiçoada.

**Palavras-chave:** Empregabilidade, inserção laboral, indicadores, graduados, complexidade

## 1. INTRODUCTION

Concern over employability has become one of the pillars for the formulation of public policies around the world, as well as for the establishment of the objectives of educational institutions. The complexity of talking about employability can explain why there is no consensus regarding the way it should be understood, treated or managed, and the reason why such a plethora of meanings currently exist, ranging from purely personal issues such as competency-based approaches to approaches to labour market conditions for the generation of employment [3] [4].

The construction of the concept of employability under the Emple-AP project will allow the unifying principle to guide and promote guidelines and strategies that affect the construction of a common language in the countries of the Pacific Alliance; the formulation of public policies in order to facilitate the standardization and comparability of the data generated by the allied countries.

The purpose of this document is to review literature related to the concepts of employability to construct a proposal from which the Emple-AP project will address and facilitate defining indicators to assess compliance with the overall objective of

the project: “improve employability rates in the countries of the Pacific Alliance...” [5] as well as being a source of relevant information for decision-making by different stakeholders.

## 1.1 Employability as a complex problem

The importance and complexity of the term “employability” has led to it having different interpretations (Table 1); this is due to multiple variables, agents that may be affected by interactions and contexts in which it arises.

**Table 1. Review of the literature on employability.**

Source	Definition of Employability	Context Analysis
Ripoll et al. (1994, cit. En Gamboa et al., 2007, p. 8)	Subjective appreciation that the individual makes of his or her chances of finding work based on the objective situation of the labour market and certain personal characteristics [6].	From an individual’s perspective, this author presents the personal satisfaction in the context of employability.
Hillage and Pollard (1998)	The ability of individuals to obtain an initial job, maintain employment, move between roles within the same organization, get a job if required and ideally ensure an adequate and sufficiently satisfactory job [7].	In a public policy area, the term employability is used to determine best practices.
Grip et al. (1999) Formichela and London (2005)	Employability is an individual’s potential to access and stay in a job [8] [9].	In a context of sociology, employability is assessed as a factor of equity in the vulnerable population.
Lefresne (1999)	Employability is a broader term than employment, as it refers to the individuals’ ability to keep a job, change jobs and construct their own career path [10].	This construct is presented as a strategy for the development of a society.
Groot and van den Maasen Brink (2000)	The opportunity for individuals to have a job in the domestic and/ or external labor market, considering key elements in the process, both the preparation and attitudes or the worker availability [11].	From a business perspective, employability is an important fact for productivity in organizations.
Trevor (2001)	The perceived ease of movement in the labor market [12].	This author defines employability from personal satisfaction and attributes to move in the labour market.
Harvey (2001)	The graduate’s propensity to exhibit attributes that employers anticipate will be necessary for the effective future functioning of their organization (company) [13].	This author makes this definition from an educational conception.
Campos Rios (2003)	The probability of obtaining a vacancy in a specific job market based on the attributes with which the search engine is endowed and which are the ones that allows them to overcome the obstacles imposed by the market [14].	Under an economic view, employability is considered as a strategic factor for economic growth and the outstanding role played by the institutions to do so when it arises.
Van der Heijden and Van der Heijden (2006)	The ability to be employed in a job [15].	Employability is presented as a fundamental requirement for personal development and career success.

