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University-enterprise cooperation for the employability of higher education graduates: a social capital approach

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ABSTRACT

Our paper addresses the analysis of how the collaboration between HEIs and companies affects the employability of HEIs students. We approach the paper from a social capital theoretical framework, and the perspective of companies, investigating how the intensity of collaboration between HEIs and companies, as well as the diversity of mechanisms used, affects the satisfaction of employers in HEIs graduates in companies. We use the database on 'Employers' perception of graduate employability' from Flash Eurobarometer of the European Commission, collecting the responses of 7,036 companies in Europe. From the theoretical point of view, our paper contributes to expanding the previous literature, showing that creating an active collaboration between the university and the company both in-depth and in breadth is a facilitator of the employment of HEIs graduates. The second contribution of our paper is rooted in managerial implications. Our results highlight the importance of establishing strong ties with HEIs, in terms of achieving a higher level of satisfaction with the employer of HEI graduates in the companies.

1. Introduction

The importance of the employability of higher education institution graduates (HEI graduates) has been highlighted in many forms, including educational, political, and business (Monteiro, Almeida, and García-Aracil 2020; Peeters et al. 2019). This is the case of the EU, which considers the employability of university graduates to be one of the 'four pillars of the European Employment Strategy' (Pavlin and Svetlik 2014), as a consequence of many graduates being underemployed or having difficulty seeking employment. In this context, even though higher education institutions (HEIs) are implementing various measures to increase the employability of their students, there is a wide debate in society about '*what universities produce vs what employers need*', which aims at solving the problem of the employability of HEI graduates (Monteiro, Almeida, and García-Aracil 2020; Römgens, Scoupe, and Beausaert 2020; Nauffal and Skulte-Ouaiss 2018).

Because of the importance of the employability of university students, the research has considered this issue from various methodological and theoretical approaches (Nauffal and Skulte-Ouaiss 2018; Pavlin and Svetlik 2014; Tomlinson 2017). These studies have focused on identifying the curricular competencies that the university must develop, and the skills students need to find

a job (Römgens, Scoupe, and Beausaert 2020). Despite important contributions to this question, the research remains inconclusive. First, although most research agrees to focus on employability as an integrating product of knowledge, skills, and attitudes; however, the variety of theoretical and research perspectives (policy, education, human resources, etc.) has produced a diversity of results that is difficult to generalise (Monteiro, Almeida, and García-Aracil 2020). Second, most of the research has been approached from the university perspective, forgetting the role of companies in this issue (Orazbayeva, van der Sijde, and Baaken 2021; Orazbayeva et al. 2019). These authors point out that for adequate research on the employability of university students, both the university and companies must be jointly integrated into their study. In this sense, Orazbayeva et al. (2019) have highlighted the importance of cooperation between HEI and companies, for the promotion of employability (Bozeman and Boardman 2013) and the reduction of the skills gap (Römgens, Scoupe, and Beausaert 2020; Monteiro, Almeida, and García-Aracil 2020). However, the cooperation between universities and companies in education remains uncaptured and underexplored (Orazbayeva et al. 2019; Galán-Muros et al. 2017).

Our paper addresses this research question, analysing *how the collaboration between HEI and companies affects the employability of HEI students*. First, we explore this question from the social capital perspective (Arranz, Arroyabe, and Fernandez de Arroyabe 2020; Moran 2005), which points out that organisations and individuals have access to resources through their social relationships. Social capital theory investigates how the intensity of relationships between organisations affects the access to resources, and as a consequence, the performance of organisations. Second, as compared to previous research, we approach our study from the perspective of companies. That is, companies establish relationships with universities as a way to access the hiring of HEI graduates, pursuing the objective of satisfying their employment needs. From the point of view of HEIs, empirical evidence indicates that this relationship is implemented through a diverse portfolio of interaction mechanisms (Orazbayeva et al. 2019). Therefore, in this paper, we investigate how the intensity of collaboration between HEIs and companies, as well as the diversity of mechanisms used, affects the satisfaction of the companies in the employment of the HEI graduates.

