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## Article

### Learn and work in the 21st century : a review of employability models for HE graduates : different levels of analysis

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## **Learn and Work in the 21st Century. A Review of Employability Models for HE Graduates: Different Levels of Analysis**

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**Abstract.** *Academic literature recognizes that knowledge is universal and higher education, as the main provider of knowledge and competences, is all the more not constrained by borders. In this regard, meeting the demand for competences is also challenging especially for the graduates of the 21st century who are confronted with the rapid changes of fourth industrial era economies. We propose a systematic literature review on increasing the employability of HE graduates by selecting relevant studies that analyze the employers, graduates and educators' perceptions of the employability skills for graduates. Also our investigation includes an analysis of existing graduates' employability models and proposes a comprehensive extension of these models considering the factors that have implication in increasing the employability. Thus, starting from reviewing the literature on employability on three levels of investigation: HE institutions, policy makers and employers and considering the selected employability models that propose a better design for curricula, our study will continue with creating an integrated employability model that takes into account all the factors identified on employability literature on each level (or main actors that have influence on employability and determine new requirements): HE institutions, policy makers and employers. This approach aims to identify on one hand the necessary skills and competences for increasing HE graduates' employability in order to reduce the gap between demand and supply of competences on labor market and on the other hand to identify and understand the factors of impact on employability of HE graduates in order to find solutions for achieving employability skills by curricula.*

**Keywords:** *employability; internationalization; graduates; 21st century skills; Higher education (HE).*

### **Introduction**

The rapid change in technology, the increased mobility of employees, the development of multinational companies and the changes in recruitment procedures are the main factors that have influenced the labor market of the 21st century. Under the

internationalization process that is available in all sectors of industries, the graduates have to obtain employability competences in order to find a job in their graduated field of study and to have access to lifelong learning to continuously adapt at labor market needs.

Starting from identifying the labor market tendencies and the competence requirements for young graduates, we propose an analysis of main theoretical aspects regarding employability of HE graduates by highlighting the models that determine graduates' employability and the practical implication of these models in the process of learning and acquisitions of employability skills. Also, we propose a review of the main factors that have crucial implication in HE graduates' employability in order to find what were the level of analysis that have already consider these factors and what is the connection between these levels in order to better define and find the solutions to increase the employability.

The practical implication of our literature review research is to establish the demand for competences needed for increasing the employability of HE graduates and to identify the main studies that have already scrutinize these demands analyzing the information from the three main level of investigation: universities & students, policy makers and employers. Also, we propose an integrated model of graduates' employability that take into account the implications of the identified factors on the three levels of analysis.

## **Literature review**

### ***The graduates of the 21st century and the labor market***

Successful economies in the Fourth Industrial Revolution (4IR) era need to:

- prevent financial crisis and mass unemployment;
- embracing change in all sectors including labor market (employees should be able to quickly adapt to new technologies and to take advantage of the new opportunities in their career);
- build an innovation ecosystem where innovation is the key to development at all levels and for all stakeholders;
- adopt a human-centric approach to economic development (recognizing that the human capital is essential for generating prosperity) (WEF, 2018).

Nowadays, the labor market is influenced on one hand by the internationalization of the skills requirements for employees and, on the other hand, by a number of conditions specific to the internationalization of markets, companies and the business environment in general:

- technological development (Gundlach & Nunnenkamp, 1997; WEF, 2016);
- increased labor mobility (Clark, 2000; Johnston, 1991);
- the development of multinational companies (Sawyer & Sprinkle, 2003);
- development of social networks and widespread use of online recruitment platforms (Gebert-Persson, Mattsson, & Öberg, 2014; Ken & Cheah, 2012; Mill, 2011).

