

ASSESSING SOCIOECONOMIC VARIABLES IN HRM INDIVIDUAL ACADEMIC PERFORMANCE

Miguel BAIÃO

*Lusófona University and CSG/SOCIUS/ISEG (Lisbon School of Economics & Management)/Lisbon University),
Lisbon, Portugal
miguel.santos@ulusofona.pt*

Edviges COELHO

*Lusófona University and TRIE, Lisbon, Portugal
edviges.coelho@ulusofona.pt*

Isabel DUARTE

*Lusófona University and TRIE, Lisbon, Portugal
isabel.duarte@ulusofona.pt*

Maciej CHRZANOWSKI

*Rzeszow University of Technology and Wydział Zarządzania Politechniki Rzeszowskiej, Poland.
mc@prz.edu.pl*

Abstract

The present case study is focused on the analysis of some socioeconomic variables on the Higher Education accession path. The research tried to answer the question if there is any association between the accession path and the student's performance. A sample of 1001 students from a HRM bachelor's degree has been used. One of the main findings is that individual performance is independent of the accession path, but it is associated to other socioeconomic variables. Despite the uniqueness of the access path variable, it seems that it has no influence on student performance.

Keywords: higher education, HRM, performance, socioeconomic variables, accession path

1. INTRODUCTION

One of the most important success factors of economies, is the entrepreneurial capital (Unger et al, 2011), as a factor management affecting the success of individuals (Millán et al, 2014). However, for education to bring real effects, it must be constantly analysed, as well as the socioeconomic variables that affect the success of individuals. After all, innovation is seen as the main factor of adapting to the changing economic reality (Hua & Wemmerlov, 2006). As German-Soto & Gutierrez (2013) claim, the essence of any modern economy is the ability to use knowledge. The competitiveness of corporations depends on the ability to react and adapt to constant changes (Sujova & Rajnoha, 2012), and to do so, fully adapted personnel are needed, especially experts in the field of human resources management. The analysis of several variables that influence the success of HRM students is crucial because the development of modern societies depends to a substantial extent on the quality and efficiency of these professionals.

The goal of the research is to answer the question whether there is any association between some socioeconomic variables, in particular the accession path, on student's performance. The uniqueness of the studied accession paths diversity (in a total of eight), is the focus of this first research over this University and specific sample. The case study methodology was used in the research, as an approach that allows a detailed study of a specific phenomenon in its context (Yin, 2003). The main finding is that Individual performance is independent of the access path, but it is associated with the age group, place of residence and income.

2. THEORETICAL BACKGROUND

According to Tumen, Shulruf & Hattie (2008) the existing literature over higher education student's tracks, discloses an association amongst student paths and three categories of features: (i) demographic

characteristics; (ii) students' success and study typology; and (iii) the field of study. This approach may be seen, as inspired in the human capital theory (Becker 1964; Mincer 1974): the investment in university education is seen as an outcome of individual cost-benefit decisions, though the decision is not grasped on a simple individual basis but also in contingent variables. This means that, according to the human capital theory, the size and form of the individual's costs and benefits are not only influenced by individual characteristics, but the student's social and cultural contexts are also expected to play a role. However, educational achievement and further student characteristics, such as gender, ethnicity, age, and socio-economic status are also focused on several studies. For instance, gender inequalities in educational success are very well studied, revealing an improved likelihood of achievement associated with women rather than men (Garg, 2018; Hamoud et al., 2018; Mohamed & Waguih, 2017; Newman-Ford et al., 2009; Scott, 2005; Vickerson, 2003). Concerning students' economic status, it is a variable also documented in studies, as being a central forecaster of academic success. Some longitudinal studies (Chiu et al., 2016; Garg, 2018; Nunez, Cuccaro-Alamin, & Carrol, 1998; Van den Berg & Hofman, 2005) have found that the likelihood of getting a degree is lower for students from lower income families than for their middle or high income pairs. These conclusions may be interpreted considering Bourdieu's (1973) social reproduction theory, while the social process through which culture is reproduced across generations, particularly through the socializing influence of major institutions (e.g., Universities).

