

Revista Investigaciones Turísticas, nº 26 (2023), pp 235-250.


ISSN: 2174-5609


DOI. <https://doi.org/10.14198/INTURI.23653>

Cita bibliográfica: Sánchez-Cubo, F., Mondéjar-Jiménez, J. y García-Pozo, A. (2023). Assessing Educational Mismatch in the Spanish Hospitality Industry. *Investigaciones Turísticas* (26), pp. 235-250. <https://doi.org/10.14198/INTURI.23653>

Assessing Educational Mismatch in the Spanish Hospitality Industry

Evaluación del desajuste educativo en la industria hostelera española

Francisco Sánchez-Cubo , Universidad de Castilla La Mancha, España
francisco.scubo@uclm.es

José Mondéjar-Jiménez , Universidad de Castilla La Mancha, España
jose.mondejar@uclm.es

Alejandro García-Pozo , Universidad de Málaga, España
alegarcia@uma.es

RESUMEN

For decades, academics have studied the human resources of many different sectors with a wide range of approaches and methodologies. However, there is still room for analysis on educational mismatch, even more so in the hospitality industry after the COVID-19 pandemic standstill as it is a topic that has been somewhat relegated in recent times. Thus, this study seeks to analyze this phenomenon based on a multinomial logistic regression, which is underused in the human capital-related literature, especially on educational mismatch. The results confirm the influence of several factors such as tenure, experience or skills and quantify their effects on the chances of being educationally mismatched. Moreover, special attention is given to the remarkable influence of the required skills for a specific job position on vertical mismatch. Therefore, this paper updates previous research on the issue but also sheds new light on identifying the main aspects in which employees may focus in order to have better career prospects. The main limitation of this study is the availability of the data, which corresponds to 2018.

Palabras clave: Education; hospitality; human capital; salaries; Spain.

ABSTRACT

Durante décadas, los académicos han estudiado los recursos humanos de muchos sectores diferentes con una amplia gama de enfoques y metodologías. Sin embargo, todavía hay espacio para el análisis del desajuste educativo, más aún en la industria de la hostelería tras el parón de la pandemia COVID-19, ya que es un tema que ha quedado ligeramente relegado en los últimos tiempos. Así pues, este estudio pretende analizar este fenómeno a través de una regresión logística multinomial, una metodología que se encuentra infrutilizada en la literatura relacionada con el capital humano, especialmente en el desajuste educativo. Los resultados confirman la influencia de varios factores, como la antigüedad en el puesto, la

Fecha de recepción: 05/10/2022 *Fecha de aceptación:* 16/03/2023

Este trabajo está sujeto a una licencia de Reconocimiento 4.0 Internacional de Creative Commons (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>)

©2023 Francisco Sánchez-Cubo, José Mondéjar-Jiménez y Alejandro García-Pozo

experiencia o las competencias, y cuantifican sus efectos sobre las posibilidades de sufrir desajuste educativo. Además, se presta especial atención a la gran influencia de las competencias requeridas para un puesto de trabajo específico sobre el desajuste vertical. Así pues, este trabajo actualiza las investigaciones anteriores sobre la cuestión, pero también arroja nueva luz sobre la identificación de los principales aspectos en los que los empleados podrían prestar atención para tener mejores perspectivas de carrera. La principal limitación de este trabajo es la disponibilidad de los datos, que corresponden a 2018.

Keywords: Capital humano; educación; España; hostelería; salarios.

I. INTRODUCTION

Since entrepreneurs and academics centuries ago began concerning employees from a more in-depth approach -not only considering them as equally productive people but as differently valuable individuals-, the efforts in studying this phenomenon have kept constant within the scientific literature. Moreover, these efforts have spread through every economic sector and industry in Western countries and, increasingly, within emerging countries. That is also the case of the Tourism industry, one of the most relevant in the Mediterranean countries, including Spain.

Thus, researchers from many disciplines have taken many approaches to analyse a wide range of different aspects of the tourism industry. In this piece of work, we focus on studying human resources in the Spanish one as it is labour-intensive, and staff are required to be highly qualified. During the last decades, the academic literature has addressed this approach from different perspectives, including employees' well-being, business types of capital or market movements. These studies account for a massive share of the scientific production in the tourism field of study.

Consequently, this piece of work aims to analyse the educational mismatch phenomenon using a different methodology rather than reiterating the use of Mincerian equations. Therefore, a multinomial logistic regression is proposed, whose dependent term refers to the existence of an educational mismatch in any of its categories. Through this approach, we aim to disassociate the assessment of the education of the hospitality employees from Mincerian regressions -or even Oaxaca-Blinder decomposition of wages analyses- in which it appears as an independent term.

So, after this brief introduction, we perform an exhaustive review of the literature on human capital in the hospitality industry, specifically on the returns obtained by employees, to be able to compare our results with those in which education is part of the analysis of other factors. Besides, educational mismatch focused studies are considered and highlighted. Then, the methodology is explained and compared with others commonly used, and the consequent results are displayed and discussed. Finally, some conclusions are drawn, and future research lines are proposed to continue these studies once COVID-19 and post-COVID-19 data are available. Indeed, the lack of current data -since the National Statistics Institute provides them on a four-year basis- entails the main limitation of this study.

Researches on human resources are immeasurable since they constitute an essential part of Economics, and so they have received the corresponding attention by the scientific

community. In this piece of work, we mainly focus on analysing the branch of research that deals with human resources characteristics and their effects on the enterprise. According to Afiouni (2009), this approach was first introduced back in the XVII century by William Petty and then addressed by Adam Smith in 1776. Since then, the idea has suffered many interpretations and modifications in countless academic studies. Through this literature review, we focus on human capital studies - as it is the term given to the phenomenon of assessing and valuing employees further than just a generic workforce - to analyse the educational mismatch of the Spanish hospitality industry.

