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An Analysis of Student Satisfaction: Full-Time vs. Part-Time Students

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Abstract This paper examines how full-time or part-time status affects students' level of satisfaction with their degree programs. For our analysis, we obtained data from a survey of graduate students. The survey was conducted at a public university in Spain from 2001 to 2004. The decision to undertake paid employment while studying emerges as one of the key determinants of student satisfaction. In particular, our findings indicate that students who hold a part-time job while studying are more likely to express less satisfaction with their college experience.

Keywords Student satisfaction · College graduates · Higher education · Part-time students · Employment status

1 Introduction

The main goal of this article is to examine the impact of employment status on students' reported satisfaction with their degree programs. Analyzing the factors underlying students' satisfaction with their college experience has received much attention in the literature as universities have come under increased pressure to be more competitive and efficient in order to attract more students. Therefore, this kind of this analysis is relevant because it could help post-secondary institutions to determine their strengths and weaknesses (O'Neil and Palmer 2004). Moreover, as LeBlanc and Nguyen (1997, 1999) have pointed out, gauging student satisfaction is not enough; the underlying factors must also be examined.

Numerous attempts have been made to define and measure student's satisfaction.[1] There is no consensus, however, in the literature. For instance, Gregg (1972) defined this concept

[1] An alternative strand of the literature deals with the concept of consumer satisfaction. This concept could be applied to the analysis of students' satisfaction. However, the relationship with this literature lies outside the scope of this paper. For a detailed discussion on consumer satisfaction see Giese and Cote (2000).

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as the degree of satisfaction that students express with the academic/professional aspects of graduate school. More recently, Elliot and Healy (2001) have measured satisfaction by students' evaluations of their experience with education-related services. As regards measuring student satisfaction, two main alternatives appear in the related literature. A number of surveys, e.g., the USA National Survey of Student Engagement (NSSE) and the British National Student Survey (NSS), provide information on student satisfaction. In addition, specific questionnaires may gauge students' opinions, which are used to measure their satisfaction.

Previous research has focused on identifying the institutional and student-related factors that determine student satisfaction. Rienzi et al. (1993), in addition to Bean and Vesper (1994), among others, investigated gender differences in student satisfaction and found that social factors, such as contact with advisors, having friends and living on campus, were strongly associated with satisfaction for females, but not for males. Some authors have found evidence to suggest that student satisfaction is related to academic performance, although they have also emphasized the complexity of this relationship. Following this line, Pike (1991) examined the relationship between grade point average (GPA) and satisfaction. His findings showed that satisfaction exerts a stronger influence on GPA than GPA does on satisfaction. In Aitken (1982), academic performance was measured based on the expected GPA reported by students, who were asked to indicate how they felt about their academic performance when completing the questionnaire. The author also concluded that academic performance is one of the most important variables underlying student satisfaction.[2]

Other studies have focused on analyzing the effects on satisfaction of other social factors such as student–student relationships, student–faculty relationships and student self-evaluations. Gregg (1972) found that satisfaction, both academic and non-academic, was positively associated with faculty–student relationships and negatively associated with competitive student–student relationships and expectation/reality discrepancies. Benjamin and Hollings (1997) found that life satisfaction among students was affected by family ties, self-evaluation, academic satisfaction and the impact of recent events. They also showed that "on-campus" factors such as academic services, social activities, etc. were not directly associated with satisfaction.

Many other authors have endeavored to analyze the role of faculty or department readiness in determining student satisfaction. Umbach and Porter (2002) and Thomas and Galambos (2004) found that, in departments where faculty members focused on research, students reported a high degree of satisfaction. In contrast, Grunwald and Peterson (2003) focused on the role of institutional factors in predicting satisfaction with the faculty. They found that student evaluations, administrative support and teaching-related issues are significant predictors of faculty satisfaction. Finally, the notable work of García-Aracil (2008) investigated satisfaction among young European college graduates, placing a greater emphasis on individual characteristics and more specific variables (like quality of learning) than in previous works.