2. Background and research model

2.1. Social capital perspective and cooperation

In its first conceptualisations, the term 'social capital' referred to the set of inherent resources that can be accessed through personal relationships. Moran (2005, page 1129) points out that 'social capital is a valuable asset and that its value stems from the access to resources that it engenders through an actor's social relationships'. For this research, we adopt the conceptualisation of social capital as the sum of the resources available through the network of relationships that an individual or social unit possesses. Moreover, the social capital perspective not only refers to the resources available through social relations, but also, to the ability to influence the development of human capital, the performance of companies (Arranz, Arroyabe, and Fernandez de Arroyabe 2020), and geographical regions and nations (Iyer, Kitson, and Toh 2005), among others.

From an operational point of view, following Moran (2005) and Arranz, Arroyabe, and Fernandez de Arroyabe (2020), we focus on the relational dimensions of social capital, which emphasises the dyadic level, which is considered as the personal relationships that people have developed with each other (Arranz, Arroyabe, and Fernandez de Arroyabe 2020). Thus, this dimension highlights the quality of those relationships, being key facets of interpersonal trust and trustworthiness, overlapping identities, and feelings of closeness or interpersonal solidarity, as a way to obtain resources.

In this context, Arranz, Arroyabe, and Fernandez de Arroyabe (2020) conceptualise cooperation as a form of interrelation between various organisations to exchange resources. At a dyadic level, the interrelationship created through cooperation generates a personal relationship of social capital between the intervening parties of the agreement. Thus, from this perspective, greater intensity

in the relationships (strong tie), increases the interpersonal trust, the communication between partners, and feelings of closeness, making it easier to access and exchange resources (Arranz, Arroyabe, and Fernandez de Arroyabe 2020).

2.2. The employability of HEI graduates

There are several definitions of employability (Monteiro, Almeida, and García-Aracil 2020; Römgens, Scoupe, and Beausaert 2020; Peeters et al. 2019). Following Römgens, Scoupe, and Beausaert (2020), we take the competence-development perspective, which defines employability as 'the capability to move self-sufficiently within the labour market to realise potential through sustainable employment, considering that the employability of higher education graduates depends on their knowledge, skills and attitudes' (Hillage and Pollard 1999, page 2). Yorke (2006, page 8) for his part, defines employability as 'a set of achievements – skills, understandings and personal attributes – that makes graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy'. Both definitions of employability are related in the sense that they incorporate the concept of an individual's (perceived) capability to obtain and maintain employment throughout their career.

In this context, employability is considered as an integrative product of knowledge, skills, and attitudes, where HEIs are perceived as generators of competencies that contribute to the employability of graduates (Römgens, Scoupe, and Beausaert 2020; Etzkowitz 2008). More specifically, the literature discusses *employability competencies* ranging from the *essential competencies to obtain a job*, such as interview techniques, job search competencies, and those necessary to create a curriculum vitae, to the skills necessary to carry out a job effectively, involving generic competencies (e.g. teamwork, organisation and communication skills), personal competences (such as punctuality, self-confidence, discipline, and meeting deadlines) and specific professional competences (such as explicit skills in engineering, healthcare and social care, or law) (see, for example, Römgens, Scoupe, and Beausaert 2020).

