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(EMPLEABILIDAD DE LOS RECIÉN TITULADOS. OPINIÓN DE LAS EMPRESAS E INSTITUCIONES CATALANAS)

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ABSTRACT

Introduction: Labor insertion for young people is probably more difficult nowadays than it was a few decades ago in all productive sectors and in academic education. A few decades ago, having a university degree was a guarantee of quick labor insertion, but nowadays, although having a university degree may somewhat alleviate the unemployment rate, it is still high among recent university graduates. In this paper, we show the differential profile of the companies who do hire recent graduates as compared to those who do not. Methodology: We worked with a sample of 1,325 employers from the business world of Catalonia, who were administered the questionnaire prepared ad-hoc during 2014. Results: The main results show that the more workers a

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company has, the higher the probability that they will hire recent graduates. Companies with a high percentage of graduated workers are more likely to hire recent graduates. Companies who are willing to work with Agency for the Quality of the University System of Catalonia hire more than those who are not. And finally, the service sector hires more than construction or industry. Conclusions: In the present study we have shown a differential pattern between the companies that hire recent graduates or not, a very important aspect because this could help define university policies to facilitate the transition to the labor market.

KEY WORDS

Labor insertion; recently graduated university students; employers; employability; university training.

RESUMEN

Introducción: La inserción laboral de los jóvenes, probablemente es más difícil hoy en día que unas décadas atrás, en todos los sectores y en todos los niveles de formación. Hace unas décadas, tener una titulación universitaria prácticamente era garantía de rápida inserción laboral, pero hoy en día, a pesar de que tener una titulación universitaria puede hacer descender el desempleo, éste es elevado también entre los recién titulados universitarios. En este trabajo, se muestra el perfil diferencial de las compañías que contratan a recién titulados en relación con las compañías que no los contratan. Metodología: Se ha trabajado con una muestra de 1.325 ocupadores del mundo laboral de Cataluña. Estos ocupadores, contestaron durante el 2014, un cuestionario preparado ex profeso para determinar los aspectos vinculados con la contratación de recién titulados. Resultados: Los principales resultados muestran que cuantos más trabajadores tiene una compañía, mayor es la probabilidad de que contraten a recién titulados. Compañías con un alto porcentaje de trabajadores que tienen titulación universitaria, presentan mayor probabilidad de contratar a recién titulados. Compañías que están dispuestas a trabajar con la Agència per a la Qualitat del Sistema Universitari de Catalunya (AQU), contratan más que las que no tienen esta disposición. Y finalmente, la contratación es mayor en el sector servicios que en los sectores de construcción o industria. Conclusiones: A partir del presente trabajo se ha podido detectar un patrón diferencial de compañías que contratan a recién licenciados, aspecto de suma importancia, puesto que puede ayudar a definir políticas universitarias de transición al mundo laboral.

PALABRAS CLAVE

Inserción laboral; universitarios recién graduados; ocupadores; empleabilidad; formación universitaria.

INTRODUCTION

The labor insertion of young people may be considered the transition process from adolescence into adulthood (Arnau et al. 2014), as it implies that the person must take on new responsibilities which, up until then, fell on the parents or legal tutors. Therefore it can be considered as a turning point into adulthood, as it implies the ending of the training period to access the active life and, consequently, employment (Martínez-Rodríguez and Carmona-Orantes 2010).

This transition into the labor market has become more difficult in recent years due to the high general unemployment rate caused by the economic crisis, which has influenced certain age groups to a greater extent. One of these groups is the young people who are about to access the labor market for the first time (Verick 2009). This higher fragility in recent years for young people to access their first job is of great importance, as access to the first job is essential for the worker's employability path. (Banerjee et al. 2008).

It is worth mentioning that this difficulty to access the labor market is universal. For that reason, different strategies have been set in motion to try to alleviate this difficulty, and thus improve labor insertion rates. For example, the European Council adopted, in February 2013, an initiative to improve youth employment by assigning a budget of 6 billion euro for the 2014-2020 budget period (Communication of the European Commission, 2013). Another example is the implementation of territorial agents to revitalize labor insertion and territorial pacts in the province of Granada, Spain (Pérez-Sánchez et al. 2013). Yet another, more innovative strategy is the development of the work tutor, an intelligent virtual tutor tool for labor insertion which has advised over 5,000 Spanish youngsters residing in Germany, France, the United Kingdom, and Switzerland (Alonso-Ramos et al. 2015).