Studies over age variable, generally found that younger students are more likely to complete their degree than older students (Ahmad et al., 2015; Hamoud et al., 2018; Martin & Karmel 2002; Mueen et al., 2016; Newman-Ford et al., 2009; Vickerson, 2009).

Several research studies concluded that the work status is crucial to complete the bachelor's degree. Full-time students are more likely to successfully complete their studies than working students (Hall, 1999; Kul & Cramer, 2006; Lundberg, 2004; Martin, & Karmel 2002; Nunez, Cuccaro-Alamin, & Carrol, 1998; Scott 2005).

Yet, there is a limited assortment of studies about HRM graduates' trajectories and labour market insertion (Almeida, 2000, 2004, 2007, 2012), employability (Dowling & Fisher, 1997; Keef, 2015; Kochan, 2004), curricula development and design (Johnson III & Rivera, 2007; Jowah & Beretu, 2019; Pounder & Sakka, 2010; SHRM, 2018) or HRM profession (Cohen, 2015). No quality and comprehensive studies about HRM bachelor's degree accession paths were found so far.

Related to the methodological option, the case study (Yin, 2014) was chosen, as it is an empirical analysis that explores a current phenomenon within its framework by focusing on accuracy, validity, and reliability of data triangulation and operationalizes a sequence of occurrences over an extended period (Yin, 2014). According to Tumen, Shulruf & Hattie (2008) a comprehensive number of previous studies over these subjects use descriptive analytical tools to assess the association between pathway outcomes or academic success and demographic variables (e.g., Scott, 2003; Smart, 2006; Van den Berg & Hofman; 2005) or even multivariate analysis using logistic regressions or probit model analysis (e.g., Martin, Maclachlan, and Karmel, 2001; Morgaman et al., 2002; Scott, 2005).

2.1. Overview

The literature revealed contradictory topics of student performance. The AFT (2011) argues that student success includes the achievement of the individual education goals. In a broader sense York, Gibson, & Rankin (2015) proposed a definition that encompasses six components: academic achievement, satisfaction, acquisition of skills and competencies, persistence, attainment of learning goals, and career success.

Kuh et al. (2006), suggests a definition that involves: academic achievement, engagement in educational activities, satisfaction, acquisition of knowledge, skills and competencies, persistence, attainment of educational outcomes, and post-college performance.

Academic achievement or success is based on quantitative measurements, scales, or degrees (Bunce & Hutchinson, 2009; Choi, 2005) and is presented as Grade Point Average (GPA), or Cumulative Grade Point Average - CGPA (Parker et al, 2004). Yet, other measurements are needed to predict students' performance (Alyahyan & Düştegör, 2020; Ruegg et al, 2020). One of them is the "degree level" that measures the students' performance as the time needed to complete the degree (idem). In this study we adopted this definition of student's performance.

2.2. Factors impacting on students' academic success

There is a limited volume of studies describing the elements that impact on the prediction of students' performance (Alyahyan & Düşteğör, 2020). Prior academic achievement, student demographics, and environments, are the most reported indicators (Tumen, Shulruf & Hattie, 2008). The top two indicators are the prior-academic achievement, and student demographics, which were studied in 69% of the research papers (idem). On the other hand, more than 40% of academic works are dedicated to prior academic achievement as the most key component (ibidem).

Many authors include in Prior Academic Achievement: high school results, pre-admission data, semester GPA/CGPA, individual marks or individual assessment grades (Asif et al., 2017; Gamboa, et al, 2018; Garg, 2018; Hussain, et al 2014; Jain & Bakshi, 2014; Jansen & Bruinsma, 2005; Mesarić & Šebalj, 2016; Mohamed & Waguih, 2017; Ruegg et al, 2020; Singh & Kaur, 2016).

Regarding Student Demographics, other authors include gender, age, race/ethnicity, place of residence or covered distance, family size, and family income (Garg, 2018; Mohamed & Waguih, 2017; Jansen & Bruinsma, 2005; Mueen et al., 2016; Nelson, et al, 2018; Singh & Kaur, 2016; Vieira et al, 2018).

