

Article

Higher Education and Employability Skills: Barriers and Facilitators of Employer Engagement at Local Level

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Abstract: This research examines the barriers and facilitators to employers' engagement with higher education institutions. The data were collected through interviews with a set of employers ($n = 19$) in the Northern region of Portugal, V.N.de Famalicão, in 2019. We begin by exploring employers' engagement activities as a potential solution to address local-level skill problems. Empirical evidence suggests that the engagement activities are mostly passive as firms use higher education largely as a recruitment channel. The differences in organizational goals and culture are the most cited barriers to the lack of more active engagement. Some efforts have recently been made to strengthen the ties between higher education and employers, notably through a local multi-stakeholder partnership as a potential broker. However, it will take time for this to bear fruit and contribute to reducing skill gaps and shortages. The data show that despite employers' apparent willingness, more effort must be made to encourage active engagement.

Keywords: higher education; employers' engagement; employability; multi-stakeholder partnership



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1. Introduction

In recent decades, the collaboration between higher education (HE) and industry has grown significantly [1] fueled by marked changes in the modes of knowledge production and innovation [2,3] as well as increasing societal demands and expectations from higher education institutions (HEIs). This collaboration is based on the recognition that HEIs are an essential source of technology, innovation, and human capital [4]. Under the label of a third mission, HEIs are expected to interact with firms at the national and regional levels to promote innovation and competitiveness in the knowledge economy [5].

Only more recently have academics started to pay attention to other forms of collaboration regarding graduates' skills and training [4,6], namely in curriculum design and delivery [7], and in promoting employability skills [8]. Our study adds insights to this research agenda by examining the employers' perception of the barriers and facilitators to engaging with HEIs. More specifically, this research focuses on the engagement activities implemented by employers to develop employability skills and explores the factors that facilitate or hinder such engagement. These issues are raised by HEIs but also by employers themselves in the literature. This is a timely issue in the context of massification of HE and the skill shortages and gaps reported by employers worldwide; however scientific research is still scarce and geographically limited.

Graduate employability has become one of HE's institutional missions and it has been pursued through different means both inside and outside the classroom [9,10]. HEIs have been pressured to provide graduates with skills that match the economic and labor market skill needs and foster their employability [11,12] in a context of rising graduate unemployment levels and persistent skill problems and gaps reported by employers in different settings. The employers' engagement with HE in education and training has been promoted as a vehicle to bridge the divide between the supply and demand of higher-level

skills [13,14], foster graduates' employability, and reduce skill mismatch, thus providing employers with a timely supply of required skills in the economy.

However, in spite of the growing interest in both graduate employability and the engagement between employers and HEIs in the development of skills and training, relatively little academic research has been undertaken on the types of engagement activities developed or the factors that facilitate or hinder them [13–15]. In addition, the literature focuses on few national cases, such as the UK and Australia; research from other European countries is remarkably scarce. Furthermore, the perception of employers deserves proper scrutiny since it provides HEIs with information on the barriers and facilitators to developing engagement. This paper contributes to this literature by attempting to answer the following questions: In which activities do employers engage with HE? What are the major obstacles and facilitators of this engagement?

The empirical analysis draws on qualitative data collected in 2019 through interviews with a set of employers ($n = 19$) from a city that has developed a multiple stakeholder partnership aimed at connecting different local stakeholders to promote employability, entrepreneurship, and innovation in the region. We have therefore studied employer engagement at a local/regional level in order to ascertain the extent to which this type of partnership fosters closer ties between HE and employers. This qualitative material was examined through content analysis which allowed us to categorize the skill problems faced by these employers at the graduate level, the engagement activities which they develop with HE, and the drivers and barriers to those engagement activities.

The rest of the paper is organized as follows. The next section provides an overview of the literature on employers' engagement with HE in education and training and the role of HE in developing employability skills, a brief overview of the national and regional contexts regarding HE as well as of the local partnership implemented by the city council. Section 3 is devoted to the methodology before reporting the empirical findings in Section 4. Finally, Section 5 provides a discussion of those findings as well as some policy implications.

2. Theoretical Background

2.1. Tackling Skill Problems through Employers' Engagement with Higher Education

The cooperation between higher education institutions (HEIs) and firms has grown significantly in recent times [1,4] fueled by increasing global competition, changes in modes of knowledge production and innovation as well as in the roles attributed to higher education (HE) by policy-makers and societies. This collaboration is expected to provide benefits to different stakeholders [16] by increasing firms' innovation and competitiveness in knowledge economies [5], improving graduates' employability [8], and providing new streams of financing to HEIs in the face of decreasing budgets [17]. Academic interest in university–business collaboration has thus increased dramatically [1] along with the recognition of HEIs as an essential source of technology, innovation, and human capital [4] in the triple-helix model of knowledge production [2] and its subsequent theoretical revisions [3].

However, academic interest has focused mostly on R&D and related activities [1], while collaboration with the development of skills has received less attention [4,6]. The literature on employer engagement attempts to fill this gap but it is mostly limited to a set of countries. Although people may interpret employer engagement with HE in training and education in different ways [18], it essentially comprises responses that help the upskilling of workers or the development of tools that enhance employability [19]. It is reported in the literature that employability is often assumed to be synonymous with work-readiness [12] and HEIs are trying to involve employers to prepare graduates for the world-of-work. The move towards making employers insiders and key actors in transforming employability into graduate employment [20] has only emerged since the 1990s and it aims to both improve graduates' employability prospects and provide a better response to economic and labor market imperatives [9] by promoting closer ties between the supply of skills and labor market demand.

Employer engagement may be enacted in different forms and through various activities, notably information exchange, internships and using HE as a recruitment channel, participation in job fairs, assessment of the quality of graduates, training opportunities, advice on curriculum and courses, co-design of certain courses, participating in the governance bodies of HEIs and co-funding as a partner.

Some authors further distinguish between “active” and “passive” forms of engagement [13]. A more “passive” engagement involves a simple market transaction and focuses on the acquisition of HEIs’ products and services. Examples of the latter may be found in information exchange activities where employers turn to HE to provide information to access the best graduates [21], participation in job fairs [22], or through graduate recruitment [18]. In the context of information exchangers and recruiters, employers are viewed as passive stakeholders that provide information about skills and take advantage of channels to access the most skilled candidates.

Other initiatives imply a more “active engagement”, which involves collaboration and the definition of what is being delivered by higher education [13] both at the undergraduate and graduate levels [23] as well as in lifelong learning [4]. A more active engagement allows firms to have far greater influence on the supply of skills and thus contributes to reducing skill problems. Active forms of engagement include, for example, work-based learning, which is often incorporated in the HE curriculum [14,24]. Work-based learning is essentially a partnership between employers and HE institutions to deliver courses and provide students with work experience opportunities [25] and has been found to provide all stakeholders with the most potential benefits [24].

The design, delivery, and assessment of tailored courses [26] is a further example of active engagement. Ref. [27] (p. 2010) label it an “anticipative strategy”, which indicates that employers participate in the supply of skills; they work with universities to conceive courses and expect HEIs to provide them with bespoke graduates. Finally, some employers participate in one or more of the governing bodies of HEIs. Once again, this helps employers influence the supply of skills as advisers [28], but according to ref. [29] (p. 2007), it should also involve their financial contribution. Co-funding aims to reduce public expenditure and fosters higher education expansion. However, [10] found evidence of employers’ persistent unwillingness to make financial contributions to the development of higher education programs.

2.2. Barriers to Engagement: Higher Education Institutions and Employers

Another stream of the literature examines the employers’ engagement with higher education in order to make this interaction more efficient with a win-win outcome. Under the label of barriers and facilitators [14,15,25], this stream of literature focuses on issues that stakeholders from HE and employers raise in order to facilitate the engagement activities and outcomes.

Available literature provides a set of cultural and structural barriers faced by both HEIs and employers [13,18,30]. Barriers within HE refer to the cultural mismatch that often reduces the willingness to engage with employers to ensure the supply of suitable skills. It is said that HE has a certain disdain for business-like activities and places a strong focus on academic activities. Communication difficulties are another widely reported as employers and HE lack a common language.

Some barriers seem to be structural because they relate to the HE system, notably: the disciplinary-based curriculum; the adaptation of pedagogical methods; lack of flexibility to provide tailor-made courses or curriculum; timing of the response to requirements; or poor customer services. In sum, higher education’s response needs to meet, rather than conflict with, the employers’ and learners’ needs in order to obtain a strategic fit.

Additionally, studies have cited the need for an appropriate learning package, that is, higher education should build or adapt training to better fit the employers’ specific needs. This often involves bespoke courses and of course rejects the one-size-fits-all programs. However, HE often has insufficient information about employers’ skill needs

and engagement involves a trade-off between costs. Ref. [18] note that engagement is costly and risky for HEIs so they may prefer to look for alternatives or prioritize other activities. Moreover, academics' engagement activities are currently not generally acknowledged in career progression within academia [4] and thus often result from sporadic and informal contacts [31] that are not institutionalized.

Employers also impose barriers to engagement. Firstly, the nature and intensity of employers' engagement with HEI vary, notably in line with their workforce composition and specific skill needs, their product or service, and the market competition [13]. Secondly, it is necessary to have a culture of learning and perceive engagement as an investment; whereas the business strategy is often to pursue immediate profit, the benefits of engagement take time to become evident [18]. Thirdly, not only do employers find it difficult to enumerate skill requirements but these may change over time [9], and their main demand is for soft skills and sound work attitudes [23]. Finally, engagement is easier when employers need graduates from certain fields of education, notably engineering [32], chemistry, or health [13].

The reported barriers indicate that a cultural fit between organizations is required from the outset, and it not only calls for changes in work practices and mindsets on both sides but also a share of values. Ref. [19] (p. 2013) highlights the tension between entrepreneurial and academic languages and this creates barriers to collaboration. The literature therefore also examines what facilitates engagement.

2.3. Facilitators of Engagement: Higher Education Institutions and Employers

The HEIs are faced with two interrelated issues. On the one hand, they must proactively encourage engagement by approaching employers, involving them in learning, and providing information about the benefits [33]. It is essential that HEI and the employer develop proper communication and a shared understanding [18]. On the other hand, the system itself needs to be adapted. Ref. [25] (p. 2015) stress that staff from all levels must be enthusiastic about the engagement, in particular in the case of workplace learning.

Employers have a selective approach to HEIs and trust is one of the major issues. For example, the willingness to invest in skill development depends on the employer's knowledge about the programs supplied by the HEI [30]. Alumni can also be used to build a bridge with the HEI to ensure that collaboration is beneficial. The literature documents the fact that the gratitude towards the academy felt by alumni impacts their willingness to engage [34]. Employers may also develop collaboration with individual academics and follow them across HEIs [13]; that is, they mostly interact informally and this means alumni play a decisive role.

On the other hand, employers prioritize the geographical proximity of HEIs [35]. Geographical and social proximity between HE and firms may help in informal relations and information collection [13]. Furthermore, ref. [15] note that engagement is facilitated by the ability to sustain the partnership. This entails equality among partners, but the complexity of this varies in line with the number of members involved; small partnerships are easier to manage, while larger ones require more clearly defined roles.

Employers' engagement with HE is therefore far from straightforward [19] and involves a continuum that goes from an understanding of specific employers' skill requirements as well as the different levels of skills of students and employees to the implementation of mechanisms to develop such skills. All this process requires a culture of trust and commitment to the defined goals; engagement of skilled staff to interact with employers; flexible systems and working methods adapted to the diverse workforce. Only when these conditions are fulfilled do they work as facilitators; otherwise, they function as barriers and invalidate or contribute to making the engagement inefficient. Ultimately, both the decision taken by employers to meaningfully engage with HE and the potential results of that engagement will depend on their assessment of the perceived costs and benefits of that engagement [13]. Some argue that engagement should involve public investment [36],

while others suggest there should be multiple funding sources as they facilitate engagement and acknowledge the relevance of the activities [37].

In sum, in spite of the growing interest shown by different stakeholders in graduates' employability and particularly in the collaboration between employers and HEIs in actual skill development and training, relatively little academic research has been conducted on the types of engagement activities developed, the factors that facilitate or hinder those activities, as well as the perceptions of both HE professionals and particularly of employers about these relationships [10,38,39].

A profusion of policy reports have been written at the behest of governments [40] or employers' associations [14] and in some countries, namely the UK and Australia, a number of academic studies have already been made on this subject [41]. However, literature is scarce for other European countries, although some have made huge investments in HE. Furthermore, to the best of our knowledge, there are still no studies in the academic literature on the employers' perceptions of engagement or the factors that facilitate or impede engagement or make it more efficient.

2.4. The National and Regional Contexts

At the national level, Portugal has made substantial investments and progress in both HE and vocational training in recent decades. There has been a trend of massification in HE since the 1990s, with a sharp increase in enrolment rates from around 157,000 students in 1990 to almost 400,000 in 2019. Over roughly the same period, enrolment rates among 30–34-year-olds have also more than doubled, going from 15.1% in 1992 to 36.2% in 2019 and drawing close to the EU average which stood at 40.3% in 2019 [42]. Other recent trends have seen the diversification and differentiation of the system with the expansion of the private and polytechnic subsystems, and the adoption of the Bologna model in 2006 and of a managerialist reform in 2007 that brought Portuguese HE more in line with the trends in Europe and beyond [43].

Over this period, post-graduate and doctoral enrolment [44], as well as research activities, also increased substantially along with research outputs at the system level [45]. On the other hand, the Portuguese education and training system has been found to be excessively centralized, leaving little room to accommodate regional needs [46,47]. Recent legislation has acknowledged the potential benefits of decentralization and has tried to promote the greater involvement of local and regional authorities and stakeholders in addressing the specific skill needs of sub-national economies. However, up until now, the engagement of these local actors has been mostly limited to advice or consultations initiated by the central government [47].

The relatively sparse and fragmented literature on employer engagement with HE in education and training in Portugal has reported somewhat mixed findings. Ref. [39] (p. 107) acknowledge that the collaboration between employers and HEIs is at an embryonic stage, and this is a pervasive feature. Some authors report examples of a variety of activities of engagement, including the design and delivery of courses and shared governance [28]. Nevertheless, passive forms of engagement, such as hiring candidates or job advertisements [28] and internships [48], are widespread among employers in Portugal.

Given this low level of cooperation, a regional multi-stakeholder partnership, Famalicão Made IN, was formed by the city council of V. N. Famalicão with the aim of connecting different local stakeholders to promote employability, entrepreneurship, and innovation in the region through suitable responses from education and training systems. V. N. Famalicão is in a small but vibrant industry-based region, ranking third in the country's export volume and 2nd in gross added value in manufacturing industries [49]. The main industrial sectors include textiles, metallurgy/machinery and polymers (namely for use as automobile components), and agri-food industries and the unemployment levels are traditionally below the national average. Although the region has a few large industrial firms, namely in the textile and automobile components sectors, the majority are small and medium-sized firms in keeping with the typical profile of firms in Portugal [50].

In the region, there are four HEIs, two universities, one public and other private, and two public polytechnics. The universities are more generalist in what they offer (but with a strong component of engineering degrees) while the polytechnics are more vocational in nature (as is usually the case for polytechnics in the Portuguese system) and with a stronger focus on industry-related degrees. Not surprisingly, these institutions in the more immediate vicinity are the ones with whom the firms in our sample will develop greater ties both for recruitment and R&D purposes. Other institutions in the wider Northern region with whom our firms also develop some ties include also public and private universities and polytechnics.

The primary role of Famalicão Made IN is to build bridges between employers and other actors, such as education and training institutions at all levels, local employment services, municipal and intermunicipal institutions, and ultimately to mediate the relationship between local actors and national policymakers. In the context of employer engagement with HE, this partnership can be viewed as an agent that facilitates the cooperation with firms, especially medium and small enterprises [51].

This program was officially launched in 2013 and was initially focused primarily on VET provision as key to boosting employability and addressing the persistent skill shortages experienced by firms in the regional ecosystem. Over time, it has diversified both its scope of action and the stakeholders engaged in it. The collaboration with local HE is thus more recent and targets joint R&D projects conducted by firms as well as initiatives to reduce skill shortages and gaps.

3. Methods and Data

The data were gathered in the course of an ongoing project undertaken in Portugal to analyze and reflect on employers' engagement with HEIs as a possible avenue for the reduction of persistent skill mismatches at the graduate level. The paper draws on primary qualitative data gathered from face-to-face semi-structured interviews with human resource managers and owners of 19 industry-based firms located in the northern region of Portugal (county of V.N. de Famalicão). The interviews were conducted by two members of the research team, lasted between 1 and 2 h and were fully transcribed. The questions were intended to draw data on (i) recruitment strategies; (ii) perceptions on the preparation of graduates for the world-of-work and skill problems faced by these firms; (iii) solutions for skill problems (among which training and recruitment policies, relations established with schools and HE and barriers and facilitators to the engagement with these training organizations); and (iv) characterization data of these firms.

This qualitative material was examined through content analysis in order to gain a better understanding of the actual engagement activities developed by local firms with HEIs and the major obstacles and facilitators of those relations. Following the literature review and content analysis of the interviews, we defined several categories for each analytical dimension: skill problems (shortage and gaps); engagement activities regarding the acquisition, training, and assessment of skills, as well as R&D activities; barriers to that engagement, namely cultural/organizational barriers, and facilitators related to personal/social, geographical proximity. A single table containing the selected analytical dimensions was then produced and all the relevant excerpts from the interviews were coded into those categories. This has allowed a more systematic and comparable overview of the analytical data from the interviews. Smaller excerpts were selected for use throughout the paper to illustrate the employers' perceptions of the subjects under analysis.

The firms were selected by convenience sampling and the sample is therefore not statistically representative. However, we have included firms from the most representative sectors (namely textiles, metallurgy, and agri-food) of this strongly industry-based region, with different characteristics in terms of size and years of activity (Table 1). However, the sample is somewhat skewed in relation to size as it includes a higher proportion of large firms than is present in the region which, as noted, is comprised largely of small and medium firms. Most of the firms in the sample have been actively recruiting graduates in

the past three years, notably in different engineering fields, ICT professionals, and, in some cases, also from management and product design areas.

Table 1. Characterization of firms.

Firm	Year of Establishment	Number of Employees	Industry (NACE)
1	1961	753	10.1—Processing and preserving of meat and production of meat products
2	1943	230	10.7—Manufacture of bakery and farinaceous products
3	1937	1216	13.2—Weaving of textiles
4	1927	1131	13.3—Finishing of textiles
5	2011	38	13.3—Finishing of textiles
6	1950	200	13.9—Manufacture of other textiles
7	1970	140	13.9—Manufacture of other textiles
8	2008	50	14.1—Manufacture of wearing apparel, except fur apparel
9	1995	160	14.3—Manufacture of knitted and crocheted apparel
10	1996	146	17.2—Manufacture of articles of paper and paperboard
11	1993	2154	22.1—Manufacture of rubber products
12	1993	63	22.2—Manufacture of plastic products
13	2003	30	22.2—Manufacture of plastic products
14	1981	67	25.9—Manufacture of other fabricated metal products
15	1973	656	26.7—Manufacture of optical instruments and photographic equipment
16	2007	1500	28.1—Manufacture of general-purpose machinery
17	1988	2672	29.3—Manufacture of parts and accessories for motor vehicles
18	2013	308	30.1—Building of ships and boats
19	1999	72	33.1—Repair of fabricated metal products, machinery and equipment

4. Results

This section will start with a brief overview of the main skill shortages and gaps faced by employers in this regional setting. As employers' engagement with HE does not take place in a vacuum, the forms and intensity of these activities are likely to be influenced by either the skill problems at the graduate level or the perceived costs and benefits associated with that collaboration. We will therefore delve deeper into the actual engagement activities developed with HE before examining the perceived barriers and facilitators to that engagement in the next section.

4.1. Employers Engagement with HE at the Regional Level

Skill problems include skill shortages, translated into hard-to-fill vacancies, and skill deficits or gaps which relate to the employers' perceptions of graduates' level of preparation for the world-of-work. These gaps were further typified under the categories of soft skills, work attitudes/maturity, and technical skills.

Regarding skill shortages and hard-to-fill vacancies, a non-negligible proportion of the employers (8 of 19) refer to difficulties in finding and retaining graduate employees in the region, giving rise to constraints in their activity. Most of these vacancies are found in technical areas such as Engineering (F6; F15; F18; F1; F11), ICT (F6; F10; F12), and Physics (F15). Three sets of factors are reported by the sampled employers to explain skill shortages. First, they blame HEIs for a skill shortage that causes an undersupply of graduates in these areas, despite the massification of HE. Second, the good labor market conditions, notably low level of unemployment and the greater bargaining power of graduates, which increase the labor costs: *“it's a region of full employment [. . .] in all areas of expertise it is now very difficult and it's the candidates who choose where they want to go and what they want to do.”* (F16); *“I would say in engineering nowadays you are only unemployed if you choose to be (. . .) people are much more selective today”* (F15). Finally, the brain drain of young qualified people is a problem that affects the sampled firms. The demand for talented youngsters from large neighboring cities and the international labor market makes it more difficult for employers from the relatively small town where these firms are based to attract and retain a skilled workforce.

In terms of graduates' preparation for the world-of-work, there is widespread consensus that HE graduates are well endowed with technical skills, *“technical skills are excellent”*

(F8), and “nowadays students have a far higher skill level than when I finished university” (F6). However, employers claim graduates are poorly prepared in soft skills and work attitudes (12/19). They report graduates often lack soft skills such as written and oral communication, problem-solving, and transversal skills in general: “In terms of technical skills, they are better prepared but what they lack is some behavioral and social skills” (F6); “I feel that teamwork is an issue as is communication; the ability to communicate both orally and in writing is definitely a problem”. (F13); “Nowadays, we give as much value to behavioral skills as we do to technical skills, something which did not happen a few years ago” (F3).

The work attitudes, commitment, and behavioral skills of recent graduates are a major concern (15/19). These characteristics are highly valued by the firms and are widely regarded as instrumental for the use of other technical skills to the benefit of the organization (F4; F11; F3, F2). Thus, HEIs are often blamed for not sufficiently addressing soft skills and attitudes, alongside the technical skills (F6; F1): “They [graduates] have difficulties in interaction and communication (. . .) but I don’t see the universities addressing this issue of soft skills” (F1).

The next question is the employers’ willingness and/or ability to engage with HE to tackle skill problems. Table 2 displays the engagement activities of the sampled employers, as well as the barriers and facilitators of this engagement. As can be seen, HEIs serve as a recruitment channel to access the best candidates and engage in the training of graduates through internships. All firms develop at least one of these types of interaction and a non-negligible number (9/19) engages in three. Firms sometimes also participate in job fairs and events at the university (F16; F5).

Table 2. Firms’ engagement activities with HE and barriers/facilitators to engagement.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Engagement with HE																			
Search for good candidates	x		x	x		x		x	x		x	x	x		x	x	x	x	
Information on candidates	x		x	x		x		x			x				x	x			
Internships for students	x	x	x	x	x	x	x	x		x	x	x		x	x	x	x	x	x
Assessment of students																x			
Accreditation of training																			
Teaching at HE																			
Course co-design																			
Participation in governance																			x
Collaboration in R&D		x	x	x	x		x		x			x							
Barriers																			
Cultural/organizational barriers	x	x		x		x	x	x			x		x						x
Facilitators																			
Social/interpersonal proximity			x			x					x	x			x	x			x
Geographic proximity	x		x	x		x	x		x	x		x			x	x			

The internship programs are regarded as an opportunity to provide some real-world training to students while allowing for candidates to be screened to create a pool of talent. The internships target both graduates (masters and PhD) and non-graduates and occur throughout the year or in the summer. Internships also result sometimes from students visiting the firm (F16). F4 regrets that some students have never had any contact with an organization and, consequently, are unaware of the world-of-work. These internship programs are often implemented through formal agreements between firms and HEIs and are reported as beneficial by the sampled employers:

“That has been the way recently, we establish protocols with the universities in the region to receive interns and then recruitment comes from those visits (. . .) the truth is that they are very receptive to what we have to say just as we are very receptive to what they have to show us.” (F16);

“Yes, we work with different internship programs and we have our own program too. We like to receive those interns, especially because in nine months or so they will enter the labor market. And if we can have this contact before and the student can also get to know the reality of a company, it can facilitate their choice afterwards” (F1);

“We have some people coming here for internships. Some come to do their Master thesis. They usually have to face a problem and then come up with a solution. (. . .) It is good, it is a way of evaluating people and knowing if they are good enough to stay.” (F18).

Activities such as teaching, collaboration in course design, or participating in HE governance bodies are scarcely reported by employers. However, they intend to engage more actively in these activities and some firms, namely medium and larger firms, are sometimes invited for this kind of collaboration. In such cases, these types of firm are consulted in the design and demanded an assessment of the course: *“Well, I know that one of our engineers here participates in one of these [governance] bodies (. . .) sometimes they ask to use some of our machines, they have visits here or we donate some equipment. I know they sometimes discuss some new degrees, pedagogic content, what makes more sense or not” (F19).* Nevertheless, employers call on the expertise of HE institutions if they are unable to properly prepare graduates: *“We have people with a lot of know-how that want to pass on that knowledge [to graduates] but they don’t know how to do it (. . .) so what we did was a partnership with the . . . Business School” (F17).*

However, this is a random activity, often resulting from the employers’ interpersonal relations with HE professionals, so it is far from a systematic and internalized process. Overall, the sampled employers indicate that there is room to deepen the engagement and they are willing to do so. Nevertheless, as we will see later, there are barriers that hamper closer ties.

The collaboration in R&D activities attracts wide attention and prevails in 8/19 firms. It should be noted that the firms in the sample are industry-based and need to develop new products and technologies, which entails close interaction with HEIs. At the same time, firms and HEIs have strong incentives and a long history of cooperation in R&D: *“Nowadays we have two R&D projects in cooperation as well as several in the 2020 [program] in the areas of innovation and markets, especially because we have opened up to cooperation with universities. Beforehand secrecy was the soul of business but not anymore . . . ” (F7).* *“In R&D we have seven people, three of whom are doctorates (. . .) we will always have to resort to research centers because they have other skills that we don’t have.” (F3).* The engagement not only involves R&D but also post-graduate training and sometimes the recruitment of master or PhD graduates that participate in the development of products and technologies. A sectoral pattern emerges in the collaboration with HE in R&D in that firms from the agri-food and textile sectors seem to be more engaged in collaborative R&D than those from other sectors, namely metallurgy, machinery, and components for the automobile industry. One possible explanation is that the textile industry in the region has undergone a strong technological upgrade in recent decades that has been widely recognized, and therefore resorts more to this sort of collaboration. However, these results should be treated with caution because other industries, namely those related to the automobile industry, may be more prone to producing in-house R&D (or in collaboration with other firms in the sector).

In sum, the reported engagement activities show that employers are aware of the relevance of HEIs as skill suppliers and often contact them to acquire talented people. However, they are still far from participating systematically in the skill formation process, although some are trying to do so. As noted, the sampled employers are available and intend to extend their engagement, so it should be possible to make progress in the future. Currently, R&D continues to be the major activity of contact between employers and HEIs.

4.2. Barriers and Facilitators to Employers' Engagement with HE

The sampled employers reported a set of barriers and facilitators of engagement. More specifically, cultural differences that prevent fruitful communication between HEIs and firms are perceived as the major issue. HEIs are generally accused of being distant from firms (F16; F6; F8; F7; F18; F4; F11, F2) and from the world-of-work. *"The world is moving at one pace and universities are another"* (F6); *"I believe the universities are still distant (. . .) the students should be put in contact with firms sooner in their university trajectory as they are in programs abroad where the connections with firms start in the first year of college"* (F8). HEIs continue to be focused on academic activities and disregard the requirements of employers. According to these employers, it is the HEIs that fail in setting shared goals and a common language that would increase proximity and develop ties: *"We need a stronger connection with reality (. . .) and that does not happen. It does not happen on either side because firms try to get closer and then often lose their patience because of bureaucracies (. . .) and universities often use firms just for statistics so that they can say they have links with firms and present those numbers"* (F2). This detachment exacerbates the mismatch between the skills acquired at HE and those required by employers (F8; F18; F11; F2). Two employers (F3; F11) highlighted their willingness to collaborate with vocational schools. They noted the benefits of working with vocational training institutions rather than with universities or polytechnics, notably the flexibility to adapt the curriculum and pedagogical methods, and teachers' knowledge of skill requirements that help a better match of the skill supply.

Some employers recognize that some steps have been taken in recent years to overcome organizational barriers (F16; F15; F18; F19), and some HEIs try to be more responsive to firms' needs and engage more actively with them. However, for these firms, HEIs have not yet provided an adequate response to employers' apparent willingness to engage more actively with HE, and the costs of these engagement activities incurred by firms still exceed the potential benefits: *"The relations have improved, I'm not going to say they haven't, but they still need to be closer"* (F16); *"I believe relations are increasingly better and I see HEIs making strides to come and ask the firms, something which didn't happen before (. . .) [HEIs] are proactively trying to get closer to firms"* (F15); However, the trade-off between costs and benefits is at the heart of the discussion. *"We must also see what is the economic benefit for us (. . .) generally the end result is more of a burden and a loss for our activity"* (F19). Employers suggest engagement is a risky activity that has uncertain benefits.

The barriers are not limited to HEIs with some firms (F11; F2) referring that they refrain from establishing closer links to HE. Others acknowledge that their willingness to engage is often lessened by the above-mentioned barriers and they must take initiatives to improve the ties with HE. Faced with the trade-off between costs and benefits, the sampled employers propose solutions to increase effective engagement.

The sampled employers enumerate some facilitators: They believe that personal contacts, notably through alumni and teachers, are efficient ways of finding appropriate partners inside the HEIs and conducting research projects and/or finding talented candidates: *"We are not approached. Fortunately, we have a relationship (. . .) with universities and polytechnics, with teachers and alumni that allows us to implement our normal [hiring] processes. What we feel is that without these actions we would not be contacted either by universities or polytechnics"* (F11). However, F3 reports that *"Our relations with HEIs happen in two ways: either we proactively contact them because we have a specific need and then relations are established, or there is someone here at the firm that has a good relationship with someone at the university and then the collaboration follows through that different channel."* In other words, personal contacts appear to be a facilitator for closer ties between HEIs and the world-of-work.

Geographical proximity is an additional facilitator reported by the sampled employers. Regional universities easily create networks with local employers since they have a deeper knowledge of the region and employers' needs. Consequently, employers refer to local interactions rather than national and distant partners (F16; F6; F15; F7; F10; F1; F12; F3). On the one hand, geographical proximity eases face-to-face interactions and access to information about institutions and people able and willing to establish partnerships. On

the other hand, it helps create a pool of talents of young graduates in HEIs closer to their homes and searching for job opportunities in the local or regional labor market. Some employers speak about these advantages:

“We work a lot with the [local] University (..) we give priority to the [local] University because of a partnership we established several years ago, because of geographic proximity (. . .) we have a lot of people here from that university. We have a good relationship with the presidency and the vice-presidency and great proximity also with the school of engineering” (F15). “We work with several institutions on account of proximity, [local] University, the Polytechnic . . . [all in the Northern region of Portugal]” (F1). However, in addition to fruitful experiences, some underline the specificity of education programs and technological specificities of certain HEIs (F13; F18). Others are “available to collaborate with any HEI as long as the attitude is appropriate” (F4; F7; F8)

We now turn to the relationship between engagement activities and the barriers or facilitators reported by the sampled employers. One group is made up of firms that use HEIs as a recruitment channel but acknowledge that cultural barriers probably prevent other types of engagement (F8, F1, F2). Others follow the same strategy but take advantage of personal contacts and geographical proximity to overcome such barriers (F16, F6); use only of the proximity to overcome them (F7, F1, F4); or use only interpersonal contacts (F11). In other words, barriers are compensated by some facilitators, especially to allow firms to access talented graduates.

It is interesting to note that F19 is actively engaged with HEI and this was facilitated by personal contacts; however, he/she refers to skill shortages and admits that young graduates lack work attitudes and maturity. Furthermore, firms must also tackle cultural barriers to develop collaboration in R&D. This is given as the major factor inhibiting stronger university-business collaboration.

Finally, regarding the role of Famalicão Made IN, the local partnership, many employers recognize that it has already positively impacted R&D collaboration between HE and firms, access to funding, the visibility of firms, and the county and it has facilitated access to other local and national institutions and decision-makers. Some of the R&D partnerships and engagement activities have indeed resulted from post-graduate training work and knowledge interactions, and the county is currently trying to expand these projects. However, most employers are also aware that much work is required to address local skill problems and, more importantly, to align the supply of and demand for higher-level skills, as well as to overcome existing barriers between firms and HEIs. It should be noted that Famalicão Made IN has very recently taken steps to work with HE, and it can become an efficient broker to reduce cultural barriers in the future.

5. Discussion and Conclusions

This research contributes to our understanding of two key but often neglected questions in the literature: Are employers willing and able to actively engage with HEIs to become a viable solution for skill problems at the graduate level? What are the main barriers and facilitators of the engagement activities with HE experienced by firms?

Our results show that the sampled employers use HEIs as a recruitment channel and set aside active forms of engagement that would allow them to directly influence the supply of skills. These results are in line with the relatively sparse and fragmented literature on employer engagement with HE in education and training in Portugal, for example, [28,34,48]. However, despite the sampled employers' willingness to develop more active forms of engagement, some barriers remain.

Given the data displayed in Table 2, the efficiency of engagement activities must be questioned. We note that F19 laments skill shortages and a lack of graduates despite being engaged in active strategies. These examples confirm that there is no one-size-fits-all solution for skill problems [28]. Active engagement, through shared governance, for example, does not seem to be the answer either.

When examining the employers' perception of the barriers and facilitators of engagement, we found that a cultural mismatch between business strategy and academic language is the major barrier [19]. HE and the sampled firms seem unable to fully communicate through a common language and goals. This probably prevents active engagement and two employers (F3; F11) expressed their preference for vocational education institutions that show greater flexibility and responsiveness than HE. These firms noted structural barriers related to the strategy of the curriculum and pedagogical methods [18] that differentiate HE from other levels of education.

This raises the question of whether HE should change its goals and language so that it can cooperate closely with the world-of-work? Previous research has shown that the expectations of employers vary, for example, [28] with some employers preferring to hire ready-to-work candidates provided by HEIs, while others deliver training and ensure that newly hired workers are endowed with specific skills. In fact, the training policies of the employers in our sample involved preparing their workforce and using internships as the key to screening and training graduates.

Turning to the facilitators of engagement, the sampled employers emphasized the role of trust in developing sustainable collaboration. Some know which institutions have responses to their technical skills requirements [30]. Although HEIs' proactive approach to employers was noted [33], all employers are also aware of the costs of engagement [10] and acknowledged the trade-off between costs and benefits [13]. This leads us to the discussion of public investment in the engagement activities [36]. We agree that it involves multiple sources [37] and the stakeholders involved must acknowledge the relevance and the economic and social impacts of investing in engagement. Public intervention would probably be translated into regulations that guarantee equity among different types of HEI and different types of employers. The reform of Portuguese HE in 2007 strived to engage external stakeholders at non-executive governance bodies of HEIs. However, to date, their participation is still minimal to non-existent and is sometimes referred to as imaginary or non-interfering friends [52].

Our study found that the sampled employers reported geographical proximity as well as personal and social contacts; this later appeared as a major factor for successful cooperation. It is the alumni that sometimes open the door to HEIs and support collaboration [34]. So, when the sampled employers had suitable partners [15], they were able to access talented graduates. The multi-stakeholder partnership was also seen as a broker to help build bridges between HE and employers [25].

Geographical proximity interacts with this [13] as informal relations in a small region seem to be the perfect recipe for encouraging collaboration and communication. Finally, while the multi-stakeholder partnership attempts to build bridges between HE and the market [51], employers acknowledged that further work is required to improve the partnership's role as a broker to ease cooperation.

The reported facilitators raise trust which may encourage employers to become stakeholders that can help foster graduates' employability and create opportunities for the world-of-work to be embedded in HE. However, the development of employability skills is a shared responsibility [28] and HE has to fulfill multiple missions and respond to economic as well as social and cultural needs.

Although the findings achieved thus far are interesting, they should be interpreted with caution. This is a case study of one region using a sample of firms solely from industry sectors. Future research should therefore explore the skill problems of other sectors and preferably of other regions. This might be useful to ascertain the national and regional level differences of skill problems, as well as the solutions and the barriers/facilitators to tackle them. Policymakers, HEIs, and employers should understand that multiple solutions are required to reduce skill mismatch, shortages, and gaps, and all stakeholders are responsible for finding appropriate answers. However, each stakeholder has its own culture and language, and efforts should be taken to improve communication and interaction between them.

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