With regard to research, several studies have approached this topic. Some of them have studied how training affects employability (Corominas et al. 2012; Fachelli and Navarro-Cendejas, 2015; Fachelli et al. 2014; Jung et al. 2016; Silva et al. 2016). Therefore, Corominas et al. (2012) constructed an index to assess the occupational quality of recent university graduates (last three-five years) which, among other indicators, considers the perception of recent graduates on the adequacy between university training and the work carried out. Jung et al. (2016) studied the employment rate of youngsters in South Korea, and they showed that university students present a higher access rate to more prestigious jobs than youngsters without university studies. On the other hand, Fachelli et al. (2014) showed that going to college softens the social differences in labor insertion; and in their 2015

paper (Fachelli and Navarro-Cendejas, 2015), they showed that this effect is maintained regardless of the degree they took.

Accordingly, in the case of Spain, as pointed out by Merino and García (2007), this implied higher access to university, especially after the 1960s, and mainly in the democracy period. Consequently, over one third of Spanish youngsters enter university nowadays. This aspect, which is positive with regard to the training of youngsters and therefore of the country's cultural level, also entails a harmful effect, as a great number of university graduates are overqualified for the job they have (Battu et al. 2000; Brynin 2002). Consequently, they are colonizing areas of the labor market that used to be occupied by people without a university degree (Tomlison 2008).

In any case, it should be noted that several papers show that having a university degree may no longer be considered a relevant advantage when accessing the labor market, and therefore the importance of having a university degree should be put into question before entering the university. Accordingly other aspects should see their value increased, like for example the recent graduates' competencies, skills, or social networks (Allen and Weert 2007; Arnau et al. 2014; Cai 2013; Gutierrez and de Pablos 2010; Kalfa and Taksa 2016; Martínez-Rodríguez, and Carmona-Orantes 2010; Schomburg 2007; Tomlison 2008). Consequently, several papers highlight the need to prepare the process of transition to the labor market by implementing training programs that focus on learning soft competencies, as well as employability skills (Berridge 2007; Dixon 2006, 2007; Mendes 2009). Internationalization can be a good form to prepare university students in soft competences and hence for work, because it contributes to the graduate's portfolio of employability skills (Crossman and Clarke 2010). Other works focuses on formal work integrated learning which exposes university students to professional ideology and practice in order to develop pre-professional identity among students (Jackson 2016). Or Silva et al. (2016) show how internship interaction with labor market during higher education studies reduces the unemployability rate, and also it is an advantage for employers that can see how the students work. Trede and McEwen (2105), also remarks the benefits to workplace learning early during the university studies in order persist with their learning and to improve the posterior employability.

Be that as it may, it should be pointed out that all of the studies mentioned so far focused on the point of view of the youngster trying to access the labor market. However, in the job hunting process to access the labor market for the first time, one should bear in mind the pair job-hunting recent graduate / employer, and even add to this pair the university trainer's viewpoint (Cai 2013; Crossman and Clarke 2010; Serrano et al. 2015; Sin and

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Amaral 2017). Brown and Hesketh (2004) showed that the importance given to university degrees by employers has decreased, whereas the importance they give to personal characteristics and people's skills has increased. Still, we should note it is not only about knowledge and personal skills, but also to what degree they fit the employer's requirements (Schöer et al. 2014). There are few papers trying to study this relationship, but they do not actually study the employer's viewpoint. Thus, Serrano et al. (2015) actually compared, for every competency studied, the educational level taught to how useful the students considered it for their professional development. For his part, Tomlison (2008) focused once again on the point of view of the students looking for their first job, and he came to the conclusion that they give great importance to soft credentials, that is, personal, social, and behavioral credentials. Martín, Rabadán and Hernández (2013), shows the little mismatches between the competencies needed from the employers' point of view and the level get for the university graduates in engineering sciences in Madrid.

Therefore, not many studies analyze the employer's point of view. For this reason, in the current paper, we intend to analyze which characteristics differentiate the employers who did hire recent graduates in the last five years from those who did not.

METHOD

Participants

The sample of the current study comprises a total of 1,325 occupiers from the business world of the autonomous community of Catalonia based on an accidental sampling.

33.5% of the occupiers from the sample work in companies of 1-9 workers, while 36.7% work in companies of 10-50 workers. 94.9% work in private companies, in 63.9% it is a one-branch company. Finally, the companies had been in business for an average of 26.80 years, with a standard deviation of 27.75 years, so the newest company was not even 1 year old, while the oldest had been in business for 316 years.