Thus, despite valuing employees in that way dates from many centuries ago, human capital theory as it is currently known appeared in the 1960s (Schultz, 1963; Becker, 1964) and then first modelled by Mincer (1974). Indeed, nowadays, Mincerian regressions are still used when studying human capital through this methodology, but in a more developed format. The original equation included the key variable "years of study", which was ground-breaking but, later on, academics agreed that years of study do not necessarily match market and business needs. Consequently, some human capital studies included a new variable: the educational mismatch (Marchante et al., 2005; Marchante et al., 2007; García-Pozo et al., 2014; Salinas-Jiménez et al., 2014; Campos-Soria et al., 2015; Lillo-Bañuls & Casado-Díaz, 2015; Veselinovic et al., 2020). This term means the difference between the individuals' education and the required one for a particular job position.

In this light, it is important to note that Mincerian - and derived - equations are based on the Human Capital Theory, despite the existence of other competing theories – as Thurow's theory (1975) based on the competence for job positions, which may lead individuals to be overeducated to be ahead of the queue for employment (Lillo-Bañuls, 2009). However, the prior approach it is not the only one that addresses the educational mismatch issue within the frame of the study of the decomposition of wages. Indeed, as shown by Bauer (2002), two more models studied a similar phenomenon by the end of the century. On the one hand, Duncan & Hoffman (1981) proposed an equation in which salaries depended on three terms representing the required education, the overeducation and the undereducation, and a fourth term compiled the rest of the explanatory variables. Similarly, Verdugo & Verdugo (1989) proposed their equation but substituting "required education" for "attained education". Further discussion about these methodologies and others can be found in Leuven & Oosterbeek (2011), in which they express their concerns about their limitations. Thus, since both equations divide the variables related to education into three terms and group the rest of the possible explanatory variables in a unique term, it seems evident why Mincerian regressions became so popular, as they can add as many explanatory elements as required.

Nevertheless, they usually consider the salary of the employees as the dependent variable (Ons-Cappa et al., 2020; Liwinski & Pastore, 2021), being the main approach chosen to address the Human Capital Theory. Thus, analyses are made in terms of explaining of much does each variable influence the final salary. In other words, if we aim to analyse the phenomenon of educational mismatch properly, we should choose methods that make it possible by using it as the dependent variable. Since it has three categories - adequately educated, overeducated and undereducated -, using multinomial logistic regressions seem to be a proper choice (Pérez-López, 2019) (Eq. 1). However, there are still examples of using this

methodology but using other variables as dependent variables (Ruesga & Murayama, 2002; Pompei & Selezneva, 2021), although their interest is comparable to Mincerian regressions. A more in-depth explanation of the multinomial logistic regressions is given in the methodology section.

Regarding the body of knowledge created around the influence of the level of education on the salaries - as well as on other issues such as job satisfaction or health (Dunlavy et al., 2016; Nyberg et al., 2020; Voces & Cainzos, 2020) - the following main results are shown. Thus, following the statements of the Human Capital Theory, it has been demonstrated that more years of study, in addition to experience and tenure, lead to higher salaries (Liu & Zhang, 2008; García-Pozo et al., 2014; Ons-Cappa et al., 2020). These studies and many similar ones constitute a solid base of this relationship, particularly for the hospitality industry. However, despite including "education" and "educational mismatch" as variables, they are not the main objective.

The bulk of the studies do not focus on hospitality or tourism, but they analyse the workforce of some specific territories as a whole. Consequently, territorial differences appear as is the case for African countries, where undereducated workers are more common than overeducated ones, conversely to the rest of the world (Morsy & Mukasa, 2021). But also, regarding the share of educationally mismatched employees -undereducated and overeducated-, being noticeable higher in South American countries such as Chile (Didier, 2021). However, there is a phenomenon that is repeated all over the studies on educational mismatch: immigrants are usually overeducated, they earn less than their pairs (Aleksynska & Tritah, 2013; Valenta & Drbohlav, 2018; Hou et al., 2020), and this situation is worse for women (Koutna et al., 2016; Prieto et al., 2016). In this line, some studies analyse if a gender gap concerning the educational mismatch exists, finding that it does indeed (Campos-Soria et al., 2009; Park, 2021).

Even so, the main concern within the extant literature resides in the problem of an excess of university graduates in comparison to the volume of job positions that require them (Ermini et al., 2017; Hou et al., 2020). More specifically, some studies analyse which degrees are more likely to 'generate' overeducated employees as there are not enough vacancies in the labour market (Robst, 2007; Betti et al., 2011; Boll et al., 2018; Somers et al., 2019; Salas-Velasco, 2021). Nevertheless, they would have greater prospects than their undereducated counterparts, namely career progress, larger income increase (Mysikova, 2016; Roller et al., 2020), or just a reduction in the chances of unemployment (Pompei & Selezneva, 2021). Besides, university graduates are the only ones to receive a little more money than other employees when entering the labour market (Liwinski & Pastore, 2021).

Lastly, other studies also analyse aspects such as mobility, which seems highly relevant in this issue. Firstly, mobility - understood as international experience - might influence the odds of getting employed if the worker migrates from a country with a worse unemployment rate than the host country (Vazquez-Rodriguez et al., 2021). Besides, mobility - understood as changing the labour market - seems to influence the chances of becoming overeducated (Ramos & Sanromá, 2013; Romaní et al., 2016). Also, other variables usually included in Human Capital studies are proved to impact the chances of mismatch risk. That is the case of previous experience and past unemployment, which decrease and increase such risk,

respectively (Boll et al., 2016). Finally, Korpi & Tahlin (2021) state that some mismatch might happen because of a failure in designing the job position, and so training would be necessary for employees to perform adequately.

For the specific case of hospitality and tourism, educational mismatch focused studies are limited, despite many others include 'education' variables. So, most conclusions drawn are in line with the previously mentioned studies, proving the loss in terms of money that overeducated employees perceive, in contrast to the slight benefit their undereducated pairs experience (Marchante-Mera, 2005; Lillo-Bañuls & Casado-Díaz, 2015; García-Pozo et al., 2014; Ons-Cappa et al., 2020). In consequence, such loss, which was quantified at 10% by Lillo-Bañuls & Casado-Díaz (2015), generates job dissatisfaction. Nonetheless, while mobility generates some effects for the general case, it is not proved for the hospitality industry (Marchante et al., 2007; Campos-Soria et al., 2015). Ultimately, overeducated professionals perform better than their pairs in terms of productivity (Marchante & Ortega, 2011), and overeducation decreases as the employee ages (Petrizzi et al., 2015).

II. MATERIALS AND METHODS

As previously stated, the methodologies commonly used in human capital studies, including educational mismatch ones, are focused on Mincerian regressions or wage decomposition equations, in which 'education' and 'educational mismatch' are independent variables of the model. But, if 'educational mismatch' is considered as the dependent variable, other methodologies are required. In this sense, the academic literature addressing it does provide three main options. On the one hand, a minority of studies choose to use binomial logistic regressions - even some of them do not incorporate 'educational mismatch' as the dependent variable (Prieto et al., 2016; Nyberg et al., 2020) -, taking the dichotomy as adequately qualified or overqualified (Koutna et al., 2016). However, in this specific case, the qualification is not measured objectively but through the subjective perception of the surveyed employees.

Then, the bulk of studies use binomial probit models, stating the dichotomy to be 'overqualification of the employee' or 'there is not overqualification' (Ramos & Sanromá, 2013; Ermini et al., 2017; Boll et al., 2018; Roller et al., 2020). As in the previous case, other dependent variables might be chosen (Aina & Pastore, 2020), but they are out of the scope of this study. In addition, some combine probit approaches with multinomial logit models (Boll et al., 2016; Morsy & Mukasa, 2021), creating more complex analyses in terms of the methodology used, but achieving similar conclusions than the prior ones.

Lastly, academics who study the educational mismatch phenomenon are increasingly employing multinomial logistic regressions. However, this is not the first time this approach is adopted since Marchante et al. (2007) did so back in 2007 for the case of the employees of the hospitality industry. For some reason, and despite its similarity with multinomial probit models - they only differ in the probability distribution they follow -, multinomial logistic regressions have been left apart. Nevertheless, there are recent studies that use this method to assess this phenomenon (Dunlavy et al., 2016; Hou et al., 2020; Pompei & Selezneva, 2021; Salas-Velasco, 2021). Therefore, we use it to analyse it for the case of the Spanish hospitality industry, offering an update of its situation. To run the calculations, data from the National

Statistics Institute (2020a) is used, specifically the 2018 wave of the Quadrennial Wage Structure Survey (QWSS). Thus, the sample includes 7,332 individuals who work in hospitality.

So, briefly introducing the multinomial logistic regression, its general specification - for both possible outcomes - goes as it follows:

$$P(Y = j | X) = \frac{\exp(X\beta_j)}{1 + \sum_{h=1}^j \exp(X\beta_h)} \quad (1)$$

$$P(Y = 0 | X) = \frac{1}{1 + \sum_{h=1}^j \exp(X\beta_h)} \quad (2)$$

Where $j = 0, 1, \dots, j$. For this specific case, j accounts for 0 if adequately educated, 1 if undereducated and 2 if overeducated. Then, the specific regression to apply in equations 1 and 2 is:

$$\beta_0 + \beta_1 S3 + \beta_2 Ten + \beta_3 Exp + \beta_4 Age + \beta_5 Gen + \beta_6 TWD + \beta_7 TC + \beta_8 Res + \beta_9 CS_k + \beta_{10} Occ_k + \beta_{11} Nat_k + \beta_{12} Reg_k \quad (3)$$

Being 'Educational mismatch' the dependent variable, which can take the values 'adequately educated', 'undereducated' and 'overeducated'. This variable does not measure how much the employees are educationally mismatched or not but which education status they have. Consequently, through the independent variables in the model, the multinomial logistic regression aims to calculate the odds of being educationally mismatched. These three categories were calculated following Kiker et al. (1997) criteria, which classify as 'adequately educated' those workers whose educational attainments are between one standard deviation – under and above – of the mean value for a given occupation. From that reference, the employees over that margin are considered as 'overeducated' and the ones below that margin as 'undereducated'. Then, there are twenty independent variables. The quantitative variables are 'Years of study' (S3), 'Tenure' (Ten), 'Previous experience' (Exp) and 'Age' (Age), which are expressed in years. In addition, a range of dummy variables as 'Gender' (Gen) - male or female -, 'Type of working day' (TWD) - full-time or part-time -, 'Type of contract' (TC) - indefinite or temporary -, 'Responsibility' (Res) - yes or no -. Lastly, some categorical variables are included, where k refers to each category of each variable, ordered as it follows. Thus, these variables are: 'Company size' (CS) - micro-enterprise, small enterprise and medium or large enterprise-, 'Occupation' (Occ) - white-collar workers, intermediate workers, skilled manual workers or unskilled manual workers-, 'Nationality' (Nat) - Spain, EU (without Spain), rest of Europe, Africa, America, or other countries -, and 'Regulation' (Reg) - sectoral statal regulation, sectoral local regulation, or enterprise regulation-.

Once the model is specified, the parameters are estimated through the maximum likelihood method since logistic - and probit - regressions are non-linear (Pérez-López, 2019). The resulting estimators, in big enough samples, are consistent and normally distributed. Therefore, t-tests can be applied (Stock & Watson, 2020).

III. RESULTS AND DISCUSSION

Once the methodology is explained, Table 1 summarises the most relevant descriptive statistics for the variables used. Thus, since most of them are dummy or categorical variables, the mean and the standard deviation are considered to be commented. In this sense, when the mean is calculated for dummy variables, it returns the percentage of individuals that belong to the selected category. For instance, 'adequately educated' workers account for 61.01% of the sample, which is the percentage of employees in the hospitality industry who are adequately educated. Regarding the general salaried workforce, it is slightly higher, but the volume of overeducated employees is 6% higher – comparisons extracted from (National Statistics Institute, 2020b). However, an educational mismatch is not a synonym of high qualification. Indeed, only 10.84% of the Spanish hospitality employees could be considered 'white-collar workers; that is, highly qualified. This figure is extremely poor, compared to the 34.97% of 'white-collar workers at the national level. On the contrary, intermediate workers are far more abundant in the hospitality sector - 57.05% - to 30.03% of the general figure.

Then, another relevant variable is gender, which highlights as it is highly feminised; 61.92% of the hospitality employees in Spain are women. Besides, the type of working day is especially relevant as part-time workers account for 48.60% in hospitality while they are only 18.87% for the general case. This figure illustrates how precarious the contractual situation is in Spain. In this sense, it would be of high interest to follow the evolution of this figure once the COVID-19 pandemic is over. Lastly, and in high relation with the temporality and high turnover of the Spanish hospitality industry, the average tenure is only 7.88 years, while for the economic sectors altogether is 11.05 years.

Table 1. Descriptive statistics of the sample

Variables	Mean (Std. Dev.)	% N	Variables	% N
Adequately educated		61.00	Small enterprise	13.33
Undereducated		11.76	Medium and large enterprise	77.40
Overeducated		27.24	White-collar workers	10.84
Years of study	8.52 (3.25)		Intermediate workers	57.05
Tenure	7,88 (8.49)		Skilled manual workers	4.16
Previous experience	18,32 (1.66)		Unskilled manual workers	27.95
Age	42,28 (11.68)		Spain	87.73
Male		38.08	EU (without Spain)	5.25
Female		61.92	Rest of Europe	0.41
Type of working day (Full time)		48.60	Africa	2.17
Type of working day (Part time)		51.40	America	3.53
Type of contract (Indefinite)		81.33	Rest of the world	0.91
Type of contract (Temporary)		18.67	Sectoral Statal regulation	21
Responsibility (Yes)		16.50	Local Sectoral regulation	71.14
Responsibility (No)		83.50	Rest of regulations	7.86
Microenterprise		9.27		

Source: Authors from National Statistics Institute (2020) (2018 wave QWSS)

Also, since the variables 'age', 'experience' and 'tenure' are fundamental in human capital studies, Table 2 provides the correlation matrix between them, to complement the descriptive statistics shown above in Table 1. Then, Table 3 provides some statistics that allow assessing the model built as in Equation 2 using the variables contained in Table 1. Firstly, log pseudolikelihood is the measure selected to evaluate the model fit. That is because standard errors are requested when estimating the model, assuming a not precise specification of the model, so log-likelihood is not applicable but log-pseudolikelihood. Consequently, the commonly used Likelihood Ratio (LR) cannot be used. Instead, the Wald chi-square test is applied to find out if, at least, one of the coefficients of the independent variables of the model is statistically different from zero; and it does at 99%. Finally, McFadden's pseudo-R-squared is calculated, retrieving a remarkable value of 0.489, which is significantly high in this type of analysis. Therefore, the fit of the model is good.

Table 2. Correlation matrix

	Experience	Tenure	Age
Experience	1		
Tenure	-0.2288	1	
Age	0.6993	0.5175	1

Source: Authors from National Statistics Institute (2020) (2018 wave QWSS)

Table 3. Model fit through pseudolikelihood

N	Wald chi2 (df=40)	Sig.	Pseudo-R2	Log pseudolikelihood
7,332	2225.19	0.000	0.489	-3,399.4522

Source: Authors from National Statistics Institute (2020) (2018 wave QWSS)

Straightaway, the estimation of the model is performed in two ways (Table 4). In the first place, the multinomial logistic regression retrieves the estimated coefficients but in log-odd units. Their interpretation might be confusing as they are expressed in that units. Nevertheless, Relative Risk Ratios facilitate this task since they are defined as e^{β_i} . Hence, they are expressed in simpler units and interpreted as an increase or decrease in terms of factors. For instance, an additional year of study for undereducated employees might involve a drop by a factor of 0.7916, *ceteris paribus*. Conversely, an increase by a factor of 74.8782 to overeducated workers would happen. However, log-odds coefficients and RRR coefficients are in relation to the reference category, which is 'adequately educated'. Also, their levels of significance are identical. Then, interpretations are made through RRR coefficients.

At first glance, there is a range of extremely high and statistically significant figures, while RRR coefficients interpretation is just 'higher or lower than 1'. So, these huge figures represent a massive influence of the variable on the probability of being in a specific category. In this sense, overeducation compiles most of these cases. First, it is a truism that additional years of study widely increases the chances of being overeducated. But also, tenure and previous experience make these chances grow significantly. Nevertheless, the RRR values are notably high, so it is needed to compare them to similar studies. Yet, this is not possible since there are similar studies (Dunlavy et al., 2016; Hou et al., 2020; Pompei & Selezneva, 2021; Salas-Velasco, 2021) but not identical in their construction. Fortunately, two doctoral theses address it quite similarly (Sánchez-Ollero, 2001; Petrizzi, 2015), giving a reasonable

explanation as they differentiate between educational levels using dummy variables: illiterate and undergraduate workers are extremely more likely to be overeducated than other workers at different levels of education, which affect the resulting values. On the contrary, undereducation becomes less probable to occur -favouring adequate or overeducation - for each additional year of study. Also, they show these extreme values for tenure and experience. Undereducated employees follow a similar tendency, but their RRR values are reasonable and a truism: e.g., each additional year of study would eventually lead to a diminishing of the undereducation of the employee.

In this sense, other very high values correspond to the variables about the skills of the employees - which base category is White-collar workers -. Conversely to the earlier case, these time outcomes are quite logical since the chances of being overeducated decrease as the skill level needed increases. On the contrary, the results show that the probability of being undereducated is very low, and it would rather be adequately educated in all skills categories. Of course, these results have implications in the perceived salaries (García-Pozo et al., 2014), but this is not the scope of the study.

Table 4. Multinomial logistic regression: log-odds coefficients and Relative Risk Ratio (RRR)

Independent variables	Undereducated		Overeducated	
	Log-odds Coeff.	RRR Coeff.	Log-odds Coeff.	RRR Coeff.
Years of study	-.2337*** (.0379)	.7916*** (.0300)	4.3159*** (.3987)	74.8782*** (29.8557)
Tenure	.2759*** (.0545)	1.3177*** (.0719)	4.2185*** (.4384)	67.9340*** (29.7814)
Previous experience	.2413*** (.0543)	1.2729*** (.0692)	4.2431*** (.4367)	69.6226*** (30.4044)
Age	-.2554*** (.0544)	.7747*** (.0422)	-4.2233*** (.4362)	.0147*** (.0064)
Gender	.0088 (.1027)	1.0088 (.1036)	-.35065*** (.0922)	.7042*** (.0649)
Type of working day	.5225*** (.1027)	1.6862*** (.1731)	-.2333** (.0938)	.7920** (.0743)
Type of contract	-.0190 (.1311)	.9812 (.1287)	-.0270 (.1165)	.9734 (.1134)
Responsibility	-.3491** (.1399)	.7053** (.0987)	.2197* (.1329)	1.2457* (.1656)
Small enterprise	.8472*** (.1986)	2.3332*** (.4634)	-.0411 (.1855)	.9598 (.1780)
Medium and large enterprise	.6001*** (.1788)	1.8223*** (.3258)	.6662*** (.1514)	1.9469*** (.2948)
Intermediate workers	-4.0673*** (.1676)	.0171*** (.0029)	3.1851*** (.3061)	24.1705*** (7.3984)
Skilled manual workers	-5.0988*** (.3158)	.0061*** (.0019)	4.5655*** (.3069)	96.1118*** (29.4935)
Unskilled manual workers	-5.5636*** (.1954)	.0038*** (.0008)	6.7538*** (.2890)	857.2759*** (247.7465)
EU (without Spain)	.8002*** (.1911)	2.2259*** (.4254)	-.3977** (.1930)	.6718* (.1297)
Rest of Europe	.9685* (.5328)	2.6339* (1.4034)	-.0314 (.8259)	.9691 (.8004)

Assessing Educational Mismatch in the Spanish Hospitality Industry

Africa	.0177 (.3158)	1.0179 (.3214)	.1842 (.2766)	1.2022 (.3325)
America	.0021 (.2615)	1.0021 (.2620)	.3093 (.2285)	1.3625 (.3113)
Other countries	-.6180 (.5125)	.5390 (.2763)	-.1326 (.4633)	.8758 (.4058)
Local sectoral regulation	1.0650*** (.1438)	2.9007*** (.4172)	.02271 (.1005)	1.0230 (.1028)
Rest of sectoral regulations	.5189** (.2070)	1.6801** (.3477)	-1.1596*** (.1786)	.3136*** (.0560)
Intercept	5.9002*** (.7118)	365.1044*** (259.8937)	21.4153*** (3.3273)	2.00E+09*** (6.65E+09)

a. Reference category: Adequately educated

b. Standard Errors in parentheses.

c. $p < 0.01$ ***, $p < 0.05$ ** , $p < 0.1$ *

Source: Authors from National Statistics Institute (2020) (2018 wave QWSS)

Then, regarding the attributes of the workers, age plays an interesting role since, for both educational mismatches, it positively influences the adequacy of the education to the job position. And so, it also does gender, if men, in favour of avoiding educational mismatch, but it is not statistically significant for undereducated workers. Again, comparisons are not possible due to the lack of similar studies, but gender and/or age have been previously found statistically significant in regard to wages (García-Pozo et al., 2014), satisfaction (Lillo-Bañuls & Casado-Díaz, 2015), employability (Pompei & Selezneva, 2021) and mobility (Campos-Soria et al., 2015). Besides, nationality seems to highly affect undereducation for EU and European non-EU workers compared to Spanish ones, which might happen because of Eastern countries immigration flows (González-de-Aguilar & Valbuena-Reyero, 2011). Conversely, and going against previous studies that reflect the overeducation mismatch for immigrants - but not specifying where they come from - (Aleksynska & Tritah, 2013; Koutna et al., 2016; Prieto et al., 2016; Valenta & Drbohlav, 2018; Hou et al., 2020), EU workers - without Spain - might be undereducated rather than overeducated or adequately educated.

In addition, business-related factors seem to affect educational mismatch probabilities. Firstly, regarding the type of working day, if a full-time job position, workers are more likely to be undereducated. In this line, the type of contract is not statistically significant, but responsibility does. Specifically, employees with people in their charge have more chances of being overeducated. However, they would earn higher salaries than temporary workers and their pairs without this kind of responsibility (Campos-Soria et al., 2015; Ons-Cappa et al., 2020). Then, business size plays a role, and both kinds of educational mismatch - except overeducation in small enterprises, which is not statistically significant - are highly probable to occur in comparison to micro-enterprises. Similarly, the type of regulation that is applied to workers - compared to enterprise regulations - makes it more probable to be undereducated, but 'other sectoral regulations' diminish the probability of a mismatch due to overeducation. Lastly, following Camarero-Rioja et al. (2021), the intercept has no economic meaning and, therefore, no comments are made. The results regarding the conditional marginal effects for the proposed model can be found in Annex 1.

In summary, the multinomial logistic regression provides a considerable volume of information regarding the educational mismatch in the Spanish hospitality industry. The in-

depth analysis of the causes of such mismatches and their quantification is crucial, even more in the post-COVID-19 context. As shown within the comments and discussion of the results, there is little academic literature easily comparable with the outcomes of this study, so comparisons through similarities are made within the document. In this sense, the immediate comparison is with studies on salary decomposition or regressions that use the educational mismatch as a variable in the equation. Indeed, the inclusion of variables commonly used in these studies allows for understanding more about their role in defining each employee's job situation. More specifically, the great influence of the years of study, tenure and previous experience is corroborated (Marchante-Mera, 2005; Lillo-Bañuls & Casado-Díaz, 2015; García-Pozo et al., 2014; Ons-Cappa et al., 2020), as well as the dependency on the employees' skills. Moreover, the influence of personal variables such as age, gender and nationality are barely null, which suggests that there are differences (Ons-Cappa et al., 2020) but that they are not the main determining factors. On the contrary, the level of skills of the workers seems to be the most decisive one in explaining the educational mismatch, while it does not explain wages (García-Pozo et al., 2014).

IV. CONCLUSIONS

During the centuries, employees have been studied from a wide range of approaches, and so through many methods. Within the last decades, they have been applied to the tourism industry to understand better the characteristics and functioning of its workforce and other related issues. In this line, some methodologies are underused or not applied yet at all. So, this piece of work aims to contribute to analysing the educational mismatch phenomenon by using a less common methodology as the multinomial logistic regression is. For that purpose, data from the National Statistics Institute is used and applied to that methodology. Once the calculations are performed, promising outcomes arise.

In the first place, the descriptive analysis retrieves striking figures which strongly differentiate the tourism industry from the rest. Starting with the education level, adequately educated workers are just 61%, which is 6% less than this figure for the whole economy. But it is even worse regarding the qualification of the employees, being only 10.84% White-collar employees while this figure account for 34.97% for the rest of industries. Along with this, part-time jobs are almost 50% of the contracts, more than doubling this figure for the general economy. Lastly, it is a strongly feminised industry -61.92% -, and it is characterised by a high temporality and turnover since tenure is only 7.88 years.

Then, the multinomial logistic regression retrieves the following results, which help in explaining the determinants of the educational mismatch in the Spanish hospitality industry. Firstly, it is noticeable how much the years of study, tenure, previous experience and the level of skills of the employees influence the chances of being overeducated. Besides, the type of regulation, the business size and the contractual conditions have some effects on the probability of experiencing educational mismatch, but their values are not striking. Then, it is promising how personal variables such as age, gender and nationality have effects but are very close to zero. It may suggest that there are very limited effects on educational mismatches regarding these factors.

The educational mismatch is not a brand-new problem but, considering the exponentially increasing number of undergraduate individuals, it may worsen over time. Therefore, this issue is of high relevance in today's world, even more in the post-COVID-19 scenario, after many people who were fired or temporarily ceased from their jobs have returned to study. The study on the progress of this issue is of high interest for the authors of this paper, so they will continue investigating this line of research. However, some limitations might tackle the present and future works. On the one hand, data availability is crucial since 2018 data is used - from a quadrennial survey -, but 2022 data is not expected until 2024. On the other hand, less in-depth data might be used, but it has many gaps since the tourism industry ceased its activity and so much of the data remains under statistical secret. Nevertheless, the authors aim to find resources to perform the beforementioned research.

REFERENCES

- Afiouni, F. (2009) Human Capital Management, What Does it Really Mean? *Proceedings of the European Conference on Intellectual Capital*, 10-18. <https://doi.org/10.1504/IJLIC.2013.052081>
- Aina, C. & Pastore, F. (2020). Delayed Graduation and Overeducation in Italy: A Test of the Human Capital Model Versus the Screening Hypothesis. *Social Indicators Research*, 152, 533–553. <https://doi.org/10.1007/s11205-020-02446-0>
- Aleksynska, M. & Tritah, A. (2013). Occupation-Education Mismatch of Immigrant Workers in Europe: Context and Policies. *Economics of Education Review*, 36, 229–244. <https://doi.org/10.1016/j.econedurev.2013.06.001>
- Bauer, T. K. (2002). Educational mismatch and wages: a panel analysis. *Economics of Education Review*, 21, 221–229 [https://doi.org/10.1016/S0272-7757\(01\)00004-8](https://doi.org/10.1016/S0272-7757(01)00004-8)
- Becker, G. S. (1964) Human Capital. Nueva York: National Bureau of Economics Research.
- Betti, G., D'Agostino, A. & Neri, L. (2011). Educational Mismatch of Graduates: a Multidimensional and Fuzzy Indicator. *Social Indicators Research*, 103(3), 465-480. <https://doi.org/10.1007/s11205-010-9712-6>
- Boll, C., Leppin, J. S. & Schömann, K. (2016). Who is overeducated and why? Probit and dynamic mixed multinomial logit analyses of vertical mismatch in East and West Germany. *Education Economics*, 24(6), 639-662. <https://doi.org/10.1080/09645292.2016.1158787>
- Boll, C., Rossen, A. & Wolf, A. (2018). Patterns of overeducation in Europe: The role of field of study. *IAB-Discussion Paper*, 20/2018. Available at: <http://hdl.handle.net/10419/182159>
- Camarero-Rioja, L., Amazán-Llorente, A. & Mañas-Ramírez, B. (2021). *Regresión Logística: Fundamentos y aplicación a la investigación sociológica*. Available at: http://www.uned.es/socioestadistica/Multivariante/Plan_trabajo.htm (accessed on 23 July 2021)

- Campos-Soria, J. A., Ortega-Aguaza, B. & Ropero-García, M. A. (2009). Gender Segregation and Wage Difference in the Hospitality Industry. *Tourism Economics*, 15(4), 847–866. <https://doi.org/10.5367/000000009789955152>
- Campos-Soria, J. A., García-Pozo, A. & Sánchez-Ollero, J. L. (2015). Gender wage inequality and labour mobility in the hospitality sector. *International Journal of Hospitality Management*, 49, 73-82. <https://doi.org/10.1016/j.ijhm.2015.05.009>
- Didier, N. (2021). Are we ready? Labour market transit to the digital economy. *Journal of Adult and Continuing Education*, 28(1), 73-97. <https://doi.org/10.1177/1477971420983347>
- Duncan, G. J. & Hoffman, S. D. (1981). The incidence and wage effects of overeducation. *Economics of Education Review*, 1(1), 75–86. [https://doi.org/10.1016/0272-7757\(81\)90028-5](https://doi.org/10.1016/0272-7757(81)90028-5)
- Dunlavy, A. C., Garcy, A. M. & Rostila, M. (2016). Educational mismatch and health status among foreign-born workers in Sweden. *Social Science & Medicine*, 154, 36-44. <https://doi.org/10.1016/j.socscimed.2016.02.018>
- Ermini, B., Papi, L. & Scaturro, F. (2017). An Analysis of the Determinants of Over-Education Among Italian Ph.D Graduates. *Italian Economic Journal*, 3, 167–207. <https://doi.org/10.1007/s40797-017-0053-3>
- García-Pozo, A., Sánchez-Ollero, J. L. & Marchante-Mera, A. (2014). Educational Mismatch and Returns on Human Capital in the Spanish Hospitality and Travel Agency Sectors. *Tourism Economics*, 20(2), 337-353. <https://doi.org/10.5367/te.2013.0273>
- González-de-Aguilar, C. y Valbuena-Reyero, R. (2011). Inmigración altamente cualificada: mercado y regulación. Una revisión del caso español. *Anales de Derecho*, (29), 81-114. <https://doi.org/10.6018/analesderecho>
- Hou, F., Lu, Y. & Schimmele, C. (2020). Trends in Immigrant Overeducation: The Role of Supply and Demand. *International Migration*, 59(3), 192-212. <https://doi.org/10.1111/imig.12764>
- Kiker, B.F., Santos, M.C. & Mendes de Oliveira, M. (1997). Overeducation and undereducation: Evidence for Portugal. *Economics of Education Review*, 16(2), 111-125. [https://doi.org/10.1016/S0272-7757\(96\)00040-4](https://doi.org/10.1016/S0272-7757(96)00040-4)
- Korpi, T. & Tahlin, M. (2021). On-the-job training: a skill match approach to the determinants of lifelong learning. *Industrial Relations Journal*, 52(1), 64–81. <https://doi.org/10.1111/irj.12317>
- Koutná, M., Krckova, A. & Vavrinová, T. (2016). Educational Mismatch Among Immigrants in the Czech Republic. *Sociología*, 48(6), 572-600.
- Leuven, E. & Oosterbeek, H. (2011). Overeducation and Mismatch in the Labor Market. *IZA Discussion Paper*, nº 5523. <https://doi.org/10.2139/ssrn.1771245>
- Lillo-Bañuls, A. & Casado-Díaz, J. M. (2015). Exploring the relationship between educational mismatch, earnings and job satisfaction in the tourism industry. *Current Issues in Tourism*, 18(4), 361-375. <https://doi.org/10.1080/13683500.2014.915796>

- Lillo-Bañuls, A. (2009). El papel del Capital Humano en el sector turístico: algunas reflexiones y propuestas. *Cuadernos de Turismo*, 24, 53-64.
- Liu, L. & Zhang, C. (2008). Wages for migrant workers in the Pearl River Delta: determining factors. *Social Sciences in China*, 29(3), 104-120. <https://doi.org/10.1080/02529200802288377>
- Liwiński, J. & Pastore, F. (2021). Are School-Provided Skills Useful at Work? Results of the Wiles Test. *Research in Higher Education*, 62, 72–97. <https://doi.org/10.1007/s11162-019-09569-5>
- Marchante, A. J. & Ortega, B. (2011). Human Capital and Labor Productivity: A Study for the Hotel Industry. *Cornell Hospitality Quarterly*, 53(1), 20-30. <https://doi.org/10.1177/1938965511427698>
- Marchante, A. J., Ortega, B. & Pagán, R. (2007). An Analysis of Educational Mismatch and Labor Mobility in the Hospitality Industry. *Journal of Hospitality & Tourism Research*, 31(3), 299-320. <https://doi.org/10.1177/1096348007299920>
- Marchante-Mera, A. J., Ortega, B. & Pagán, R. (2005). Educational mismatch and wages in the hospitality sector. *Tourism Economics*, 11(1), 103-117. <https://doi.org/10.5367/0000000053297149>
- Mincer, J. (1974). *Schooling, Experience and Earnings*. Nueva York: National Bureau of Economics.
- Morsy, H. & Mukasa, A. N. (2021). 'Mind the mismatch?' Incidence, drivers, and persistence of African youths' skill and educational mismatches. *African Development Review*, 32, S5– S19. <https://doi.org/10.1111/1467-8268.12478>
- Mysíková, M. (2016). Educational mismatch in the Czech Labour Market. *Review of Economic Perspectives*, 16(2), 103-120. <https://doi.org/10.1515/revecp-2016-0008>
- National Statistics Institute (2020a). *Encuestas de estructura salarial*. Available online: https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736177025&menu=resultados&idp=1254735976596#!tabs-1254736195109
- National Statistics Institute (2020b). *Notas de prensa*. Available from: https://www.ine.es/prensa/eces_2018_d.pdf
- Nyberg, A., Johansson, G., Westerlund, H., Rostila, M. & Toivanen, S. (2020). Status incongruence in human service occupations and implications for mild-to-severe depressive symptoms and register-based sickness absence: A prospective cohort study. *Scandinavian Journal of Work Environment & Health*, 46(2), 209-217. <https://doi.org/10.5271/sjweh.3853>
- Ons Cappa, M., Sánchez Ollero, J. L. & García Pozo, A. (2020). Diferencias de género en los rendimientos del capital humano en el sector de la hostelería en España. *Investigaciones Turísticas*, (19), 28-49. <https://doi.org/10.14198/INTURI2020.19.02>

- Park, K. (2021). Education-Job Mismatch and Gender Wage Gap: Evidence from Recent College Graduates in Korea. *Asian Women*, 37(1), 1-24. <https://doi.org/10.14431/aw.2021.3.37.1.1>
- Pérez-López, C. (2019). Problemas resueltos de econometría (1st reprint). Madrid, Spain: Thomson.
- Petrizzi, R. S., Sánchez-Ollero, J. L. & García-Pozo, A. (2015). Desajuste educativo. Situación actual e implicancias en el sector hotelero del Noroeste argentino. *Estudios y perspectivas en turismo*, 24(3), 1-15.
- Petrizzi, R. S. (2015). Desajuste educativo: situación actual e implicancia en el sector hotelero del noroeste argentino. [Doctoral Thesis, University of Málaga].
- Pompei, F. & Selezneva, E. (2021). Unemployment and education mismatch in the EU before and after the financial crisis. *Journal of Policy Modeling*, 43, 448-473. <https://doi.org/10.1016/j.jpolmod.2019.09.009>
- Prieto, V., Robaina, S. & Koolhaas, M. (2016). Access and quality of employment of recent immigration in Uruguay. *REMHU Revista Interdisciplinar da Mobilidade Humana*, 24(48), 121-144. <https://doi.org/10.1590/1980-85852503880004809>
- Ramos, R. & Sanromá, E. (2013). Overeducation and Local Labour Markets in Spain. *Tijdschrift voor economische en sociale geografie*, 104(3), 278-2914. <https://doi.org/10.1111/j.1467-9663.2012.00752.x>
- Robst, J. (2007). Education and job match: The relatedness of college major and work. *Economics of Education Review*, 26, 397-407. <https://doi.org/10.1016/j.econedurev.2006.08.003>
- Roller, C., Rulff, C. & Tamminga M. M. (2020). It's a mismatch! Overeducation and career mobility in Germany. *German Economic Review*, 21(4), 493-514. <https://doi.org/10.1515/ger-2019-0107>
- Romaní, J., Casado-Díaz, J.M. & Lillo-Bañuls, A. (2016). On the links between spatial variables and overeducation. *Applied Economics Letters*, 23(9), 652-655. <https://doi.org/10.1080/13504851.2015.1095996>
- Ruesga, S. M. & Murayama, C. (2002). Educación y el lugar en la cola del paro: el caso español. *Investigación Económica*, 62(239), 161-179.
- Salas-Velasco, M. (2021). Mapping the (mis)match of university degrees in the graduate labor market. *Journal for Labour Market Research*, 55, 14. <https://doi.org/10.1186/s12651-021-00297-x>
- Salinas-Jiménez, M. M., Rahona-López, M. & Murillo-Huertas, I. P. (2014). Gender wage differentials and educational mismatch: An application to the Spanish case. *Applied Economics*, 45(30), 4226-4235. <https://doi.org/10.1080/00036846.2013.781260>
- Sánchez-Ollero, J. L. (2001). Desajuste educativo: existencia, medición e implicaciones en la industria hostelera de Andalucía. [Doctoral Thesis, University of Málaga].

- Schultz, T. W. (1963). *The Economic Value of Education*. Nueva York: Columbia University Press.
- Somers, M.A., Cabus, S.J. & Groot, W. (2019). Horizontal mismatch between employment and field of education: Evidence from a systematic literature review. *Journal of Economic Surveys*, 33, 567-603. <https://doi.org/10.1111/joes.12271>
- Stock, J. H. & Watson, M. W. (2020). *Introduction to econometrics (14th Ed.)*. Harlow, England: Pearson.
- Thurow, L.C. (1975). *Generating Inequality: Mechanisms of distribution in the U.S. economy*. Basic Books. <https://doi.org/10.1007/978-1-349-15723-5>
- Valenta, O. & Drbohlav, D. (2018). Longitudinal and spatial perspectives on the mismatch of tertiary educated migrant workers in the Czech labour market: The case of Ukrainians. *Moravian Geographical Reports*, 26(4), 255-272. <https://doi.org/10.2478/mgr-2018-0021>
- Vázquez-Rodríguez, A., García-Álvarez, J. & Santos-Rego, M. A. (2021). *Educar*, 57(1), 81-96. <https://doi.org/10.5565/rev/educar.1185>
- Verdugo, R. & Verdugo, N. (1989). The impact of surplus schooling on earnings: some additional findings. *Journal of Human Resources*, 24(4), 629–643. <https://doi.org/10.2307/145998>
- Veselinovic, L., Mangafic, J. & Turulja, L. (2020). The effect of education-job mismatch on net income: evidence from a developing country. *Economic Research-Ekonomska Istrazivanja*, 33(1), 1–22. <https://doi.org/10.1080/1331677X.2020.1723427>
- Voces, C. & Cainzos, M. (2020). Overeducation as Status Inconsistency: Effects on Job Satisfaction, Subjective Well-Being and the Image of Social Stratification. *Social Indicators Research*, 153, 979–1010. <https://doi.org/10.1007/s11205-020-02516-3>

AUTHORS CONTRIBUTIONS

Author 1: contributed with the following CRediT taxonomies: Conceptualisation, Formal analysis, Investigation, Writing - Original Draft, Writing - Review & Editing, Visualisation.

Author 2: contributed with the following CRediT taxonomies: Methodology, Formal analysis, Resources, Supervision, Writing - Review & Editing.

Author 3: contributed with the following CRediT taxonomies: Conceptualisation, Methodology, Software, Data curation, Supervision, Writing - Review & Editing.

ACKNOWLEDGEMENTS

Sánchez-Cubo, F. benefits from a predoctoral contract for training researcher staff within the frame of the Formación de Profesorado Universitario (FPU) Fellowship Programme of the Ministry of Universities of Spain.