Our study provides a more in-depth analysis of the complex relationship between student satisfaction, students' academic characteristics and the overall college experience by incorporating employment status as a new determinant of student satisfaction. More specifically, this study seeks to assess the impact of work experience on student satisfaction. This issue has already been addressed to some extent in previous literature. Existing studies show that college graduates are generally satisfied with their jobs and their college

[2] See also Howard and Maxwell (1982), Bean and Bradley (1986) and Knox et al. (1992).

experience. Moreover, they believe that their academic experience was relevant to their current employment (Pace 1979; Moden and Williford 1988; Pettit 1991). Also noteworthy is the work of Pike (1994), who found that college graduates who are more satisfied with their jobs are more likely to report higher satisfaction with their educational experience. In line with Pike's research, Ginés-Mora et al. (2007) recently attempted to clarify the role of educational factors in determining the job satisfaction of college graduates.

Our analysis differs from previous studies in a number of ways. First, information is included about students' employment status while they were enrolled in their degree program. In other words, an explanatory variable is included indicating whether students were enrolled full-time or part-time (i.e., whether they undertook paid employment in addition to studying); information on the type of job is also included. Second, we use data provided by recent graduates to ensure that the answers are based on recent experiences. This should result in more detailed and accurate information since the students are not biased by inaccurate recall.[3]

In pursuit of the above aims, this study poses the following major questions:

1. Are there differences in satisfaction levels among full-time students and those who undertake paid employment in addition to studying?
2. Do students prefer diversified or specialized curricula?
3. What other factors affect students' overall satisfaction?

Our main findings indicate that students in part-time employment are more likely to report a lower level of satisfaction with their educational experience. Our findings also suggest that students prefer specialized rather than diversified studies. Finally, our findings suggest that GPA and degree completion time positively affect overall student satisfaction.

The rest of the paper is structured as follows. The data set and the variables of the model are presented in Sect. 2; the empirical model is presented in Sect. 3; the results and findings are presented and discussed in Sect. 4; and Sect. 5 concludes. The tables are relegated to Appendix A.

2 Data and Variables

2.1 Data

The data set was obtained from a graduate student survey conducted at a public university in Spain from 2001 to 2004. The respondents were students who had successfully completed the Bachelor's Program in Computing (BPC) at the Autonomous University of Barcelona (UAB). To be considered as having graduated, the respondents had to have met various official requirements and paid the official fee. We realize that the data set may present a problem of bias since the respondents were self-selected and all of them attended their graduation ceremony. Nevertheless, this bias does not differ significantly from that associated with the traditional methodology, in which respondents are asked to fill out questionnaires at home. In both cases, respondents are more likely to assess their college experience positively since they were willing to cover the cost of attending their graduation ceremony and returning the completed questionnaire. Our sample consisted of 116 observations.

[3] Other studies, such as Pike (1994), have examined data from individuals who had been working for at least 10 years since they obtained their degree.

We selected the BPC because we needed a program that allows students to work "off-campus" as they complete their degree. In other words, the curriculum is designed so that students can enter the job market long before they complete their degree. Indeed, as we will show later, a large percentage of the students surveyed worked off-campus during their degree program. This phenomenon has a number of implications with respect to the sample size. For example, when students undertake paid employment, they usually take longer to complete their studies. Despite the fact that students were surveyed over a 4-year period, few of them had completed their degree requirements.

2.2 Variables

Tables 1 and 2 summarize the descriptive statistics of the main variables and the students' academic characteristics. In the questionnaire, students were asked to assess their undergraduate program in general terms, in addition to evaluating a number of additional aspects relating to their college experience. The opinion survey consisted of several questions concerning satisfaction variables, as described in Appendix B. The variable values are ranked from 0 to 10. The variables measure the respondents' degree of satisfaction with various aspects of their graduate program. More specifically, the variables measure the extent to which the students are satisfied with the following aspects: general satisfaction with the undergraduate program (S_G), satisfaction with theoretical lectures (S_{TL}), satisfaction with the quality and quantity of applied lectures (S_{QL} and S_Q), satisfaction with faculty (S_F), satisfaction with the curriculum's relevance to job market requirements (S_A), satisfaction with library services (S_{LI}), satisfaction with classroom facilities (S_C) and satisfaction with laboratory facilities (S_{CL}). It should be noted that the S_A variable receives the lowest level of satisfaction (5.94), while the variable with the highest level of satisfaction is library services (7.57). The overall level of satisfaction of the graduate program is 7.13.