In this global economic context, the generation of graduates of the 21st century is looking for employers whose management focuses on issues such as: *professional and*

*personal development of employees, constant investment in innovation and technology, gaining consumer loyalty and, last but not least, increasing employee satisfaction through competitive salaries* (Pînzaru, Mihalcea, & Zbucea, 2017). Also, considering the increasing importance of technology and innovation, for this generation, the demand for skills is primarily aimed at obtaining strong academic grounding (including both theoretical and practical knowledge) supported also by individual abilities globally recognized and transferable from one job to another in the global labor market vision (National Network of Business and Industry Associations, 2014; Nicolescu & Păun, 2009; Sienkiewicz, Jawor-Joniewicz, & Sajkiewicz, 2014). Thus, currently, the quality factors that influence the skills are: developing digital literacy, interpersonal skills, creativity and critical thinking. Considering these factors, the demand and the supply on labor market is focused on selecting the competences gathered under the term of *employability competences*. This competence includes a range of skills and abilities such as problem solving, teamwork, integrity and communication that make graduates more adaptable to the jobs demands (WEF, 2018). This approach, at university level, aims at providing internationalized learning for all the students instead of isolated international experiences for just a small number of students and is imposed by the employers' demand for globally recognized and transferable competences (Petcu, Petcu, Hâj, Santa, & Fiț, 2015, pp.21-22). Also, since both higher education and the labor market are changing rapidly (Harvey, 2002) we need to investigate the factors that have influence on employability from universities, employers and policy makers' perspectives.

### ***Employability: theoretical aspects***

Our investigation of the main studies and research in the field of employability starts from the premises that employees with their competencies represent the main and most valuable resource that companies need for developing and being competitive (Bush & Bush, 2008; Clark, 2000; Muller & Wolbers, 2003; Sienkiewicz et al., 2014; Yu, Guang, Yang, & Chiao, 2005; WEF, 2018). In this regard, recruiting the employees involves selecting from candidates with a suitable combination of *personal or behavioral competences* and *ethical competences* (Cotton, 1993; OECD, 2016) reunited under the term of *employability skills*. This combination of *behavioral* and *ethical competences* is related to the individual's ability to contribute through enthusiasm, communication, respect to the team members and with personal motivation to the fulfillment of job-specific attributions (Delamare Le Deist & Winterton, 2005; Gruden & Stare, 2018).

The underlying arguments for combining and reunion *behavioral* and *ethical competences* under the term of *employability skills* are:

- 1) the employers take into account, in the recruitment process, the emotional abilities of an individual, the discipline, enthusiasm, motivation, punctuality, the positive attitude that the candidate shows to work and efficiency in general (Cotton, 1993);
- 2) the *behavioral* and *ethical competences* are essential in selecting the candidates for jobs that are specially designed for young graduates or, in general, for entry level jobs (Cotton, 1993);
- 3) this combination of competences is useful all the more so as the team work is done through the personal input of each employee who shows flexibility in managing and solving problems (OECD, 2016).

While employability skills were underlying skills factors that lead to graduate employability (Erabaddage, Shukri, & Khatibi, 2015), the term of *employability* or *the*

*ability to be employed* (Vanhercke, De Cuyper, Peeters, & De Witte, 2012) is seen as an individual adaptation through qualities and competences to meet the changing needs of employers and customers and is applied in different contexts by those in work or by those seeking work (McQuaid & Lindsay, 2004). *Employability* is defined by Yorke and Knight (2016) as *a set of achievements – skills, understanding and personal attributes – that make graduates more likely to gain development and be successful in their chosen occupation, which benefits themselves, the workforce, the community and the economy*. A similar opinion in defining employability is seen in a study that draws political guidelines for employment in Europe, gathering the term under this statement: *employability is a combination of factors that enable individuals to advance in their career* (European Commission, 2014, pp.61-63). Also, the employability is seen as individuals' ability to remain attractive on labor market and to increase their ability to be selected and appreciated by employers (Rothwell & Arnold, 2007) and represents the fundamental competence for all industries combining four main categories of competences: *personal skills, people skills, applied knowledge and workplace skills* (National Network of Business and Industry Associations, 2014).

### ***Employability: factors and levels of analysis***

In our approach to investigate the main factors that have implications in determination of employability, we identified two main categories of factors: the *contextual factors* and the *personal factors* (Alvarez-Gonzalez, Lopez-Miguens, & Cabalero, 2017).

The *contextual factors* are those from individual's environment (Alvarez-Gonzalez et al., 2017) and are also divided in two groups: *local contextual factors* and *macro level factors* (Barnes, Green, & de Hoyos, 2015). The *local contextual factors* are represented by organizational factors (the reputation of the university, teaching & staff commitment and curriculum) and social factors (labor market demands and the forecast on demands for competences) (Alvarez-Gonzalez et al., 2017). The *macro level factors* are related to the influence of international economic environment, migration, global allocation of production and labor supply, the influences of technology and innovation, the welfare regime and international labor market requirements (Alvarez-Gonzalez et al., 2017; Vogler-Ludwig, 2006).

The *personal factors* refer to the perception that an individual has regarding himself (Alvarez-Gonzalez et al., 2017), and is also divided in two main categories of factors: *individual factors* and *individual circumstances* (Barnes et al., 2015; Green et al., 2013). While the *individual factors* are represented by skills, attitude to employment, qualification, individuals' work experience and knowledge of the labor market, adaptability and mobility (Barnes et al., 2015; Green et al., 2013), the *individual circumstances* are mostly represented by individuals' chances to gain qualifications and employability skills or having access to resources (Barnes et al., 2015) and are related to having access to university courses, having confidence in higher education efficiency, the existence of diversification in higher education areas of study and students' mobility to study in other region or abroad (Green et al., 2013).

These factors are analyzed at different levels in order to establish whether graduates have employability skills and to measure whether the policies implemented for the

growth of graduates' employability have the expected impact. The levels of analysis to be discussed are:

- at university level to establish the utility of graduates' provided competences according to labor market requirements (Alvarez-Gonzalez et al., 2017; Pool & Sewell, 2007; Rothwell, Jewell, & Hardie, 2009);
- at governmental institution level to ensure a balance in the labor market by increasing the degree of inclusion of graduates in the labor market and by encouraging lifelong learning of the staff employed (OECD, 2016; Pool & Sewell, 2007);
- at employer's level, on one hand, to identify the current and future need of labor market in terms of both the professions and the skills needed to ensure competitiveness in an increasingly dynamic economic environment and, on the other hand, to establish the criteria necessary for recruitment and career guidance of the workforce (Froelich, Liu, & Van der Heijden, 2018; Pool & Sewell, 2007; Robles, 2012; Rothwell & Arnold, 2007; Vanherche et al., 2012).

The investigations at university level cover more areas starting with the involvement of HE institutions in the transition from student to employment life and continuing with curricula, study conditions and students' study behavior, skills and competences, experience of practice linked to the course study, internationalization of HE and the results in growing the graduates' employability (Teichler, 2018). The implications of HE institutions in graduates' employability have been developed into an integrated strategy linked to learning and teaching policy (Rothwell et al., 2009). Thus, the management of higher education institutions must consider the ever-changing transformations and requirements in the economic and social environment at both national and international level (Nicolescu & Dima, 2010) in order to accommodate the learning and teaching policy. The prospects on labor market made by HE institutions are meant to ensure a high quality in education. In this view, the authors Nicolescu and Dima (2010) draw up a set of good practice and recommendations for educational management, including: identifying labor market requirements, collecting data from alumni, acquiring regular knowledge of the degree of satisfaction from students and employers with regard to skills acquired after graduating from university studies by applying satisfaction surveys. These surveys provide the most valuable feedback and are undertaken one or two years after graduation and collects information concerning: perceived employment and work situations, perceived substantive links between study and work, transition processes to employment, perceived competences at the time of graduation and after first job, retrospective perception of study conditions and provisions (Teichler, 2018).

At governmental institution level we find a range of policies covering more than national areas (European Commission, 2014) designed for promoting the expansion of HE on the dual premises of the need for graduate skills in a "knowledge economy" (Brătianu & Vătămănescu, 2017) (to ensure the increasing of students' chances to obtain a job in their field of study) and on the personal, social and economic benefits provided through the attainment of a degree (Gedye & Beaumont, 2018; Lowden, Hall, Elliot, & Lewin, 2011). Also, Lowden et al. (2011) show in their study that for long term results in increasing the graduates' employability strategy-led are needed rather than singular, ad-hoc projects. Public policies on employability and curriculum management are based on forecasting the changes in the labor market, with a view on developing a proactive and systemic response to avert potential imbalances (OECD, 2016) in the general sense that universities' mission is to provide relevant academic qualifications for the labor market and to provide graduates' opportunity to evolve throughout their professional

career by improving qualifications on the basis of lifelong learning programs (Petcu et al., 2015, p.21). Thus, the manpower policy employability focused on identifying the gaps between individual characteristic and the demand for work in the labor market (McQuaid & Lindsay, 2004) and also on identifying the future needs for the labor market (WEF, 2016).

Usually at employer's level, the study of employability covers more areas of debate in order to establish the gaps between the demand and the supply for competences (CPPR, 2008; Ken & Cheah, 2012; European Commission, 2016; McMurray, Dutton, McQuaid, & Richard 2016; Nicolescu & Păun, 2009), to forecast the future demands for competences and to identify the influence of innovation and technology in the labor market changes. These analyses are used in the study of human capital at national, regional and international levels (Pool & Sewell, 2007; Sienkiewicz et al., 2014).

The employability studies showed also that developing graduates' employability skills and attributes should cumulate the information and strategies from all three levels of investigations (universities, employers and national and international strategies) (Lowden et al., 2011; Nicolescu & Dima, 2010; Nicolescu & Păun, 2009) in order to gather all the information from stakeholders and better prospect of labor market tendencies.

## **Research methodology**

The literature review chapter highlighted the factors and the level of investigations for shaping graduates' employability. Starting from these elements we propose a thorough analyze of employability models for establishing:

- 1) the practical implication in the study of graduates' employability;
- 2) the factors that have been considered in designing the models;

### ***Designed models to determine graduates' employability***

Nicolescu (2018) reviewed in the literature the employability frameworks and the typology of employability skills and found a large diversity of employability models. These models are either designed for measure the graduates' employability, either used to measure the employability of an industry sector or to measure the employability on labor market, in general. Likewise, the employability is analyzed according to individuals' evolution from graduate to maturity on labor market (Froehlich et al., 2018). Thus, in the employability model developed by Froehlich et al. (2018), the occupational expertise or professional competence is considered the basis for developing other competences like optimization of job-specific results and personal flexibility and anticipation. Also, the advancement of employee's career leads to development of other competences concerning organizational culture and the individuals' balance between personal interests and companies' interests.

For the present study, our investigation starts with selecting the graduates' employability models that are based on the connection between the competences and the main employability determinant factors (contextual factors and personal factors). After that, we propose a model of graduates' employability in which are highlighted the

influences of labor market as contextual factor or changing circumstances in defining the multidimensional and transferable skills that are reunited under the employability competences umbrella. Finally, the process will be completed by presenting an integrated model that combines the competences and its determinant factors identified on the three main level of investigation: HE institutions, employers and governmental institution/ policy makers. Thus, for the first step in our investigation, the table below presents a selection of employability models, along with the categories and the subcategories of competences that form the model and the practical implication in the study of graduates' employability.

**Table 1. Models of graduates' employability**

Model/ Author & Year	Practical implication	Main categories of competences associated with employability	Subcategories of competences
The employability skills model/ Cotton (1993)	The model represents the basis for developing recommendation in the process of learning and acquisition of employability skills	Basic skills	Oral communication Reading, understanding instruction Basic arithmetic Writing
		Higher order thinking skills	Problem solving Learning skills strategies Creative, innovative thinking Decision making
		Affective skills and traits	Dependability/ Responsibility Positive attitude toward work Conscientiousness, punctuality, efficiency Self-confidence, positive self-image Adaptability, flexibility Enthusiasm, motivation Self-discipline, self- management Appropriate dress, grooming Honesty, integrity Ability to work without supervision
A cross- industry approach to foundational skills. Common employability skills/ National Network of Business and Industry	The model guide: - potential employees in identifying the employers' expectations and improving their skills for the labor market conditions and requirements	Personal skills	Integrity Initiative Adaptability Professionalism Dependability & Reliability
		People skills or relational skills	Teamwork Communication Respect



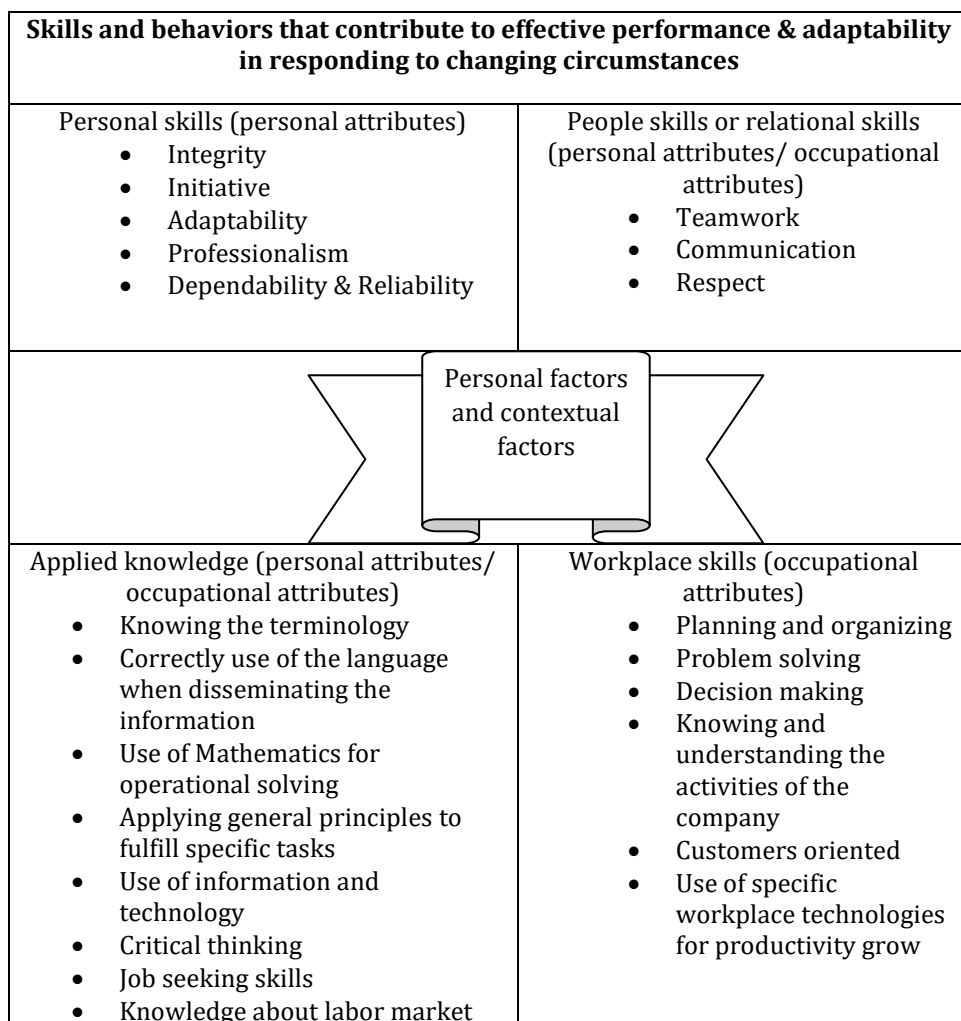
Association (2014)	- educators to emphasize foundational skills demanded by labor market; - employers to identify the common skills that all their employee should exhibit.	Applied knowledge	Knowing the terminology; Correctly use of the language when disseminating the information; Use of Mathematics for operational solving; Applying general principles to fulfill specific tasks; Use of information and technology; Critical thinking
		Workplace skills	Planning and organizing; Problem solving; Decision making; Knowing and understanding the activities of the company; Customers oriented; Use of specific workplace technologies for productivity grow
The USEM model of employability/ Yorke and Knight (2006)	The model is based on theoretical framework and does not allow practical use (Pool & Sewell, 2007)	Understanding	Knowledge and critical thinking
		Skillful practice	Apply knowledge in practice with awareness and responsiveness
		Efficacy beliefs	Be able to make a difference in a probabilistic way
		Metacognition	Learning how to learn; The capacity of self-regulation
A practical model of graduate employability CareerEDGE/ Pool and Sewell (2007)	The model can be used to explain the concept of employability to students and their parents. It is also useful for employers in their recruitment activities and for educators when preparing students for their future career.	Career development learning	Students ability to research the job markets to see what opportunities are available for them; Students ability to present themselves effectively to prospective employers
		Experience	Apply the knowledge in practice
		Degree subject knowledge, understanding and skills	Degree subject knowledge in depth; Critical thinking

		Generic skills	Imagination/creativity; Adaptability/flexibility; Willingness to learn; Independent working/autonomy; Working in a team; Ability to manage others; Ability to work under pressure; Good oral communication; Communication in writing for varied purposes/audiences; Numeracy; Attention to detail; Time management; Assumption of responsibility and for making decisions; Planning, coordinating and Organizing ability; Ability to use new technologies
		Emotional intelligence	Abilities to accurately perceive emotions; Abilities to understand emotions and emotional knowledge; Abilities to reflectively regulate emotions so as to promote emotional and intellectual growth
A model of graduates employability development/ Harvey (2002)	The model is presenting four main activities at universities level in order to promote and to ensure graduates' employability:	Self- promotional skills/ career management skills	Know how to use the internet for recruitment; Knowledge about labor market opportunities
		Employability attributes	Degree subject knowledge in depth - depends on the programs of study
		Willingness to develop	ICT learning skills; Learn & work in teams

	1) enhance or revise central support for students in developing career skills; 2) modify of curricula according to employers' demand for competences 3) promote of <i>work experience</i> opportunities within, or external to, programs of study 4) recording and reflecting on achievement (to help students reflect on work experience and identify the learning from it)	Work experience/ practical experience	Organized work experience as part of a program of study; Organized work experience external to a program of study; <i>Ad hoc</i> work experience external to a program of study
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The competences that are presented in the employment models from Table 1, reunited under the term of employability are also influence by a range of factors, all alone the employability does not guarantee employment but increasing the chances of obtaining suitable employment, compared to other job seekers (Erabaddage, Shukri, & Khatibi, 2015). In this regard, we propose a more thoroughly analysis on literature searching and selecting from the main elements of employability models the factors that influence the employability.

Thus, starting from the model developed by National Network of Business and Industry Association (2014) and highlighting the two dimensions of employability: personal and occupational attributes (Rothwell & Arnold, 2007) we emphasize in Figure 1 the influences of labor market as contextual factor in defining the multidimensional and transferable skills that are reunited under the employability competences umbrella. In this model, the employability competence is influenced both by factors from the university and outside of it in which is included the labor market tendency, previous work experience, knowledge about labor market and job seeking skills (Rothwell & Arnold, 2007).



**Figure 1. The model of employability**  
(National Network of Business and Industry Associations, 2014;  
Rothwell & Arnold, 2007)

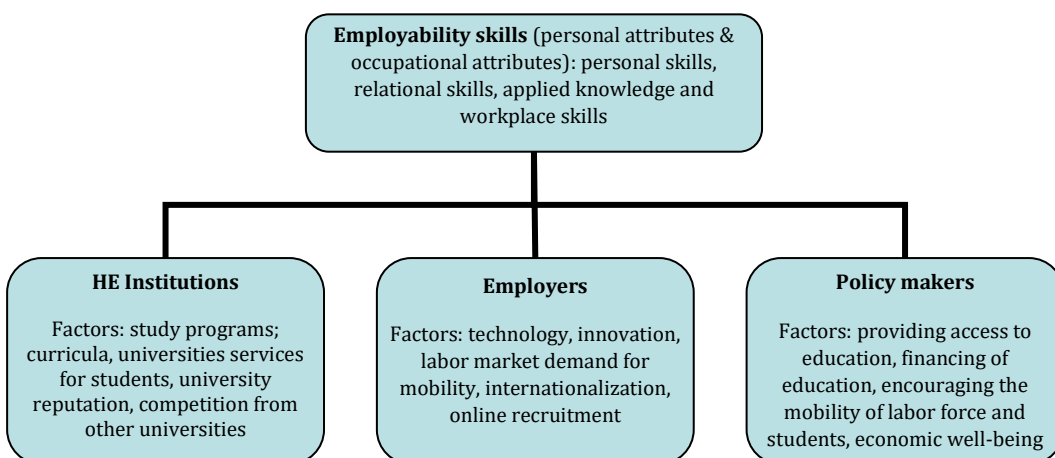
The advantage of this model is the universality of competences (available for all industries sectors) (National Network of Business and Industry Association, 2014) but in this construct of employability are highlighted only the factors and the competences not the level of analysis that revealed them.

### ***The integrated model of employability on three levels of analysis***

Thus, in this model, the factors are grouped on each level of analysis without specifying the direct implication in development of a specific competence. The implication of each factor in competences' development could be analyzed and measured by specific techniques and instruments depending on the level of investigation:

- interviews/ on line surveys with students and faculty/ curricula analysis for the university level;

- interviews/ on line survey with employers/ job platforms analysis for the employers' level;
- empirical analysis on policies and regulation of labor market and HE institution that promote graduates' employability and economic growth for the policy makers level.



**Figure 2. The model of graduates' employability and its determinant factors**

The practical implication of this model is that it could be used both in universities and as a national human resource strategy for developing graduates' employability due to its integrated nature of combining the factors from all levels of analysis.

## Conclusions

The study of employability for HE graduates revealed the existence of numerous factors that have implications in ensuring employability skills. These factors are imposed by the mechanism of the supply and demand for competences (Vogler-Ludwig, 2006) and their implication is measured and analyzed in various studies that are undertaken at HE institutions level or at national or international level in the form of public policies for increasing HE graduates employability. These policies usually include the information from labor market, scanning the tendencies for jobs demand and analyzing employers' perception on graduates' skills and their adaptability at the work place.

The employability assets include basic skills and essential personal attributes (McQuaid & Lindsay, 2004), applied knowledge and workplace skills (National Network of Business and Industry Association, 2014), career development learning skills (Pool & Sewell, 2007) and metacognition (learning how to learn and the capacity of self-regulation) (Yorke & Knight, 2006). A similar theoretical framework of employability is seen in the construction of competency models associated with employability. The models of employability are usually designed for increasing graduates' adaptability in responding to changing circumstances on their future career and in their construction is consider all stakeholders' demands. Also, the investigation of competences that are reunited under the employability umbrella revealed that there is a perspicuous change

in the demand for competences due to the influences of technology and innovation in all industrial sectors, the increase on labor mobility, the development of social networks used for recruitment process and the influence of internationalization of companies and HE institutions.

In order to synthesize all the information from the three levels of investigation we proposed an integrated model of employability that consider all identified factors in determine employability competences for graduates. Even if this model is not tested yet we identified the instruments that will be used in its testing and we revealed the practical importance of the model in developing curricular management to provide students with the necessary skills and competences associated with employability.

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