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Source	Definition of Employability	Context Analysis
Forrier and Sels (2003)	It gives employees the opportunity to get a job if required [16].	Employability in the light of public policy and the role of government in promoting this social construct.
Thijssen (2000)	Individual capacity to perform a variety of functions in the given labour market. Factors related to the context and with the individual that will influence its future position in the labor market in a given context [17].	This definition is given from the employment of the individual, and the ability of this term's intervention determines the individual and organizational career.
Weinberg (2004)	It encompasses the skills, knowledge and competencies that enhance the ability of workers to get and keep a job, improve their work and adapt to change, secure another job if they want or get laid off, and get work more easily in the market in different periods of their life [18].	The author presents this definition in the context of education and vocational training which are essential components of any decent work.
Alles (2006)	Possibility of obtaining a job (and / or keep), considering that if he wants to achieve this it will be necessary to possess what the jobs require [19].	Over the ability to influence the employability of graduates.
Rothwell and Arnold (2007)	The ability to keep or get the job they want [20].	This construct is based on a purely humanistic perspective which highlights the traits of the individual.
Berntson (2008)	Perception of the individual about his chances of getting a new, equal or better job [21].	Social context is based on health and wellness [22].
García Manjón (2008)	Related to the development of competences that are valued in the labour market, i.e. the existence of a series of competences is assumed to improve the possibilities of the individuals who possess them to find a job and to maintain it over time [23].	Towards an educational initiative, an analysis of employability and competences.
Hernandez et al. (2011)	It refers to employment opportunities for a person, attending to their personal characteristics and a particular work context [24].	From the context of the labor market, a concept of self-efficacy for employability and job search is proposed.
Guzman & Irigoin (2000)	Skills and qualifications that enhance the ability of people to take advantage of opportunities for education and training in order to find and keep a decent job [25].	Within a sociology context, this term is presented towards integration and social participation.
Martinez Gonzalez (2011)	The skills a person has to design his career, access to the labor market and manage their own career development with satisfaction [26].	Employability immersed in an educational context and development of skills in college.
Et.Al Fugate (2004)	Ability to identify and fulfill career opportunities [27].	In a sociological framework, employability and their applications are defined.
Pool and Sewell (2007)	Set of tools, knowledge, understanding and personal attributes that make a person more likely to choose and secure occupations in which they are satisfied and successful [28].	The focus of the authors is specifically educational, mainly on students and graduates of higher education in the UK.

**Source:** Adapted from Suarez (2016). [29]

As shown in Table 1, the term employability has been used by different fields of knowledge, applied in different contexts (formulation of public policy, building enterprise, social, etc.), and has different interpretations depending on the view point of actors (companies, educational institutions, society, state, etc.), or if they want to give emphasis in construction concerns. In this way it is possible to find concepts, ranging from understanding employability as a problem attributable to the competencies and skills, to employability and job placement (Figure 1) [30] [31] [32].

EDUCATIONAL CONCEPTION OF EMPLOYABILITY	STRATEGIES	EMPLOYABILITY AS A CONCEPTION OF EMPLOYMENT
Skills and abilities development	High education	Labour insertion
"Transferable skills and qualifications that reinforce people's ability to take advantage of education and training opportunities presented to them in order to find and keep decent work". [24]	"The competence that a person has to design their professional career, access to the labour market and manage their own work development with success and satisfaction". [25]	"Refers to employment opportunities that a person has according to their personal characteristics and a specific work context". [23]
"Set of tools, knowledge, understanding and personal attributes that make a person more likely choose and secure occupations in which they are satisfied and successful". [27]	"It covers different basic skills needed to learn and perform effectively in a job". [28] [33]	"The perceived ease of movement in the labor market". [12]
	"The propensity of the graduate to exhibit attributes that employers anticipate will be necessary for the effective future operation of their organization". [13]	"The possession of the qualities and competencies required to face the changing needs of employers that an individual has, and thus help realize their aspirations and their potential at work". [33]

**Figure. 1.** Understanding employability from emphasis is to be given.

Source: Adapted from Suarez (2016) [28]

## 1.2 Employability Indicators

"An indicator is defined as an expression set by the relationship between two or more variables, in order to measure the progress on achieving a given target in a period of time." [34] [35]

An indicator of employability is a broadly defined term in the literature, similarly with the construct of employability that has many definitions from different perspectives as presented in Table 2 [36] [37].

**Table 2.** Literary review of employability indicators.

Source	Definition	Context Analysis	Example
Rebolledo (2009)	Set of indicators con- signed as the attain- ment of employment derived from training actions at the work level [38].	This author's perspective focuses on job training as a factor of employability in special education in the province of Ñuble, Bío-Bío region, Chile.	- Occupancy rate by years of study, type of instance and training practice - Rate of proportion of popu- lation employed by Level of Mental Retardation and Sex
Arrieta (2009)	Measure of perfor- mance describing factors that may favour access to and subse- quent maintenance of employment [39].	Analysis of the employ- ability of immigrants in the European Union.	- Job training - Be able to plan your work - Responsibility - Commitment - Know how to work inde- pendently - To know how to make decisions, to have initiative, to know how to identify and solve problems
Pérez <i>et.al</i> (2007)	They measure the distance between the real conditions that a subject has to access an occupation and the optimal conditions that must occur at a given time, depending on the circumstances of the labour market [40].	This definition is present- ed within the framework of the representations and actions of university students with regard to employability.	- Knowledge of languages - PC management and tech- nology - Establish networks and contacts - Strategic thinking - Studies and work experience
QS World University Rankings	N/A	Known as the employabil- ity ranking of universities in the world, is prepared by QS World University Rankings, approved by the Group of International Classification Experts. It is one of the three most read classifications in the world [41].	- <b>Employer Reputation:</b> Based on more than 42,000 QS survey responses for employers. In this survey, employers identify the most competent, innovative and employable institutions. - <b>Academic Reputation:</b> Has expert opinions from more than 83,000 academics in the area of higher education in relation to the quality of research at univer- sities around the world.