Some studies suggest that Student's Environment (e.g., socioeconomic status, parent's education and occupation, place of residence / travelling distance, family size, and family income) is a crucial component of performance (Ahmad et al., 2015; Berg & Hofman, 2005; Garg, 2018; Hamoud et al., 2018; Lizzio et al., 2010; Mohamed & Waguih, 2017; Mueen et al., 2016; Singh & Kaur, 2016; Thomas, 2002)

In this study we adopted some of these definitions of factors impacting on student's academic success.

3. RESEARCH METHOD

3.1. Study population and case study

The choice of the case study relies on Yin's (2014) prerequisites: a) the research question (extent question), b) the phenomenon in context, c) a longitudinal analysis and d) uses for analysis a blend of qualitative and quantitative data.

The analytical work plan included: the definition and description of variables, a descriptive statistic, an independence test, and an inferential statistic test.

As this is a case study, the sample included all the enrolled students (n=1001) at the Human Resource Management (HRM) bachelor's degree, from the academic years 2010/2011 until 2020/2021. The data, gathered through a questionnaire, included: gender, age, place of residence, average mensal income, working student or not (throughout the degree), admission path used, status in the course and individual performance until graduation. Our choice of method approach is close to the studies of Scott (2003), Smart (2006) and Van den Berg & Hofman (2005).

3.2. Description of the variables

The selection of the variables was taken considering the existing literature and the European Union's General Data Protection Regulation (GDPR). Those two boundaries limited the selection of variables that can be quizzed.

Admission Path

This variable is the main focus of this research. Analysing the admissions criteria may show that has a predictive status of the student's performance (Lamadrid-Figueroa et al., 2012), despite much subjectivity is established throughout the admission process (Lamadrid-Figueroa et al., 2012; Svirina, Lopatin & Titko, 2021). Ruegg et al (2020) found that students who entered the university after completing the local university entrance requirements are the group who were found to underperform. Regarding the admissions in private Higher Education Institutions, the studied system encompasses a uniqueness as it is made of eight different student's accession pathways: 1) completed the upper secondary and have made successfully the National Admission

Exams (UpSec Exam), 2) completed VET Courses (VET), 3) are over 23 years old (>23y), 4) have already a Higher Education bachelor degree (OHED), 5) have already a Tertiary non University course (TESP), 6) are already enrolled in a HE bachelor degree and wants to change to another or have dropped out and wants to return (CHCourse), 7) are international students (IntS) and 8) are external Students (ExtS). The selection is made upon: a) curriculum analysis and GPA (UpSec Exam, TESP, CHCourse, OHED and IntS), b) admission tests (>23y, TESP, IntS and VET) and c) individual interview (>23y and VET). There are no admission criteria for ExtS because they are not internal students, and they have one academic year to achieve the conditions to become internal students via the other 7 paths.

Age

The literature is overflowing and produces contradictory results (Crowford & Wang, 2015). For example, age is a minor impact factor in determining performance (Cassidy, 2012; Richardson, 1995). On the other hand, the age has a positive relation with performance (Ahmad et al., 2015; Hamoud et al., 2018; Mueen et al., 2016M; Newman-Ford et al., 2009; Vickerson, 2009).

Gender

Gender seems to have a role over the choice of study options (Ahmad et al., 2015; Garg, 2018; Hamoud et al., 2018; Mohamed & Waguih, 2017; Newman-Ford et al., 2009; Sainz et al., 2012; Vickerson, 2003) and in the university grades attainment (Ramist, et al., 1993) or performance (Kappe & van der Flier, 2012; Palmer et al. 2011; Tentsho et al., 2019). However, other studies found no significative role of gender on performance (Almarabeh, 2017; Garg, 2018; Newman-Ford et al., 2009; Vickerson, 2003).

Place of residence

The impact of the distance travelled, from residence to the HEI, on the academic achievement was confirmed in several studies (Grayson, 1997; Newman-Ford et al., 2009; Ruegg et al, 2020; Scott, 2005; Tentsho, et al., 2019; Vickerson, 2003).

Average Mensal Income

This variable may be understood as individual or family earnings because there are students that are still dependent from their families and other that are working students. According to Garg (2018), Nunez, Cuccaro-Alamin, & Carrol (1998) and Van den Berg & Hofman (2005) the earnings are one of the least contributing variables towards performance. This conclusion is also supported by Chiu et al. (2016) as they argue that the impact that family income has on student performance is not so obvious.

Work Status

According to Riggert et al. (2006) the studies are inconsistent and contradictory. This team found that there are no theoretical models to fully explain the relationship between work status and performance. The negative relation of working hours and time to graduation was verified by Hall (1999), Lundberg (2004) and by Kulm & Cramer (2006) and is mainly due to scheduling conflicts. Dundes & Marx (2006) found that the number of hours worked per week have a key role in performance.

Status in the Course

The possibilities considered are a) current student (1st, 2sn and 3rd year), b) finished bachelor's degree and c) dropped out. The effects of the status (Newman-Ford et al., 2009) and year of attendance (Brock, 2010; Chemers et al, 2001) have a direct role on performance, as measured by GPA, with some steadiness across year-levels (Zeegers, 2004).

Individual Performance of Graduation

A longitudinal study conducted by Chemers et al. (2001) examined the effects of academic self-efficacy (including the year/semester of study) on performance. The results have revealed that academic self-efficacy is directly related to performance. Tentsho et al. (2019) argue that the time to achieve a graduation is often omitted in performance studies as many students do not graduate within the regular time. Some results showed that the year or semester is significantly associated with time needed to graduation (Hall, 1999; Tentsho et al.,

2019; Yue & Fu,2017). As this variable is the time that students needed to achieve a graduation in HRM bachelor, we considered 3 levels of performance: a) the regular time for graduation of 3 years, b) 4 years, and c) more than 4 years.

The variables are nominal (gender, place of residence, work status, access path and year of the course) and ordinal (age, individual income, and performance).

3.3. HYPOTHESES

The starting question was: Is there any relation between some socioeconomic variables, in particular the access path, over HRM student's academic performance?

So, we have drawn 8 hypotheses:

H1: the gender is related with the individual performance of graduation.

H2: the age is related with the individual performance of graduation.

H3: the place of residence is related with the individual performance of graduation.

H4: the average mensal income is related with the individual performance of graduation.

H5: the working status is related with the individual performance of graduation.

H6: the status in the course is related with the individual performance of graduation.

H7: the admission path is related with the individual performance of graduation.

H8: the individual performance graduation is related with all other variables.

4. RESULTS AND DISCUSSIONS

In general, the results highlight some differential importance of socioeconomic variables over individual performance.

Regarding the questionnaire the results are shown in Table 1.

TABLE 1 - QUESTIONNAIRE RESULTS

	Number	%
N	1001	100
Answers	266	26,57%
Validated Answers	243	24,3%
Valid Cases	228	22,78%

4.1. Chi-square Independence Tests

We have applied this independence test, to compare socioeconomic variables in a contingency table and to verify any relation. We have stated that:

H_0 : the variables are independent

H_a : the variables are not independent

It was used a significance level of .5%, because is the widely used value for social sciences (Stockmer, 2019).

It is accept that: a) age is associated with income, working status, year of the course, access path and performance, b) the place of residence is associated with access path and performance, c) Individual income is related with performance, d) working status is related with access path and year of the course, r) the access path is associated with age, place of residence and working status, f) year of the course is related with performance and g) individual performance is associated with age, place of residence, individual income and year of the course.

So, a major importance is given to these last four socioeconomic variables in individual performance, then the accession path.

4.2. Multiple Correspondence Analysis (MCA)

It was chosen the MCA because it allows to study the association between two or more qualitative variables (Stockmer, 2019). To perform it, we decided to use six active variables: Age (with 5 categories), Place of Residence (with 4 categories), Individual Income (with 4 categories), Work Status (with 2 categories), Access Path (with 5 categories, due to grouping 3 of them) and performance (with 3 categories, due to have removed the dropped-out learner's answers). So, there are in total 23 categories.

As supplementary variables we have set gender (with 2 categories) and Course Year (with 4 categories).

We used two methods of normalisation: symmetrical and variable principal. Yet, we only display the results of this last one (Table 2).

TABLE 2 - MODEL SUMMARY

Model Summary

Dimension	Cronbach's Alpha	Variance Accounted For		
		Total (Eigenvalue)	Inertia	% of Variance
1	,654	2,199	,366	36,648
2	,474	1,653	,275	27,545
Total		3,852	,642	
Mean	,577 ^a	1,926	,321	32,096

a. Mean Cronbach's Alpha is based on the mean Eigenvalue.

This value varies between 0 and 1, and the closer to the upper limit, the more variance is explained by each dimension. The most relevant dimensions are those ones that have higher associated inertia values. Table 3. shows the discrimination measures for each variable.

The variables that discriminate the most in each dimension are those ones that have a measure of discrimination higher than the value obtained, by dividing the total active of the relative variance of the dimension by the number of variables (Stockmer, 2019). So, for the 1st dimension: $2.199 / 6 = 0.3666$ and for the 2nd dimension: $1.653 / 6 = 0.2755$

In Figure 1. the variables that most discriminate in one or another dimension will tend to be closer to the respective axis. The variables whose projection is close to the origin will be those that do not discriminate against individuals (as it is with performance). Thus, in dimension 1 we have: Age Group, Work Status and Access Path. In dimension 2 we have Age Group, Place of Residence, Income and Access Path.

TABLE 3 - DISCRIMINATION MEASURES

	Dimension		Mean
	1	2	
Age group	,729	,335	,532
Place of Residence	,129	,394	,262
Income	,048	,328	,188
Work Status	,436	,027	,231
Access Path	,673	,392	,532
Performance/duration of the course	,184	,176	,180
Gender ^a	,000	,000	,000
Course year ^a	,074	,006	,040
Active Total	2,199	1,653	1,926
% of Variance	36,648	27,545	32,096

a. Supplementary variable.

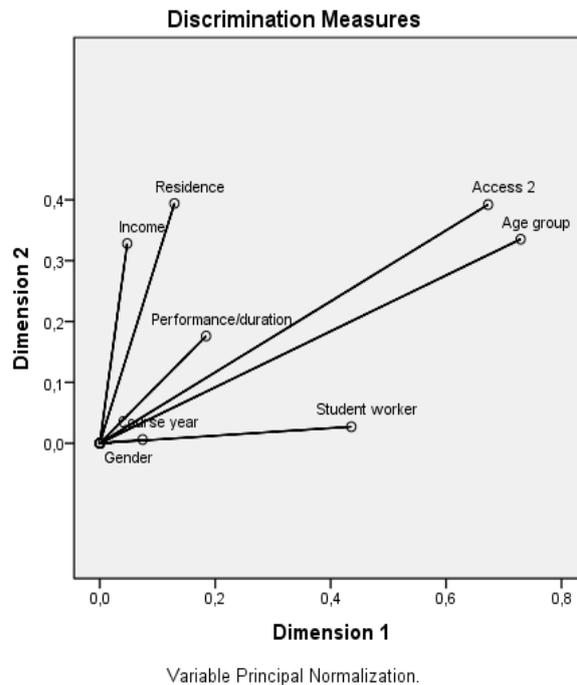


FIGURE 1 - DISCRIMINATION MEASURES

The analysed tables allows us to infer which are the socioeconomic categories that most discriminate the students, and where they stand up on the graphic.

The next question is to know from which point, a category is considered that discriminates the students and contributes to the relative variance of a dimension. The sum of contributions from all categories for each dimension is 1. Therefore, the value that tag each category as relevant is calculated as the average of the contributions, given by $1 / (\text{total of categories of the active variables})$. In our case, this value is given by $1/23 = 0.0435$.

Taken together, these results suggest that is possible to gather in dimension 1: Age Group, Work Status and Access Path, as shown in table 4.

TABLE 4 - DIMENSION 1

Dimension 1 < 0	Dimension 1 > 0
18 and under (-), 19-22 (-)	23-30 (+), 31-45 (+)
No Work (-)	Yes Work (+)
12th National exams (-)	Older than 23 (+)

In the same framework it is a possible to gather in dimension 2: Age Group, Place of Residence, Income and Access Path, as shown in table 5.

TABLE 5 - DIMENSION 2

Dimension 2 < 0	Dimension 2 > 0
CPSC (-)	31-45 (+) e above 45 (+)
<1000 (-)	LTV (+)
International student (-); External student (-)	2000-3000 (+), >3000 (+)

Figures 2 and 3 show the possible clusters according to the proximity among categories.

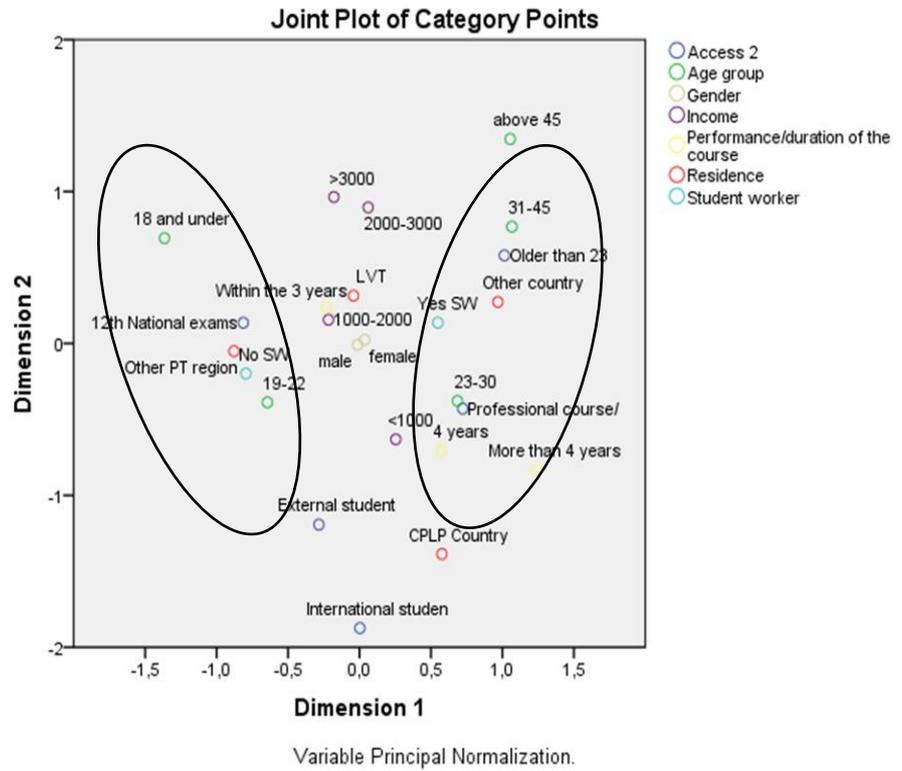


FIGURE 2 - DIMENSION 1 BY CATEGORY POINTS

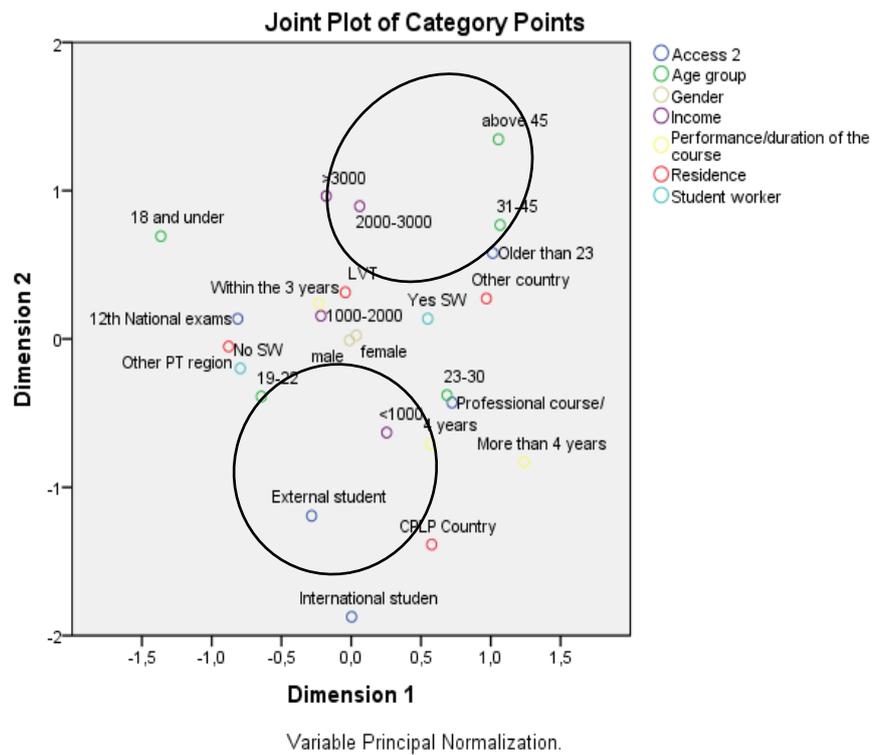


FIGURE 3 - DIMENSION 2 BY CATEGORY POINTS

The most interesting aspect of this graph is the proximity between the two categories that represent younger individuals (less than 22 years old), who are not working and whose access path was the National Exams. In

contrast, we found close and discriminating categories that stand for older individuals (above 23 years old), who are working students and whose access path was 23 and over.

In a more comprehensive socioeconomic analysis the results highlight that individual performance is independent of the access path. The most significant result is that the individual performance is associated with the age group, place of residence and income. This apparently means that circumstantial variables have lower intensity in individual performance than socioeconomic variables.

Overall, this research fully confirms the hypothesis H2, H3 and H4 and partially confirms H8. Regarding the other hypothesis it is not possible to clearly state any inference or discussion.

5. CONCLUSIONS

The aim of this research was to examine if there is any association among some socioeconomic variables, in particular the diversity of access paths, with the HRM student's individual performance.

To answer to the starting question it was carried out a Chi-square test, which indicates that individual performance is independent of the access path. Still, this performance is independent as well from the working status, the year of the course and gender. The individual performance is associated with the age group, place of residence and income. These findings are in line with the studies of several authors (Garg, 2018; Mohamed & Waguih, 2017; Jansen & Bruinsma, 2005; Mueen et al., 2016; Nelson, et al, 2018; Singh & Kaur, 2016)

The research has also shown that: a) age is associated with income, working status, year of the course, access path and performance, b) the place of residence is associated with access path and performance, c) individual income is related with performance, d) working status is related with access path and year of the course, e) the access path is associated with age, place of residence and working status, g) year of the course is related with performance and f) individual performance is associated with age, place of residence, individual income and year of the course. These results follow closely the work of Ahmad et al., 2015; Berg & Hofman, 2005; Garg, 2018; Hamoud et al., 2018; Lizzio et al., 2010; Mohamed & Waguih, 2017; Mueen et al., 2016; Singh & Kaur, 2016 & Thomas, 2002. On the other hand, these conclusions are not in line with the work of Ruegg et al (2020).

Regarding the exploratory statistics, the MCA revealed that younger individuals (less than 22 years old) who are not working use the "National Exams" as preferred access path. As expected, older working individuals (above 23 years old), choose the "23 and Older" access path.

This study has found that generally students from CPSC countries, with lower income use both "International student" or "External student" access paths. Another conclusion is that Lisbon and Tejo Valley residents with higher income are the ones who use the "23 and Older" access path.

As practical implications it can be stated that in this University the current eight accession paths should be kept covering the several backgrounds. Furthermore, the success of "External Student" accession path should be disseminated to other Universities to gradually include more foreign students.

The major limitation of this study is the number of answers to the questionnaire. So, the results must be interpreted thoughtfully. The scope of this study was also restricted to a few variables that may be freely used, due to the limitations of European GDPR. In some cases, data was missing which forced some learners to be excluded from the analyses. Therefore, these limitations entail a thoughtful generalisation of the results.

Future studies could be drawn using further variables, a bigger sample of students and a larger assortment of bachelor's or master's degrees programmes in other Universities.

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