We compared the distribution by sector of activity according to the classification of CCAE 2009 (Catalan classification of economic activities) divided into three main groups —services, construction, and industry— with the Catalan business world in 2015 based on data from the IDESCAT (Institute of Statistics of Catalonia). The χ^2 goodness of fit test shows that the sample studied does not present the same distribution as the Catalan

business world ($\chi^2(2)$ = 1,411.08; p < .001), mainly because the industry sector is overrepresented in the sample.

Instruments

The instrument administered was a questionnaire prepared by AQU (Agency for the Quality of the University System of Catalonia). It comprises a total of 24 questions for those occupiers who did hire recent university graduates in the last five years, whereas it has 9 questions for those who did not. These questions may have sub-questions and they are organized into the seven following theme blocks:

— Block 1: company identification. In this block, aspects characterizing the company are researched, such as number of workers, years in business, or main activity.
— Block 2: hiring process. In this block, information is gathered regarding whether they have hired or not. The occupiers who have, are questioned about the educational sector in which they hired, the importance given to the different levels of university degree for hiring, as well as the difficulties they had during the hiring process.
— Block 3: competencies. This blocks comprises questions on the importance of different competencies recent university graduates must have (training, cognitive, personal management, instrumental, interpersonal, and ethical), as well as the degree of satisfaction with those competencies.
— Block 4: collaboration with the universities. In this block it is enquired whether the companies collaborate with the universities in different activities and on different measures the universities might take to improve employability.
— Block 5: company strategy. In this block, the company's management of human resources is investigated, as well as their productive activity.
— Block 6: companies who have not hired recent university graduates. In this block the reasons are enquired as to why they have not hired recent graduates in the last five years.
— Block 7: information of the person answering the questionnaire.

Blocks 1 and 7 had to be answered by all the respondents, whereas blocks 2, 3, 4, and 5 were only answered by the occupiers who had hired recent university degrees in the last five years, and block 6 only by those who had not. The questionnaire can be found on this link http://www.aqu.cat/estudis/ocupadors/index.html#.WLWN8k0zUpF, or else it can be requested at the following e-mail address: infor@aqu.cat.

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Procedure

The questionnaire was administered to the sample of occupiers previously mentioned between October and December 2014. 40.3% of the surveys was collected via e-mail, whereas 59.7% was collected via telephone. The person answering the questionnaire was different in every case. In any case, in 27.09% of the cases it was the CEO or manager, in 22.86% it was the manager or head of human resources, and in 10.5%, the heads of departments.

Data analysis

The data analysis involved the description of the sample's main variables. For those items of the questionnaire grouped by construct and formulated in a Likert scale, we conducted their psychometric study, basically as regards the obtention of the items' discrimination index, reliability index as internal consistency based on Cronbach's alpha coefficient, and construct validity study based on a confirmatory factor analysis for each construct. More specifically, we analyzed the following constructs:

— Importance of university training for hiring, comprising 4 items (question 12 of block 2).
— Importance of competencies, comprising 15 items (question 15 of block 3).
— Degree of satisfaction with the competencies acquired by recent university graduates, comprising 15 items (question 16 of block 3).
— Collaboration with universities, comprising 5 items (question 19 of block 4).
— Measures of the universities to improve employability, comprising 4 items (question 20 of block 4).
— Innovations in the company's productive activity, comprising 5 items (question 23 of block 5).
— Management of human resources, comprising 4 items (question 24 of block 5).

Finally, bearing in mind those variables which were related to hiring, we conducted different logistic regressions in order to determine the variables which could determine the profile of the companies who had hired recent university graduates in the last five years. All the analyses were conducted with the *IBM SPSS Statistics* software, version 23, and with the *MPLUS* software, version 5.0 (Muthén and Muthén 2007).

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RESULTS

Descriptive statistic

Out of the 1,325 interviews we collected among the occupiers, we should note that, in 722 cases, recent graduates had been hired in the last five years; in 505, recent graduates had not been hired, and in 98 cases the information was unavailable. Out of the companies who had hired, information was available on the number of recent graduates hired in the last five years for 676 companies, where the mean was 12.01 recent graduates hired with a standard deviation of 45.17. This reveals the great variability in the number of recent graduates hired by the companies in the sample. In any case, we should point out that 90% of the companies in the sample had hired a maximum of 20 recent graduates in the last five years. Among the companies who hired recent graduates in the last five years, the education fields with most hirings were: Economy, Business Management, Production Engineering, and ICTs (table 1).