2.3. Research model: HEIs and companies' cooperation for employability

Our research model postulates that the cooperation between HEIs and companies affects the employability of HEIs graduates. First, in our model, we assume the relational perspective of social capital theory will determine the intensity or degree of interrelation between partners, and therefore, the level of resources that can be exchanged. Second, we assume that companies and HEIs establish cooperation agreements, to facilitate/incentivise the employment of HEIs graduates. From a perspective of higher education, employability is conceptualised as a set of competencies that the graduate must possess, being HEIs a source of human capital, aligned with the HEIs' 'third mission' (Etzkowitz 2008). As we have seen, the portfolio of competencies demanded by companies to HEIs graduates ranges from curricular, personal, and managerial competencies to competencies to access a job. In this context, and in line with Orazbayeva et al. (2019), and Bozeman and Boardman (2013), which recognise that such cooperation is important for reducing the competencies gap, we assume that companies, through cooperation agreements, can influence the curricula of HEIs, to increase the degree of satisfaction of companies in the employment of higher education graduates. In fact, academics and employers increasingly perceive interaction with companies as beneficial, given its positive impact on the development of students' skills and competencies relevant to the labour market (Römgens, Scoupe, and Beausaert 2020; Bozeman and Boardman 2013).

Therefore, our first research question (RQ1), examines how the degree of involvement of companies in cooperation with HEIs, affects the degree of satisfaction of companies in the employment of HEIs graduates.

RQ1: How does the degree of cooperation of HEIs and companies influence the satisfaction of companies on the employment of HEIs graduates?

On the other hand, cooperation between HEIs and companies can happen through a variety of interaction mechanisms that shape curricula, such as the well-known internships, among others (Orazbayeva et al. 2019). Rampersad (2015) points out that through internships students can acquire professional competencies and knowledge of the work environment. At the same time, companies benefit by interacting with students for potential future jobs (Bozeman and Boardman 2013). Other interaction mechanisms affect the curricular design of HEIs by reviewing and updating curricula together with the companies (Orazbayeva et al. 2019; Ishengoma and Vaaland 2016), to mitigate the possible mismatch of competencies required by the labour market. In this line, other forms of collaboration include the participation of the managers in conferences and short courses, complementing the curricula of universities (Orazbayeva et al. 2019; Plewa, Galán-Muros, and Davey 2015). Additionally, new forms of collaboration are emerging, such as mentoring by the industry, supervision of learning projects, job fairs, etc., which aim to bring universities closer to the world of businesses (Orazbayeva et al. 2019; Tomlinson 2017).

Therefore, we propose a second research question (RQ2) that explores how the diversity of mechanisms that exist in the implementation of cooperation between HEIs and companies affects the degree of satisfaction of companies in the employment of HEI graduates.

RQ2: How does the diversity of mechanisms of the HEIs and companies' cooperation in terms of employment affect the satisfaction of companies?

3. Empirical study

Our empirical analysis relies on a cross-sectional database from 2011 (Employers' Perception of Graduate Employability, Flash Eurobarometer), from European Commission Directorate-General for Education and Culture and coordinated by Directorate-General Communication (European Commission 2010). The sample consists of 7,036 firms, comprising companies in the private and public sector, excluding the agriculture and educational sector, employing 50 or more persons. The data were collected through a telephone interview in September, verifying non-response bias, and finding no significant differences between early and late respondents. The survey covered the 27 EU Member States, Norway, Iceland, Croatia, and Turkey.

3.1. Measures

The first group of variables examines the *degree of cooperation of companies with HEIs*. Following the questionnaire, we have created three variables that determine both the frequency of cooperation and its importance for companies. They are measured with a Likert scale of 1 (Very frequent/important), to 4 (never/null important).

The second group of measures analyses the *mechanisms and activities that HEIs and companies* develop or should develop in their interrelationship. In line with previous measures, the degree of frequency/importance is measured on a Likert scale, with 1 being very frequent (very important), to 4 not frequent (null important).

The last group of measures refers to the *degree of satisfaction of companies in the employability of HEIs graduates*. For both issues, the degree of satisfaction of companies is measured on a Likert scale, with 1 being very satisfied to 4 not satisfied.

Table 1 includes the description and items of variables and control variables.

4. Analysis and results.

In order to analyse our research questions, we have investigated the existence of patterns of behaviour in companies in their collaboration with HEIs using cluster analysis. For this, we use as a statistical model K-means cluster, which allows us to obtain different groups of companies. As classification variables, we use the three variables that measure the degree of cooperation between HEIs and

Table 1. Description of variables and control variables

Variables	Measures	Questions
• *Degree of cooperation of companies with HEIs*	Frequency of the interrelationship of companies with universities *(frequency)*.	How often do you cooperate with higher education institutions to discuss curriculum design and curricula?
	Importance for the company of creating this cooperation *(importance)*.	How important is cooperation with higher education institutions for your organisation?
	Frequency of recruitment of higher education graduates *(recruitment)*.	How often do you cooperate with higher education institutions to recruit their graduates?
• *Mechanisms and activities that HEIs and companies*	Frequent mechanisms used by companies when cooperating with HEIs *(mechanisms)*	(i) Participation in debates and seminars organised by higher education institutions; (ii) Personal discussions with curriculum principals and professors; (iii) Respond to surveys; (iv) Direct recruitment from schools; (v) Cooperation with career guidance centres; (vi) Participation in internship programmes with higher education institutions.
• *Degree of satisfaction of companies in the employability*	Degree of satisfaction of the company with the higher education graduates *(satisfaction)*	How satisfied are you with the university graduates hired in the last three to five years?
	Level of satisfaction with the university graduates that the company has hired in the last three to five years, specifying the skills and competencies of the university graduate *(competencies)*	(i) Be good with numbers; (ii) Good reading/writing skills; (iii) Foreign language skills; (iv) Computer skills; (v) Sector-specific skills; (vi) Communication skills; (vii) Analytical and problem-solving skills; (viii) Skills to adapt and act in new situations; (ix) Decision-making skills; (x) Teamwork skills; (xi) Skills for planning and organisation.
• *Control variables*	*Firm Size*	1: 50–249 workers 2: > 250 workers
	Sector	(i) Industry; (ii) Construction, transport, Information and Communication Technologies (ICT); (iii) Trade, accommodation and food services; (iv) Public services; (v) Non-public services.

companies: frequency of collaboration *(frequency),* frequency of hiring *(hiring),* and the importance of the relationship for the companies *(importance)*. The K-mean cluster analysis reveals two groups of companies: the first formed by 380 (5.4%), and the second formed by 6,656 companies (94.6%). A priori, we see an important difference in the number of companies between the two clusters. Moreover, Figures 1 and 2 show the differences between the two clusters of companies depending on the degree of interrelation and satisfaction of these companies in their cooperation with HEIs. First, regarding the degree of interrelation, we observe in Figure 1 that for the three measures the mean is greater in cluster 1, indicating a greater interrelation and cooperation than in the group of companies of cluster 2. Additionally, from Figure 1 we observe that while the hiring of HEIs graduates (green line), and the frequency of cooperation with HEIs (blue line), is higher in cluster 1 than in cluster 2, the difference between both clusters is especially significant in the case of highlighting the importance of cooperation in curricular design (red line). In this sense, Ezkowitz (2008), and Etzkowitz and Leydesdorff (2000) have highlighted how certain companies are internalising the need to collaborate with HEIs as part of the company's third mission, by including in their human resources policies such types of collaboration. Second, Figure 2 illustrates the degree of general satisfaction, and the satisfaction according to the competencies of the HEI graduate. From the figure, we can point out that for the group of companies included in cluster 1, the degree of satisfaction is higher than in cluster 2, without there being significant differences.

Regarding our first research question (RQ1) that explores how the degree of cooperation between HEIs and companies influences the satisfaction of companies on the employability of HEIs graduates, the results are summarised in Table 2. As dependent variables, we use the variable degree of satisfaction *(satisfaction)* and degree of satisfaction depending on the various competencies of the HEIs
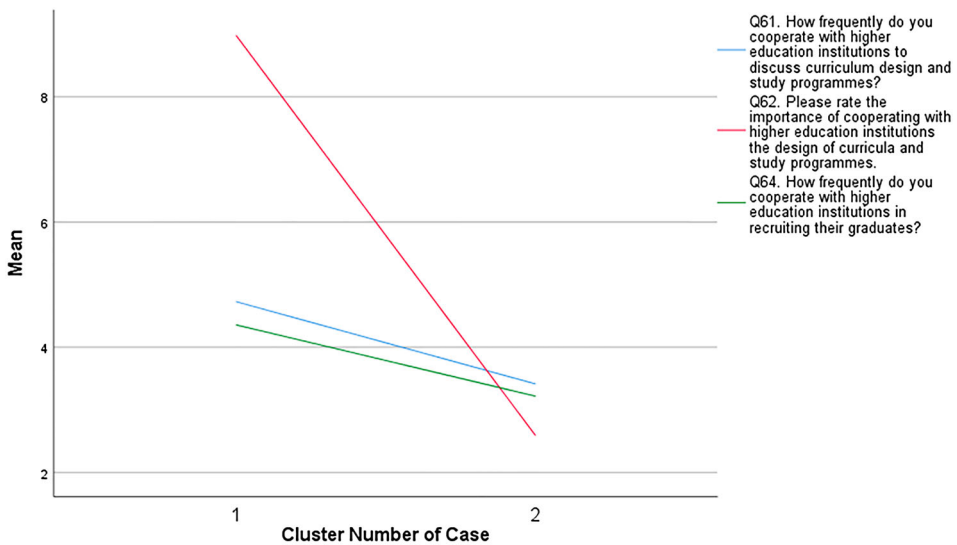
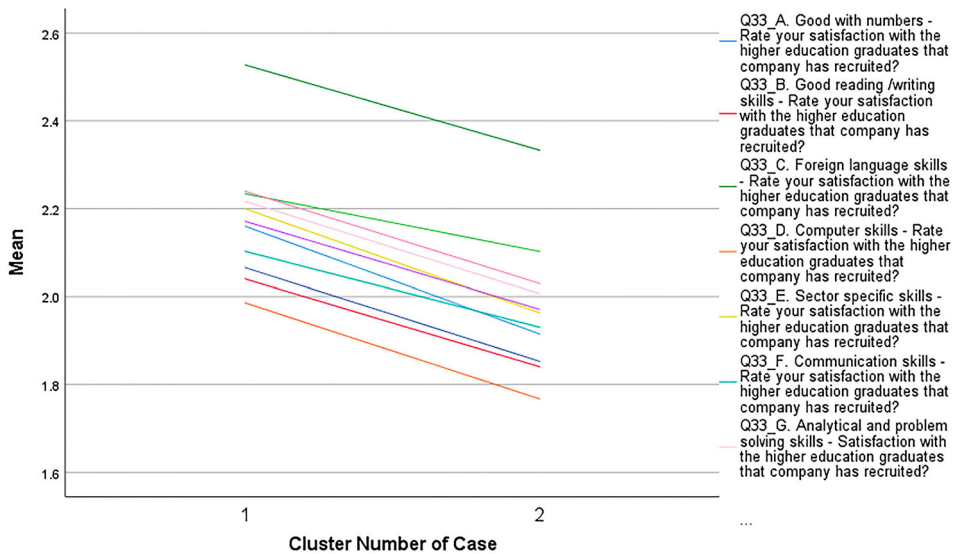**Figure 1.** Degree of cooperation between HEIs and companies/cluster.

Figure 2. Degree of satisfaction in HEI graduates competencies/cluster.

graduates *(competencies)*. As independent variables, in both cases, we introduce the independent variable *cluster membership* as a categorical variable. For the analysis of our results, the various regression coefficients must be interpreted as follows: the regression coefficient value 0 reflects the reference category (*cluster 2*), the regression coefficient obtained correspond to the categories (*cluster 1*), which reflect the probability of satisfaction level concerning to the first category. That is, H0: ß ≤ 0 means there is a greater probability of satisfaction level of *cluster 2* than *cluster 1* in terms of employability, and H1: ß> 0 entails there is a greater probability of *cluster 1* than *cluster 2*. Models 2 and 4 show that cluster 1companies, which have a higher degree of collaboration, have a positive impact on both, overall satisfaction (β = . 350; *p* < .001) and by competencies (β

Table 2. Ordinal Logistic regression analysis (RQ1).

Variables	Satisfaction		Satisfaction for competencies	
	Model 1	Model 2	Model 3	Model 4
Cluster 1		.350***		.241**
Cluster 2		0		0
Size	.152***	.117***	. 219***	.140***
Sector:				
• Industry	.099***	.129***	.123***	.133**
• Construction, Transport, Information and Communication Technologies (ICT)	.172***	.107**	.096**	.110**
• Commerce, accommodation and catering services;	.050	.043	.001	.008
• Public Services	.199***	.102*	.088*	.094**
• Non-public services	.112***	.138***	.178***	.114**
Nagelkerke	.013	.018	.023	.025
Mcfadden	.011	.015	.020	.017
−2 Log Likelihood	65.201	72.110	85.671	563.093
Chi-Square	6.009	9.571	10.334	9.025
Significance	.008	.002	.001	.004

*$p < 0.05$, **$p < 0.01$, *** $p < 0.001$

= .241; $p < .001$) than cluster 2 companies. Therefore, this answers the first research question of this paper, indicating that the greater the interrelation between universities and companies, the greater the degree of satisfaction, confirming that the social capital created as a result of the collaboration allows increasing the satisfaction of companies in the employability of the HEIs graduates.

As for the second research question (RQ2) about how the diversity of mechanisms of the cooperation between HEIs and companies in terms of employability affects the satisfaction of the companies, Figure 3 illustrates the result of our analysis. Figure 3 shows a greater propensity to utilise the diversity of cooperation mechanisms by companies belonging to cluster 1, than cluster 2 companies, being the use of internship programmes especially employed in cluster 1 companies. Therefore, we observe that companies with a higher level of satisfaction use a variety of collaboration mechanisms with HEIs, being especially intense the use of internship programmes.
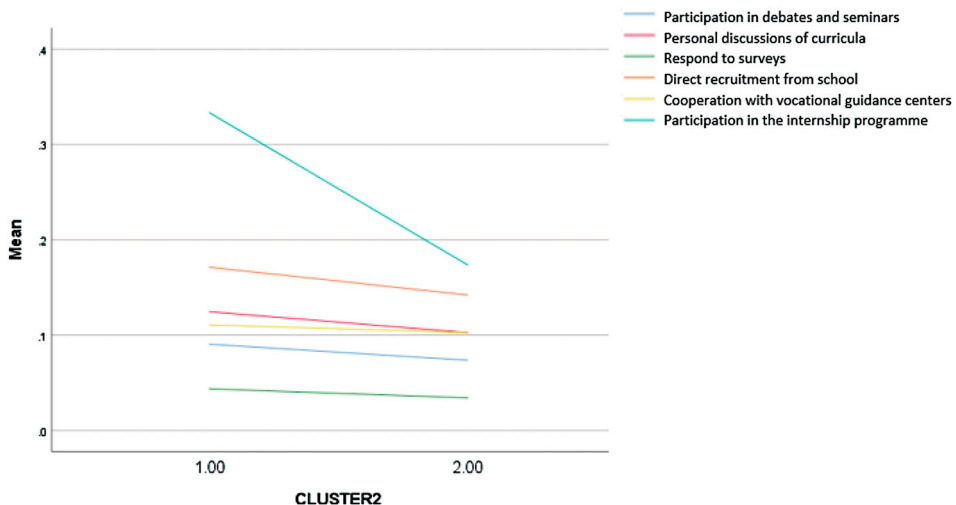
Figure 3. Mechanisms of collaboration between HEIS and companies/clusters.

5. Discussion and conclusion

Our paper is framed within the debate between the university and the company in terms of employability. Unlike previous research that has focused on the analysis of the university as a generator of graduates (Nauffal and Skulte-Ouaiss 2018; Barnett 2009), we focus on the company, analysing the degree of satisfaction it has in the employment of HEIs graduates. Moreover, in this paper, we postulate that social capital, created between companies in their interrelation with HEIs, is an essential factor in increasing employers satisfaction. Thus, companies that establish strong ties with universities obtain a higher level of satisfaction in the employment of HEIs graduates.

Our results show that most companies are weakly linked to HEIs in terms of graduate recruitment. These results are in line with previous literature that noted that university-enterprise cooperation is often initiated and carried out by individual scholars sporadically, informally and voluntarily (Rampersad, 2015), as a result of personal relationships and informal non-institutionalised channels (Galan-Muros and Davey 2019), corroborating how, in Ezkowich terminology, the third mission of HEIs is not usually recognised in the university model (Perkmann et al. 2013). Additionally, our results are consistent with previous studies that have discussed the difficulty of establishing strong ties between universities and companies (Galán-Muros et al. 2017; Ishengoma and Vaaland 2016). This has been highlighted in the literature, as problems of communication, management, and objectives, hinder the relationship between universities and companies (Ishengoma and Vaaland 2016). Regarding the mechanisms of linkage, our findings indicate that internships are the most used mechanism. The literature in the field suggested that internships are a valid mechanism to facilitate the link of HEIs graduates to companies, derived from the double benefit that it has for both the companies and for the graduates (Orazbayeva, van der Sijde, and Baaken 2021). Thus, the literature has noted that internships facilitate the acquisition of work experience for the graduate, and for the company, it has few implications in terms of labour responsibility.

Moreover, our results show that the degree of satisfaction of companies with graduates is high, both in general perception and in the competencies evaluated. This result provides empirical evidence on the debate on *what universities produce vs what employers need* (Monteiro, Almeida, and García-Aracil 2020; Römgens, Scoupe, and Beausaert 2020), confirming the high level of personal, professional, and managerial skills that HEIs graduates acquire in their passage through university. Moreover, our results show that a greater linkage of companies with HEIs increases the degree of satisfaction in companies in terms of employability. In line with previous studies, which confirm that the social capital created between institutions is a driver that affects the performance of companies (Arranz, Arroyabe, and Fernandez de Arroyabe 2020), we can point out the applicability of this hypothesis to the employment of HEIs graduates. Similarly, our results show that companies that have a higher degree of satisfaction use a different number of collaboration mechanisms. These results corroborate how the relational dimension of social capital facilitates the management and coordination of activities and can confirm that the satisfaction of companies in terms of employability is characterised by a broader collaboration both in terms of depth and breadth.

From the theoretical point of view, our first group of contributions expands the previous literature, showing that greater social capital between HEIs and companies favours the employment of higher education graduates. While previous literature emphasised the competencies and skills that HEI graduates acquire during their time at the university as a key for employability (Monteiro, Almeida, and García-Aracil 2020); our approach indicates that the social capital created in the establishment of cooperation between HEIs and companies is a driver of employment. The results show that creating an active collaboration between the university and the company both in-depth and breadth is a facilitator of the employment of students. Moreover, the results show the positive effect that cooperation between HEIs and companies has on the university students for the acquisition of competencies and skills, which facilitate their recruitment.

Our second group of contributions refers to the managerial implications. Our results highlight the importance of establishing strong ties with HEIs, in terms of achieving a higher level of satisfaction with the employment of HEI graduates in the companies. In this sense, following the antecedents of the collaboration between the university and the company for the development of technological projects, the employers must develop policies and management systems in the companies that contemplate the collaboration with the HEIs, to optimise the graduate's employability. Moreover, HEIs should facilitate the access of employers in the educational activities of universities, creating more attractive participation channels for employers. Finally, in line with the institutional efforts to promote university-business cooperation for technological development, institutions should develop programmes that facilitate and encourage the establishment of links between HEIs and companies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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