Source: own work

## 2. MATERIALS AND METHODS

Figure 2 describes the steps of the methodology developed in this research.

### 2.1 Literature review

The literature review was searched in academic databases. After being selected and organized, the definitions were analyzed according to the context of employability in which they were immersed.

## 2.2 Ontology design for concept construction.

Ontology is defined as “the theoretical organization of terms and ratios used as a tool for concepts of a domain analysis.” [42] It allows you to create a shared understanding by unifying the different points of view, as it advocates the assertive communication between members of a community and computer systems, [43] providing a shared conceptual level language for representing information in an accurate and logical manner [44] [45] [46].

Phases that compose the development of this methodology are: a) Set the expert work team into ontology and employability, b) List the different concepts of employability found in the literature review and identify the variables and actors involved in each term, c) Specify components of the ontology (analysis), as [47] [48] [49]:

- Frame: an object that includes classes, instances and relationships.
- Classes or types: Refers to a set of (physical, tasks, functions, etc.) objects, which in turn can be divided into subclasses, that represent more specific concepts than the class to which they belong.
- Relationships: Interactions are classes and / or subclasses
- Attributes: Features assigned to each class and subclass.

d) By reflecting the exercise, the selected team reaches a consensus on the construct of employability (synthesis).

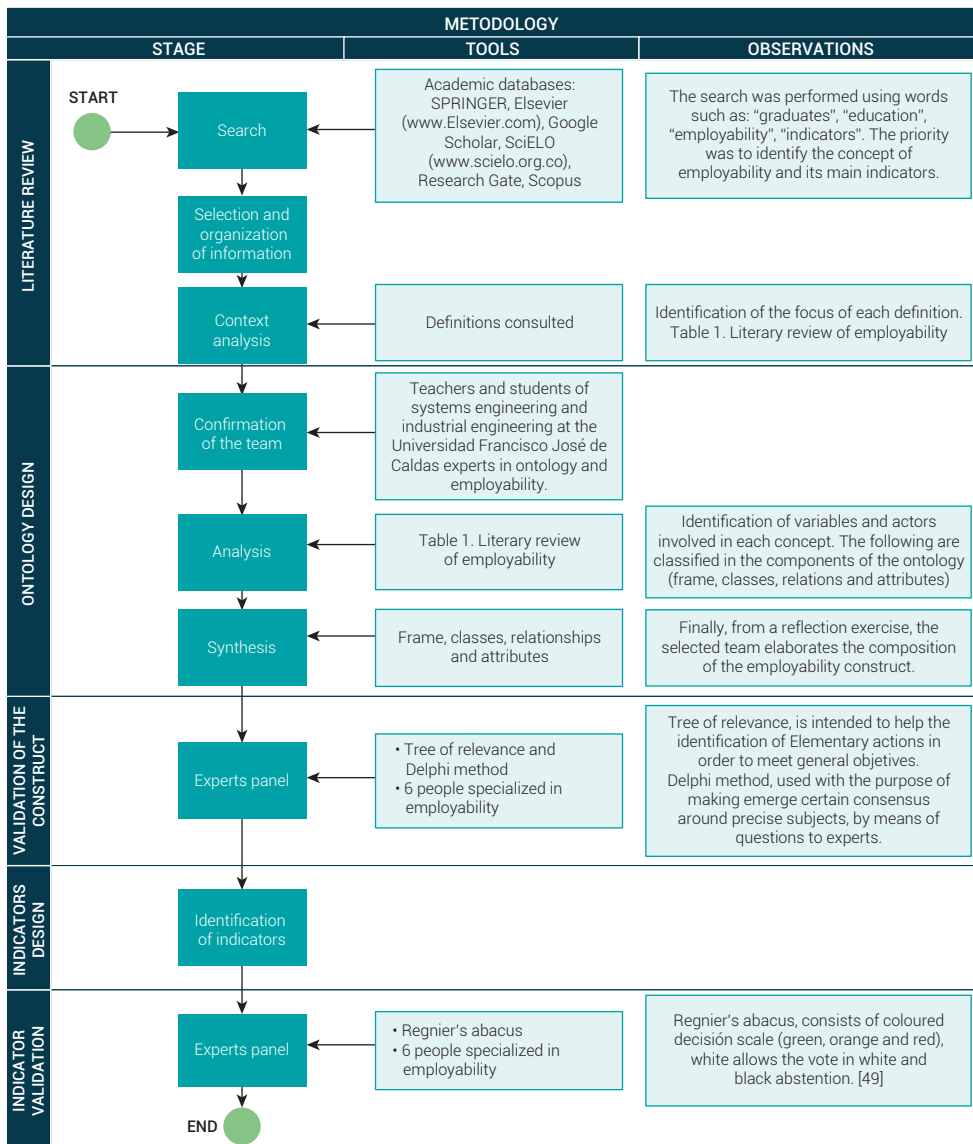
## 2.3 Expert Panel

The expert panel is a qualitative method, whose purpose is to evaluate an issue through discussion generated by different experts. The application of this method pursued the following objectives [50] [51] [52]:

- Assess whether the proposed employability construct corresponds to the objectives and nature of the project. For this purpose, we subjected the construct verification processes proposed under the methodology of relevance trees. This method was developed in two phases: the first was the tree construction pertinence based on the overall objective of Emple-AP project ending in elementary actions to accomplish the overall objective, the second phase involved the relevance of each relationship tree being evaluated by the Delphi method, where the rating was performed on a Likert scale of 1 to 5; 1 being very poor and 5 very high relevance.



- In order to evaluate the relevance, objectivity, clarity and appropriate intervals of the indicators for this methodology, the Regnier abacus was implemented. Thus, each expert filled out a matrix where the proposed indicators and evaluation criteria were related, and thus a results matrix was developed where a complete picture could be displayed on the position of each of the experts, generating a discussion on the subject for validation of indicators [53]:



**Figure 2.** Description of the methodology.

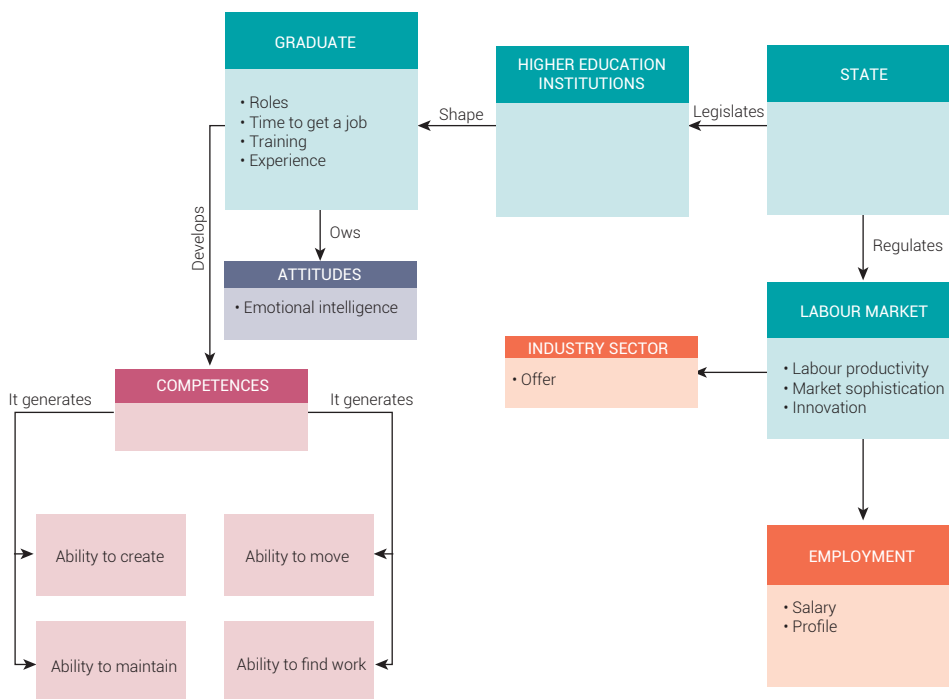
Source: own work

## 3. RESULTS

### 3.1 Construct proposed employability

From the literature review and its subsequent analysis, the ontology of terms presented in Figure 3 is designed. The components identified are:

- Frame: Employability, as this is the context in which it develops
- Classes: Graduate, Higher Education Institutions (HEI), state, labor market, etc.
- Subclasses: Attitudes, ability to create, ability to move, ability to maintain, ability to find work, industry sector, employment.
- Relations: It generates, owns, develops, shape, and legislates.
- Attributes: Roles, time, training, experience, job, salary, curriculum, etc.



**Figure 3.** Ontology design for the construction of the employability concept.

Source: own work

The construct raised from the synthesis of ontology is “a country’s capacity to articulate actors (state, HEI, company, industry) that will generate the skills and attitudes in the graduate and increase the chances for creating or finding a job, maintaining and

moving between the roles of the organization, meeting their professional, economic, promotional and personal development throughout their life needs, which is embodied in the value contribution that this makes to the employer and society.”

**Table 3. Specification of the elements of the construct.**

ELEMENTS OF THE CONSTRUCT	OBSERVATIONS
Country capacity	Refers to the set of conditions, circumstances, qualities that countries possess.
Actor articulation	It refers to a collaborative and integrated network of state actors, work, society, higher education institutions and industry to achieve collective outcomes. The articulation of actors requires consistency of analysis, goals and visions of the facts to help determine whether it is necessary to limit or create opportunities for this process.
Skills and attitudes	Skills are the personality traits of each individual, which form the foundation of the skills that individuals exhibit and attitudes presented in a work environment.
Increasing probabilities	It includes, but is not limited to, the economic development of the country, which will strengthen the productive sector, and by extension the demand for graduates of higher education institutions.
Create, find, keep, move between roles	It includes company generation as well as existing business placement in the labor market. It also refers to the ability to retain and advance in employment.
Meet professional needs	It emphasizes the relevance between the characteristics of the graduate curriculum and the profile of their position.
Satisfy economic needs	It emphasizes relation consistency between the economic income accruing in employment and training profile exit, within the economic context of the region.
Satisfy promotion needs and personal development	Emphasizes feelings of fulfillment, respect, trust and significance of employment generated in the individual.
It is embodied in the value contribution that this makes to the employer and society	Refers to the contribution that actions and knowledge make towards the performance of graduates within the company where he works and society.

**Source:** own work

In this construct, the issue of employability is not attributed to an actor in particular, on the other hand, given the context conditions, it must be linked to the strengths of the actors and countries involved, achieving synergies which foster the generation of sound public policies to ensure the graduates employability [54] [55] [56].

Finally, in order to validate the construct methodology, an expert panel is applied and, in particular, a relevance tree analysis where a rating of high relevance to the overall objective of the project was obtained.

### 3.2 Key indicators of employability

From the employability construct and specific objectives of the project Emple-AP, the following proposal was established:

**Table 4.** Proposed Employability Indicators.

Objective	Classification	Name	Indicator	Numerator	Denominator	Purpose	Time
Build a regional labor observatory that facilitates systematic, updated and permanent knowledge of the behavior, dynamics, trends and needs of the labor market in Mexico, Colombia, Peru and Chile.	Efficacy	Index of publications	(Number of publications produced by the observatory that are within the Google Scholar h5 index / Number of publications produced by the observatory) *1000	Measures the quantity and quality of an author's scientific output Numerator source: Google Scholar [57] [58]	Academic research publications that promote up-to-date and permanent knowledge of the labor market.	To measure the percentage of the observatory's flagship publications that have an impact on graduates and other stakeholders.	Annual
	Product	Participation rate of the graduates attached to the observatory	(Number of graduates with active participation in the observatory/ Number of graduates assigned to the observatory) *100	Number of graduates who actively engaged in the academic activities proposed by the observatory	Number of graduates in the observatory's databases who periodically receive information on activities and publications.	To know the degree of participation of the population of graduates that is linked to the observatory.	Biannual