We consider three types of explanatory variables: academic, personal and labor market-related variables. The inclusion of the latter group is this study's main contribution to the existing literature. The following variables are used to analyze students' academic characteristics:

- *Degree*: Two "majors" are available in the BPC program: Management and Computer-systems. The main difference is that the Management major takes an economics/business approach, focusing on software knowledge and economic issues; the Computer-systems major takes a more technical approach, with an emphasis on hardware.[4] A data analysis reveals that the respondents were split almost equally between the two majors (approximately 56% of the students surveyed were enrolled as Computer-systems majors).
- *Access*: In Spain's education system, there are four ways of being admitted into the BPC program. The first is to pass a general exam upon graduating from high school. The exam, known as the PAU (Prueba de Acceso a la Universidad), is equivalent to the SAT. The PAU score and the overall high-school GPA are assumed to reflect students' personal motivation, intellectual ability and academic proficiency. The second way is to obtain the required GPA in a vocational training program, which is an alternative to the regular secondary-school program. Vocational training programs focus more on developing the practical skills that students need to enter the job market. There are two additional ways of being admitted into the BPC program. The first of these involves

[4] In the management major, economics accounts for about one-third of the total course content.

passing a subject-specific exam if a student is more than 25 years old. Alternatively, students may enroll directly if they already hold another degree. These latter two are combined under "Other" in Table 2. A large proportion of the respondents (nearly 75% of the sample) were admitted into the BPC program based on their PAU score.

- *Duration*: This variable measures the total number of years required to complete the degree program. The average duration was approximately 5 years, exceeding the officially designated 3-year period of study by 2 years.
- *GPA*: Numerical grades range from 1 to 4, corresponding to the letter grades of C to A+, respectively.
- *Other degree*: The students were asked to indicate whether they were also enrolled in or had already completed another degree program. Approximately 40% of the respondents stated that they were enrolled in another program, which in almost all cases was closely related to the BPC program. The three most frequently cited examples were an advanced degree in Computer Engineering, a master's program in Computing or additional computing courses such as Java.

Although a wide variety of personal variables could be considered, our selection is restricted to those that are most relevant to this study: gender and age. Our sample is approximately 80% male with an average age of 24.10 years.

Finally, we include a group of variables describing student employment status. A "full-time student" is defined as one who studied exclusively, i.e., who did not undertake paid employment; a "part-time student" is defined as one who undertook paid employment while enrolled in the degree program. In particular, we have taken into account the following variables:

- *Academic years working*: This variable measures the number of "academic years" during which the student was simultaneously in paid employment and studying. The variable values range from 0 to 3, with 0 signifying that the respondent was a full-time student; 1, 2 and 3 indicate the number of academic years during which a part-time student undertook paid employment. On average, part-time students worked during two academic years. It should be noted that, for the purposes of the survey, "academic years working" does not signify the number of years that students took to obtain their degree. This variable actually refers to the official number of years required to finish the degree program, as designated by the Spanish Ministry of Education. For example, the BPC is designated as a 3-year program. Suppose that a graduate student takes 2 years to complete the first-year requirements, 1 year to complete the second-year requirements and 2 years to complete the third-year requirements, and undertakes paid employment only during the last 2 years. This student would take a total of 5 years to obtain his/her degree, but would report only "one academic year working" because he/she only worked during the third and final academic year.
- *Employment status*: This variable has only two values: 0 signifies that the respondent was a full-time student and did not undertake paid employment, while 1 indicates part-time status. Part-time students, i.e., those who undertook paid employment during the degree program, accounted for almost 80% of the sample.
- *Frequency*: This variable indicates whether part-time students held paid employment during the entire degree program or for only a portion thereof. The variable values range from 0 to 2, with 0 indicating that the respondent did not undertake paid employment; 1 indicates that the respondent undertook paid employment during a portion of the degree program, while 2 indicates that the respondent undertook paid

employment during the entire degree program. Approximately 40% of the part-time students in the sample undertook paid employment throughout their degree program.

- *Job type*: This variable seeks to determine whether students held paid employment that related to their field of study. The variable values are 0 (employment unrelated to field of study) and 1 (employment-related). A job is defined as employment-related if specific computing knowledge is a pre-requisite. Computer programmer and analyst computer programmer/analyst positions are thus classified as related employment. Other possibilities, such as teaching or consulting, are classified as unrelated employment. