Employers' perception of the role of higher education in Portugal: The varying solutions for skill problems

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Abstract

Higher education is under great pressure to provide skills that smooth graduates' transition into the labour market, prepare them for the world of work and, ultimately, contribute to their employability. This supply-side perspective does not, per se, reflect employers' view of the mission of higher education. Our research provides empirical evidence on how employers in Portugal perceive the role of higher education. It relies on data gathered in 2020 through an original online survey applied to N = 162 employers in Portugal. A k-means clustering distinguishes three groups of employers: those that acknowledge the autonomy of higher education; those who prefer to train their workforce; and those that blame higher education for their skill problems. The latter employers report skill shortages and propose different answers to mitigate them. Ultimately, the findings indicate that there is no one-size-fits-all solution for skill problems; firms have agency in finding appropriate solutions.

Keywords: Employers' perception; Role of higher education; Skill shortage; Make-or-buy; Portugal.

1. Introduction

Higher education (HE) institutions are often critiqued as being ivory towers where teaching and research are isolated from the needs of firms and community. These institutions have been experiencing multifaceted changes worldwide in recent decades, notably due to the demand for constantly changing high-quality services and to become socially and economically relevant, and thus engaged with society. It is labelled the third mission, which attempts to respond to critics regarding the isolation of HE (Etzkowitz et al. 2000).

Employers frequently complain about graduates' skills, and the education system is often thought to be to blame (Cappelli 2015; Suleman and Laranjeiro 2018; Suleman, Videira and Araújo 2021). These issues are captured through the concept of employability which focuses on the relationship between HE and the workplace (Römgens, Scoupe & Beausaert 2020). This implies a match between the skills acquired at university and those required in the workplace. HE is therefore under great pressure to provide skills that smooth graduates' transition to the labour market, prepare them for the world of work and, ultimately, contribute to their employability. But what do employers expect from the HE institutions? To the best of our knowledge, the literature has not provided a clear answer to this question. Our study attempts to provide insights into this question by providing some empirical evidence on how employers in Portugal perceive the role of HE. The data were gathered in 2020 through an original online survey and the sample comprises N = 162 employers.

It is well-known that various national and supranational initiatives have sought to boost employability. The Dearing report in the UK (Bennett 1997) and the Bologna Process in Europe illustrate shifts towards a new HE mission as well as the introduction of the tools required to implement it. It is clear that an essential part of the employability agenda involves the employers and HE institutions working together in several key areas. Available research highlights a range of skill problems identified by employers, namely skill gaps that affect the individual's performance within the firm; and skill shortages, which lead to hard-to-fill vacancies; and under or oversupply, i.e., skill mismatch (Cappelli 2015; Suleman, Videira & Araújo 2021). It seems that employers blame HE institutions for their skill problems and expect them to produce graduates with the skills they require. Nevertheless, this is not the attitude of all employers when recruiting recent graduates. Whereas some are unwilling to accept responsibility for training them, others acknowledge workplace training as a crucial step to prepare graduates for work and believe it should be part of company policy (Suleman and Laranjeiro 2018). Consequently, employability is regarded either as synonymous with work readiness or as having the ability to learn. This general observation raises the following two research questions: How do employers classify the collaboration between business and HE? Do all employers blame HE for their skill problems? This research attempts to respond to these questions using an empirical approach based on a k-means clustering of survey data from 162 firms in Portugal.

2. Data and methodology

Our study draws on original data collect through an online survey applied to employers in Portugal. The information on employers was provided by the careers office of a public university in Portugal and was collected during a job fair at that university. A link for the questionnaire was sent to the 2997 firms that were in the careers office database, as well as to 62 firms which participated in the job fair but were not included in the database. The questionnaire was applied since mid of February 2020 but was suspended in mid of March 2020 due to the pandemic and subsequent lockdown. Furthermore, the unexpected context might affect the answers of employers and create a bias that can lead to imprecise results and mistaken analyses.

The dataset comprises information on 162 firms and it is used to explore employers' perceptions on the roles of HE in training and skills. Despite the small response rate, our sample includes firms of all sizes. The dataset is made up of five items regarding employers' perception about the mission of higher education (short name in parenthesis); employers were asked to state their agreement/disagreement with each of the following statements, using a 7-point Likert scale:

- Higher education should be concerned with general training and firms with on-the-job training (general vs specific).
- Firms should not interfere in the choices of higher education institutions (autonomy).
- Companies have a training policy that enables them to meet their training and skills needs (training policy).
- Higher education institutions are not able to respond to the firms' skill needs (blame).
- Higher education institutions are not open to collaborating or to provide training to meet specific company needs (isolation).

The agreement with the three first sentences suggest employers acknowledge HE's autonomy and use their own resources to meet skill needs; on the other hand, full agreement with the last two statements mean that employers expect HE to provide appropriate responses to their skill needs and are therefore critical of HE's ability to supply suitable skills. The data on the level of agreement is used to group employers by their perceptions. Additionally, the dataset includes information of firms' characteristics, notably the size, source of capital (national or multinational), industrial affiliation, tenure, geographical location, skill shortages, quality of workforce, hiring criteria, and proxies of training policy (training plan, own training centre); these variables are expected to help differentiate groups of employers by the underlying characteristics of firms.

We carried out a k-means clustering (Jain 2010) to examine how employers perceive the role of HE. We replaced the missing data with series means and used a cosine distance, which entails each observation having unit Euclidean norm; this distance measure yielded benefits in terms of interpretability. We run the algorithm for k = 2 to k = $\sqrt{N}$, where N = 162 is the sample size, and realised that the solution k = 3 best fits the data, according to the Davies and Bouldin (1979) (D-B) index. Figure 1 displays the behaviour of D-B index for different values of k, and it attains the minimum value, i.e. best fit, for k = 3. We also note that $\sqrt{N}$ is a consensual upper bound for the number of clusters in data.
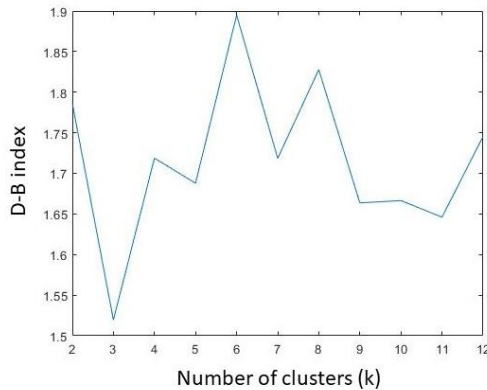

Figure 1. D-B index value for different number of clusters; k=3 is the optimal solution.

In order to characterise the typology associated with each cluster that emerged, we used the sample mean of each variable as the baseline and measured the prevalence of any variable in a particular cluster if its mean in that cluster is much higher than in the sample (see, e.g., Berkman et al. 1989). Herein, we subjectively adopted a 15% criterion, i.e., 1.15 times the sample mean.

3. Empirical analysis

Our empirical analysis comprises two steps. First, we examine the clusters of employers regarding their perception of the role of HE. The second step consists of associating each cluster with the firms' characteristics. The referred measure of 1.15 allows us to easily label the employers' perception of the role of HE as follows: Autonomy of HE (Cluster 1), Self-sufficiency of firm (Cluster 2) and Isolation (Cluster 3). Table 1 displays the variables that prevail in each cluster in bold (note: we tagged Autonomy in Cluster 1, which is slightly less than 1.15 times the sample mean, 0.38 vis-à-vis 0.39).

We found that 64.8% of sampled employers refuse the principle of proximity and pressure HE to respond to business needs. These employers recognise HE as the supplier of general skills and assume the responsibility of training specific skills. In this context, employers should avoid making demands of HE. However, almost a quarter of employers (24.1%) are critical about HE and blame it for not responding to their specific skill needs. Firms using their own resources for a timely solution to their skill problems predominate in Cluster 2. However, it is the smallest cluster of the sample (11.1%).

Table 1. The perception of employers of the role of higher education*

Role of HE	Sample mean	**Cluster 1** Autonomy of HE	**Cluster 2** Self-sufficiency of firm	**Cluster 3** Isolation
General vs Specific	0.42	**0.49**	0.24	0.30
Autonomy	0.34	**0.38**	0.20	0.27
Training policy	0.44	0.45	**0.67**	0.29
Blame	0.49	0.44	0.50	**0.60**
Isolation	0.43	0.39	0.35	**0.58**
% of firms	100.0	64.8	11.1	24.1

* The variables prevailing in clusters are represented in bold.

The next step of our data analysis was to ascertain how specific firms' characteristics influence the way employers see HE. We used the same 15% criterion to highlight the influence of the associated variables and show in Table 2, columns four to six, how they are distributed across different clusters. Explicitly, we calculated the mean value of every variable in each cluster and considered it as a discriminant condition for the cluster if its value is 1.15 higher than the corresponding sample mean. This helps understand how firms' characteristics condition employers perspective on HE.

The very large firms prevail in Cluster 1, and the figures indicate that employers interact with vocational HE institutions. This collaboration might help them meet their skill needs and probably explains the missing information in all other variables.

The major differences are found between Clusters 2 and 3 and suggest a divide between make, i.e. train the workforce, (Cluster 2) and buy, i.e. hire ready-to-work graduates from the labour market (Cluster 3). The medium-sized firms (50-249 workers) and non-graduates are predominant in Cluster 2. More importantly, these firms define the non-graduate level as the major hiring criterion but report skill shortages. It seems that self-sufficiency firms hire fewer educated workers and implement a training policy that helps them to adjust the workforce to specific needs. As can be seen from figures in Table 2, firms in this cluster have their own

training centre but they are unlikely to have a training plan. In addition to training, they interact with both types of HE institutions (universities and vocational HE) to tackle their skill shortages.

Table 2. Descriptive statistics of firms' characteristics*

Firm Characteristic	Category	Relative Frequency (x 100%)			
		Sample	Cluster 1	Cluster 2	Cluster 3
Size	1 to 9	22.8	24.8	11.1	23.1
	10 to 49	18.5	18.1	5.6	**25.6**
	50 to 249	27.8	24.8	**50.0**	25.6
	250 to 499	10.5	9.5	11.1	**12.8**
	500 to 999	5.6	4.8	**11.1**	5.1
	1000 or more	14.8	**18.1**	11.1	7.7
Capital	Multinational	37.0	38.1	38.9	33.3
	National	63.0	61.9	61.1	66.7
Hiring (last 3 years)	Missing	1.2	**1.9**	0.0	0.0
	Yes	94.4	95.2	94.4	92.3
	No	4.3	2.9	**5.6**	**7.7**
Hiring Criteria	Missing	7.4	7.6	5.6	7.7
	Non-graduates	19.8	18.1	**38.9**	15.4
	Bachelors	51.2	51.4	50.0	51.3
	Post-graduates	21.6	22.9	5.6	**25.6**
Labour force quality	Missing	3.1	**4.8**	0.0	0.0
	Non-graduates	22.8	21.0	**50.0**	15.4
	Bachelors	55.6	56.2	44.4	59.0
	Post-graduates	18.5	18.1	5.6	**25.6**
HEI	Missing	29.6	33.3	22.2	23.1
	Mostly universities	45.7	41.9	33.3	**61.5**
	Mostly vocational HE	3.1	**3.8**	**5.6**	0.0
	Universities/Vocational HE	21.6	21.0	**38.9**	15.4
Shortage	Missing	27.2	**35.2**	11.1	12.8
	Yes	42.6	32.4	**66.7**	**59.0**
	No	30.2	32.4	22.2	28.2
Training Plan	Missing	26.5	**34.3**	11.1	12.8
	Yes	56.2	48.6	55.6	**76.9**
	No	17.3	17.1	**33.3**	**28.2**
Own training centre	Missing	27.2	**35.2**	11.1	12.8
	Yes	26.5	24.8	**38.9**	25.6
	No	46.3	40.0	50.0	**61.5**

* The boldface figures indicate prevailing conditions in emerged clusters based on 1.15 criterion.

The firms in Cluster 3 blame HE for skill shoratges but have highly skilled workforce and have defined post-graduation as hiring criterion. It is about small businesses, which prefer to collaborate with universities to mitigate skill problems. However, they have designed a training plan but, probably, lack resources to own training centre to implement such plan.

4. Conclusion

Our research explored an original dataset to provide evidence on how employers perceive the role of HE in Portugal. Not only did the cluster analysis show different perceptions, but also that most of the sampled employers acknowledge the autonomy of HE. Some blame HE for their skill shortage, probably because they do not have their own resources to train their workforce. Finally, a small number of firms state their preference to train the skills and deal with the skills shortage in own training centre. While our findings corroborate previous analyses of the trade-off between make-or-buy and blaming, it adds that a non-negligible proportion of employers perceive HE to be autonomous (Suleman and Laranjeiro 2018). The firms in Cluster 2 explicitly assume that the skills matched to jobs should be provided through workplace training; and the Cluster 1 comprises firms that seems to undertake the same argument. The employers that blame HE expect ready-to-work graduates and argue in support of a strong relationship between HE and the workplace (Römgens, Scoupe & Beausaert 2020).

In sum, there are significant differences between the clusters of firms. These differences arise from the size but also involve a trade-off between make-or-buy to access suitable skills. It is important to note that firms target different skill levels and design skill acquisition policies accordingly. Ultimately, the findings indicate that there is no one-size-fits-all solution for skill problems; firms have agency in finding appropriate solutions. HE policy makers should be aware that HE reform may have been based on an incomplete view of employers; it is being, in an unsustainable way, admitted that the market wants only ready-to-work graduates. Most of employers acknolwdege and appreciate HE autonomy, and consequently implement training policies to obtain the required skills timely.

Although this research has provided original findings, the interpretation of results achieved deserves caution. Unfortunately, the pandemic restricted our access to employers and limited the sample size. We hope to return to this survey shortly to collect more data. Hence, there is room for further research that will allow us to compare the perceptions over time.

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