**Source:** own work

**Table 5. Proposed Employability Indicators.**

Objective	Classification	Name	Indicator	Numerator	Denominator	Purpose	Time
Build a regional labor observatory that facilitates systematic, updated and permanent knowledge of the behavior, dynamics, trends and needs of the labor market in Mexico, Colombia, Peru and Chile.	Result	Index of efforts aimed at identifying emerging trends and professions	Number of efforts aimed at identifying emerging trends and professions	N/A	N/A	Quantify the efforts (research or strategic alliances) that allow to know the updated context of the labor market.	Annual
	Management	Index of functioning observatories	(Number of observatories installed in the countries of the Pacific Alliance;/ Number of projected observatories in the countries of the Pacific Alliance) *100	Number of observatories of Pacific alliance countries in operation	The goal is to have an observatory in every country of the Pacific alliance.	To know the number of observatories in operation in a given period of time.	Biannual

**Source:** own work

**Table 6. Proposed Employability Indicators.**

Objective	Classification	Name	Indicator	Numerator	Denominator	Purpose	Time
Promote joint work between Higher Education Institutions, Ministries of Education and the productive sector, in order to guarantee an offer of relevant higher education that responds to the needs of the labor market of the countries of the Pacific Alliance.	Impact	Index of labor insertion of the graduates linked to the observatory	(Number of graduates who have reached labor market insertion / Number of graduates linked to the observatory) *100	Number of graduate students (in a period of no more than 5 years) who have worked together through the activities and scenarios proposed by the observatory.	Number of graduates in the observatory's databases who periodically receive information on activities and publications.	To know the impact of the observatory with regards to graduate placement	Bi-annual

**Source:** own work

**Table 7. Proposed Employability Indicators.**

Objective	Classification	Name	Indicator	Numerator	Denominator	Purpose	Time
To create synergies between the Erasmus + program and the initiatives promoted by the Pacific Alliance.	Management	Index of management of strategic alliances in students	(Number of graduates who have benefited from strategic alliances / Number of strategic alliances generated by the observatory) *100	Students who have attained employability and/or labor insertion thanks to the alliances generated by the observatory.	Number of agreements, alliances and/or projects generated between the Erasmus + program and the initiatives promoted by the Pacific Alliance.	Generate an overview of the students who have benefited from the strategic alliances generated by the observatory	Annual
	Management	Index of management of strategic alliances in graduates	(Number of graduates who have benefited from strategic alliances/ Number of graduates linked to the observatory) *100	Graduates who have achieved employability and/or labor insertion thanks to the alliances generated by the observatory.	Number of agreements, alliances and/or projects generated between the Erasmus + program and the initiatives promoted by the Pacific Alliance.	Generate an overview of the graduates who have benefited from the strategic alliances generated by the observatory	Bi-annual

**Source:** own work

Finally, a validation of indicators with the Régnier abacus methodology was developed with the panel of experts, which allowed to ensure proper construction of indicators and develop new performance measures as shown in Tables 4, 5, 6 and 7.

## DISCUSSION AND CONCLUSIONS

The studies consulted from the different contexts and the results obtained have made it possible to verify that employability is a highly relevant aspect involving different actors and it is of vital importance to articulate these to obtain accurate results and guarantee the employability of the graduates; that is why it becomes a widely complex construct, and like its indicators, it is defined as the area in which you are immersed.

An important feature of this research is the development of the construct of employability under the Emple-AP project, under an ontology design that unifies clearly and logically concepts evidenced in the literature, as this provides a shared language at a conceptual level to represent the information according to the objectives pursued, the project and the context in which it is developed.

The adoption of this construct in the project is relevant as it would diminish the cultural gaps in communication and generate synergy in the work team. It is also

noteworthy that it is a study proposal and several iterations can be carried out until perfecting the construct according to the interests pursued.

Likewise, the formulation and validation of key indicators that was proposed previously allows for an adequate starting point to project future research oriented to the formulation of new performance measures in the short, medium and long term, the design of the goals that each one of these would have, including all the interested parties (state, academia, society and the individual) in the employability observatory and the environment of each country of the alliance of the Pacific in which it is installed, thus providing an overview of the impact, management, effectiveness and result of this project.

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