Table 1
Description of recent graduates hired according to education fields (n = 722)

Education field	Hires	Does not hire	DK/NA or not applicable
Humanities, history, art	34 (4.7%)	685 (94.9%)	3 (0.4%)
Language	19 (2.6%)	700 (97.0%)	3 (0.4%)
Economy, business management	248 (34.3%)	471 (65.2%)	3 (0.4%)
Law, sociology, labor relations, social work, politics	88 (12.2%)	631 (87.4%)	3 (0.4%)
Communication, documentation	110 (15.2%)	609 (84.3%)	3 (0.4%)
Psychology, pedagogy, psychopedagogy	31 (4.3%)	688 (95.3%)	3 (0.4%)
Teaching and social education	3 (0.4%)	716 (99.2%)	3 (0.4%)
Tourism	23 (3.2%)	696 (96.4%)	3 (0.4%)
Experimental science: chemistry, environmental	74 (10.2%)	645 (89.3%)	3 (0.4%)
Health	12 (1.7%)	707 (97.9%)	3 (0.4%)
Medicine and odontology	1 (0.1%)	718 (99.4%)	3 (0.4%)
Pharmacy, science, food technology	31 (4.3%)	688 (95.3%)	3 (0.4%)
Architecture and civil engineering	62 (8.6%)	657 (91.0%)	3 (0.4%)
Production engineering (industrial, chemical, etc.)	221 (30.6%)	498 (69.0%)	3 (0.4%)
ICT (IT, telecommunications, electronics)	198 (27.4%)	521 (72.2%)	3 (0.4%)
Agricultural engineering	20 (2.8%)	699 (96.8%)	3 (0.4%)

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In the hiring process, out of the 722 companies who had hired a recent graduate in the last five years, 85.2% value the fact of having a specific degree, but when asked about a master's degree or PhD, the percentage drops drastically to 19% and 4% respectively. Additionally, we should note that 41.8% of these companies expressed their difficulty in hiring the right person for a specific job, mainly due to the lack of recent graduates with the necessary competencies for that job (40.1%) and the lack of graduates in a specific field (29.8%).

As for the 505 companies who had not hired recent graduates in the last five years, they gave the following reasons for not doing so: there were no vacancies in the company (52.5%); or they did not need workers with that level of qualification (34.7%) – the latter reason might be linked to the fact that the industrial sector is overrepresented in the sample studied. Possibly, this sector requires workers with a lower level of qualification than university.

Psychometric study

Table 2 shows the value of Cronbach's alpha coefficient for the reliability study as internal consistency along with the range of the discrimination index of the items for each construct analyzed. We should note that reliability is adequate for four constructs, since the values of Cronbach's alpha coefficient are over 0.70, or even excellent in some cases, as the study presents Cronbach's alpha values of over 0.85 (Muñiz 2005).

Table 2
Cronbach's alpha coefficient and discrimination index

Construct	n	N. items	a	DI
Importance of university education in hiring	592	4	.652	.363-.506
Importance of competencies	691	15	.862	.222-.645
Degree of satisfaction with the competencies acquired by recent graduates	633	15	.939	.493-.835
Collaboration with the universities	694	5	.712	.375-.532
Measures of the universities to improve employability	691	4	.714	.453-.583
Innovations in the company's productive activity	624	5	.646	.328-.456
Management of human resources	631	4	.565	.266-.400

α: value of Cronbach's alpha coefficient; DI: minimum and maximum value of the discrimination index in each construct analyzed.

Source: self elaboration.

In table 3, we can see the fit indices of the seven confirmatory factor analyses to assess each construct's unidimensionality. The estimation of the fits of the confirmatory factor models was conducted based on Pearson's correlation matrices with estimations based on maximum likelihood (ML). Therefore, in the seven analyses conducted, they were exogenous measurement models with the following structure: $[X_i = \Lambda_x \xi_j + \varepsilon_i]$ (Loehlin 2004).

Table 3
Fit indices of the univariate confirmatory factor analysis

Construct	N. items	χ^2	CFI	TLI	AIC	BIC	RMSR (IC)
Importance of university education in hiring	4	423.72 p = .13	.934	.914	–1.246.12	–1.276.13	.04 (.03-.05)
Importance of competencies	15	259.45 p = .08	.949	.927	–1.577.19	–1.591.23	.05 (.04-.06)
Degree of satisfaction with the competencies acquired by recent graduates	15	352.17 p = .25	.919	.939	–2.123.11	–2.155.19	.04 (.03-.05)
Collaboration with the universities	5	871.12 p = .36	.926	.945	–1.799.34	–1.820.21	.03 (.02-.04)
Measures of the universities to improve employability	4	548.22 p = .18	.922	.953	–1.221.09	–1.262.34	.04 (.03-.05)
Innovations in the company's productive activity	5	732.48 p = .14	.939	.948	–1.659.21	–169.02	.05 (.04-.06)
Management of human resources	4	433.87 p = .19	.932	.922	–1.492.16	–1.497.14	.03 (.02-.04)

χ^2: value of the chi-square fit index and p-value; CFI: Comparative Fit Index; TLI: Tucker Lewis Index; AIC: Akaike Criteria; BIC: Bayesian Criteria; RMSE (IC): root mean square error and confidence interval of the RMSE with a 95% confidence level.

Source: self elaboration.

As can be seen in the table, we can assume a sufficient fit (CFI, TLI close to 1, and RMSR below .06; Hu and Bentler 1999; Schumacker and Lomax 1996) as to assume that each latent variable is formed by the items indicated. Therefore there is sufficient construct validity to generate each construct's scores.

Despite the analyses conducted, we can assume the unidimensionality of the seven constructs analyzed. Therefore, we proceeded to obtain the score

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of each construct based on the summation of each item's score and then, in order to work with the same scale in the seven constructs, the total score was transformed in to z score based on the mean and the standard deviation observed in each construct. Accordingly, for the remaining analyses, we worked with this score and not with the direct assessment of the items.

Modelization based on logistic regressions

As has been pointed out, based on the logistic regression, we intend to determine which variables may discriminate among the companies who do hire recent university graduates and those who do not. Therefore, for this analysis, we took into account as predictor variables those which were statistically related to the fact of hiring recent graduates or not in the last five years in a bivariant analysis, and which are listed below:

— Number of workers of the company (χ^2 (7) = 130.808; $p < .001$; V = .291).
— Percentage of workers with a university degree (χ^2 (9) = 160.578; $p < .001$; V = .380).
— Years in business (t (1161) = 3.625; $p < .001$; r = .105).
— One-branch company (χ^2 (1) = 28.044; $p < .001$; V = .151).
— Company's main activity (services, industry and construction) (CCAE-2009) (χ^2 (2) = 43.46; $p < .001$; V = .191).
— Collaboration with AQU (χ^2 (1) = 26.93; $p < .001$; V = .151).

In addition to the global model, the same model was fitted for the different education fields, that is, humanities, social sciences and education, health, experimental sciences, and technical sciences. For the five logistic regression models fitted, we followed the stepwise forward conditional parameter estimation model in order to establish the most parsimonious possible model.

As can be seen in table 4, the five models present a good fit, given that the omnibus test shows that the coefficients estimated are statistically significant. Also the Hosmer-Lemeshow test indicates that the fit is adequate, as it is not statistically significant, even though for the areas of humanities, health, and experimental sciences, it is not recommended to interpret the latter test, as the application condition was not met. On the other hand, if we pay attention to the percentage of variability explained by the model, we can consider it adequate for the global model, but not for the different educational areas (table 5). Therefore, we are only displaying the estimation of the regression coefficients of the variables of the definitive model for the global model (table 6).

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Table 4
Goodness-of-fit measurements for the five models proposed (n = 974)

Model	N. steps	Omnibus test			Hosmer-Lemeshow			-2 LL	R² C-S	R² N
		χ^2	df	p	χ^2	df	p			
Global	5	245.94	19	<.001	8.09	8	.425	1.016.65	.223	.307
Humanities*	2	49.51	11	<.001	4.88	7	.674	309.02	.050	.161
Social sciences and education	4	164.17	18	<.001	4.36	8	.824	1.070.62	.155	.216
Health and experimental sciences*	3	122.25	17	<.001	5.23	8	.733	482.42	.118	.255
Technical sciences	3	118.33	16	<.001	11.50	8	.175	1.183.62	.114	.155

N steps: Number of steps in the estimation; -2LL: -2 likelihood logarithm; R² C-S: r-square Cox and Snell value; R² N: r-square Naglekerke value.

* In these cases, the application condition is not met in order to interpret the Hosmer-Lemeshow goodness-of-fit test, as there are expected frequencies below five.

Source: self elaboration.

Table 5
Correct classifications percentage for the five fitted models (n = 974)

Model	Correct classifications		
	Total	Hire	Do not hire
Global	72.6%	532 out of 632 (84.2%)	175 out of 242 (51.2%)
Humanities	95.5%	0 out of 44 (0.0%)	930 out of 930 (100.0%)
Social sciences and education	72.5%	112 out of 321 (34.9%)	594 out of 653 (91.0%)
Health and experimental sciences	90.8%	8 out of 83 (8.8%)	876 out of 883 (99.2%)
Technical sciences	67.4%	126 out of 379 (33.2%)	530 out of 595 (89.1%)

Source: self elaboration.

As can be seen in table 6, all the variables included in the model —except for the one-branch company variable— are statistically significant. As the table shows, as the number of workers of the company increases, so does the odds ratio value [Exp(b)]. Accordingly, the higher the number of workers in the company, the higher the probability that they will hire recent graduates, if we take companies with 1-9 workers as a reference. In

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any case, we should note that, in certain cases, the trust interval related to the odds ratio is very wide, which shows the little precision of the punctual estimation. This might be due to the small sample size in certain values of the variable. For the variable 'percentage of workers with a university degree in the company', we should note that the companies with 61-70% and 81-90% workers with a university degree are the ones most likely to hire recent graduates, if we take as a reference companies with 1-9% workers with a university degree. As regards the will to collaborate with AQU, we should point out that for every two recent graduates hired by the companies who do not wish to collaborate with AQU, over 3 are hired by the ones who do wish to collaborate (odds ratio = 1.625). With respect to the company's main activity, despite the fact that, globally, the variable is statistically significant, it can actually be attributed to the comparison between the construction sector and the services sector. Accordingly, for every recent graduate hired in the construction sector, two are hired in the services sector (odds ratio = 0.462). Lastly, regarding the company's years in business, with a very low effect, it can be stated that the more years in business of the company, the fewer recent graduates they hire (odds ratio = 0.993).

The logistic regression model did not have adequate predictor variables if the model was fitted by educational area. In addition, other variables besides the previous six were statistically significant if the bivariant analysis distinguished whether they hired or not in the different educational areas among the companies who *had* hired recent graduates in the last five years. For this reason, we decided to fit the logistic regression model for these four areas, adding the following variables to the six previous ones.

— Importance of having a specific degree (humanities: χ^2_{Yates} (1) = 28.04; p < .001; V = .151).
— Importance of having a master's degree (social sciences and education: χ^2 (2) = 15.42; p < .001; V = .315; health and experimental sciences: χ^2 (2) = 8.87; p = .012; V = .113, and technical sciences: χ^2 (2) = 9.13; p = .010; V = .115).
— Importance of having a PhD (social sciences and education: χ^2 (1) = 7.92; p = .005; V = .111, and health and experimental sciences: χ^2 (1) = 7.82; p = .005; V = .121).
— Importance of university education in hiring (humanities: t (588) = 1.962; p = .050; r = .081, and social sciences and education: t (588) = 2.242; p = .025; r = .092).
— Collaboration with the universities (social sciences and education: t (690) = 3.929; p < .001; r = .148, health and experimental sciences: t (690) = 2.936; p = .003; r = .111).

Table 6

Regression coefficients of the predictor variables for the global model (n = 974)

Variables	B	SE	Wald's test			Exp(B)	95% CI EXP(B)	
			χ^2	df	p		Lower	Upper
No workers			58.51	6	.000			
10-50 respect 1-9	0.615	0.197	9.77	1	.002	1.850	1.258	2.720
51-100 respect 1-9	1.150	0.279	17.02	1	.000	3.159	1.829	5.457
101-200 respect 1-9	2.185	0.396	30.38	1	.000	8.888	4.087	19.327
201-250 respect 1-9	2.889	0.783	13.61	1	.000	17.973	3.873	83.398
251-500 respect 1-9	3.577	1.071	11.15	1	.001	35.775	4.383	292.041
> 500 respect 1-9	2.826	0.787	12.89	1	.000	16.885	3.610	78.986
Percentage of workers with a university degree			92.10	9	.000			
11-20% respect 1-10%	0.851	0.267	10.14	1	.001	2.342	1.387	3.956
21-30% respect 1-10%	0.540	0.293	3.40	1	.065	1.716	.967	3.046
31-40% respect 1-10%	0.760	0.325	5.46	1	.020	2.137	1.130	4.043
41-50% respect 1-10%	1.269	0.303	17.51	1	.000	3.557	1.963	6.443
51-60% respect 1-10%	1.106	0.337	10.81	1	.001	3.023	1.563	5.847
61-70% respect 1-10%	2.771	0.522	28.12	1	.000	15.971	5.736	44.471
71-80% respect 1-10%	1.368	0.342	16.04	1	.000	3.928	2.011	7.674
81-90% respect 1-10%	2.713	0.427	40.28	1	.000	15.076	6.523	34.847
91-100% respect 1-10%	2.283	0.289	62.22	1	.000	9.807	5.561	17.293
Collaboration AQU (Yes respect No)	0.486	0.168	8.32	1	.004	1.625	1.168	2.261
CCAE (Main activity)			7.48	2	.024			
Construction respect Services	–0.772	0.289	7.11	1	.008	0.462	0.262	0.815
Industry respect Services	–0.227	0.188	1.46	1	.227	0.797	0.551	1.152
Years in business	–0.007	0.003	5.70	1	.017	0.993	0.987	0.999
Constant	–1.163	0.267	18.92	1	.000	0.312		

B: regression coefficient value; SE: standard error coefficient value; CCAE: Catalan classification of economic activities.

Source: self elaboration.

The first three are qualitative variables whereas the latter two are quantitative in ratio scale given that they are the z scores of the two constructs generated. For the four models fitted, the sample size is smaller (n = 482)

because, as has already been mentioned, the information for these variables exists only in those companies who had hired recent graduates in the last five years. Tables 7 and 8 show the models' goodness-of-fit measurements and the percentage of correct classifications, respectively.

The four models can be considered valid as the omnibus test was statistically significant, which indicates that the coefficients estimated are statistically significant globally. In any case, the r-square Cox and Snell value, as well as the Nagelkerke, are not very high. On the other hand, the Hosmer-Lemeshow goodness-of-fit test reveals good fit for the four models, except for the area of humanities. In that case, though, this test should not be interpreted, as the application condition is not met. Such is the case, too, for the area of health and experimental sciences (table 7).

If we pay attention to the percentage of correct classifications (table 8), despite the fact that, globally, the percentages are high and very good for the area of humanities and the area of health and experimental sciences, the value is very low in the group of companies who did hire. Out of the four models, the one for the area of social sciences and education presents a moderate fit. Accordingly, for this educational area, table 9 shows the estimation of the model's coefficients in the predictor variables included.

Table 7
Goodness-of-fit measurements for the four models fitted (n = 482)

Model	N. steps	Omnibus test			Hosmer-Lemeshow			-2 LL	R² C-S	R² N
		χ^2	df	p	χ^2	df	p			
Humanities*	2	17.02	4	<.001	8.90	3	.031	207.68	.035	.093
Social sciences and education	5	83.66	12	<.001	7.92	8	.442	583.86	.159	.213
Health and experimental sciences*	4	81.11	6	<.001	12.93	8	.114	311.16	.155	.278
Technical sciences	3	27.60	5	<.001	12.54	8	.129	617.98	.056	.075

N steps: Number of steps in the estimation; -2LL: -2 likelihood logarithm; R² C-S: r-square Cox and Snell value; R² N: r-square Naglekerke value.

* In these cases, the application condition is not met in order to interpret the Hosmer-Lemeshow goodness-of-fit test, as there are expected frequencies below five.

Source: self elaboration.

Table 8
Correct classification percentages for the four models fitted (n = 482)

Model	Correct classifications		
	Total	Hire	Do not hire
Humanities	93.8%	0 de 30 (0.0%)	452 de 452 (100.0%)
Social sciences and education	66.0%	112 de 232 (61.2%)	176 de 250 (70.4%)
Health and experimental sciences	86.7%	7 de 68 (10.3%)	411 de 414 (99.3%)
Technical sciences	63.5%	261 de 293 (89.1%)	45 de 189 (23.8%)

Source: self elaboration.

Table 9
Regression coefficients of the predictor variables for the social sciences and education model (n = 482)

Variables	B	Standard error	Wald's test			Exp(B)	95% C.I. EXP(B)	
			χ^2	df	p		Lower	Upper
No workers			24.38	6	.000			
10-50 respect 1-9	0.502	0.249	4.04	1	.044	1.651	1.013	2.693
51-100 respect 1-9	1.432	0.371	14.86	1	.000	4.186	2.022	8.667
101-200 respect 1-9	1.582	0.410	14.87	1	.000	4.865	2.177	10.871
201-250 respect 1-9	.614	0.591	1.08	1	.299	1.848	0.581	5.881
251-500 respect 1-9	.666	0.672	0.98	1	.322	1.946	0.521	7.271
Over 500 respect 1-9	1.461	0.607	5.79	1	.016	4.312	1.311	14.181
CCAE (Main activity)			29.89	2	<.001			
Construction respect Services	–1.324	0.484	7.49	1	.006	0.266	0.103	0.687
Industry respect Services	–1.321	0.256	26.58	1	.000	0.267	0.162	0.441
Years in business	0.011	0.004	5.93	1	.015	1.011	1.002	1.020
Importance of having a PhD			7.32	2	.026			
Yes respect No	–2.951	1.096	7.25	1	.007	0.052	0.006	0.448
In certain places respect No	0.124	0.560	0.05	1	.825	1.132	0.378	3.393
Collaboration with the universities	0.244	0.112	4.76	1	.029	1.277	1.025	1.590
Constant	–0.431	0.175	6.05	1	.014	0.650		

B: regression coefficient value; SE: standard error coefficient value; CCAE: Catalan classification of economic activities.

Source: self elaboration.

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As can be seen in table 9, there are five predictor variables which are statistically significant in predicting whether the companies hired recent graduates or not in the area of social sciences and education. As regards the variable 'number of workers of the company', we can say that as it increases —up to a size of 200 workers—, so does the probability of hiring recent graduates. Therefore, for every recent graduate hired in companies of 1-9 workers, almost five are hired in companies of 101-200 workers (odds ratio = 4.865). With regard to the company's main activity, we can say that for every recent graduate hired in construction, almost 4 are hired in services (odds ratio = 0.266). The same can be said when comparing industry to services (odds ratio = 0.267). Regarding the variable 'years in business', despite the effect being very low, we can say that the more years in business, the higher the probability of hiring recent graduates (odds ratio = 1.011). As for the variable 'importance of having a PhD', we can say that for every recent graduate hired in the group with a PhD, 20 are hired in the group without a PhD (odds ratio = 0.052). In any case, we should mention that the accuracy of the score estimation of the odds ratio is very low given the width of its trust interval. Lastly, regarding the construct 'collaboration with the universities', despite a very low effect (odds ratio = 1.277), we can say that the more the companies collaborate with the universities, the more they hire recent graduates.

CONCLUSIONS

In the current study we have shown the main characteristics that help to discriminate between the companies who have hired recent university graduates in the last five years and those who have not. To do so, we opted for the logistic regression as an analysis technique. We should note that, out of the nine logistic regression models fitted, only the global model presents good fit, with 72.6% of correct classifications. However, if we pay attention to the two groups within the companies who have hired recent graduates in the last five years, the percentage of correct classifications is 84.2%, whereas it is 51.2% among the companies who have not. For this reason the model has better sensitivity than specificity. The following conclusions can be inferred regarding this model: we can say that the more workers the company has, the higher the probability of hiring recent university graduates; the companies with a high percentage of workers with a university degree hire more recent university graduates; those companies who intend to collaborate with AQU hire more than those who do not want to collaborate with AQU; the services sector hires more than the construction sector; and the more years the company has been in business, the less they hire, although the latter is a very low intensity effect.

As regards the model fitted in the area of social sciences and education, in those companies who have hired recent university graduates in the last five years in general, it may be considered to have an acceptable fit, given that it obtains 66% of correct classifications. On the other hand, the percentage is 61.2% among the companies who hire in this area, and 70.4% among the companies who do not hire in this area. Therefore, in this case, the model's specificity is better than its sensitivity, although neither value is very high. The following main conclusions can be stated for this model: as the number of workers increases, so does the probability that the company will hire recent university graduates —as it happened in the general model—; more recent graduates are hired in the services sector than in construction or industry —in the global model, it only occurred with regard to the construction sector—; the more years the company has been in business, the bigger the probability to hire – contrary to what is observed in the global model; the companies in this area hire more recent university graduates in the last five years without a PhD than with a PhD; and the companies who intend to collaborate more with the universities hire more than those who do not collaborate.

The results obtained in the present paper agree with what Schöer et al. (2014) or Sin and Amaral (2017) pointed out regarding the fact that the probability of being hired increases as does the company's size. As for the other variables, we cannot compare this to other studies as they have not been analyzed. Like Sin and Amaral (2017), our results also show the low collaboration between employers and higher educational institution in order to improve employability.

In any case, the results obtained in this study should be taken cautiously, given that —as we have already mentioned— the sample is not representative of the Catalan business world and the industry sector is overrepresented, which may be considered a limitation of the study. However, on the other hand, it should be noted that this is one of the few studies which present the opinion of employers regarding the competencies recent university graduates should have, which is relevant to generate employability policies.

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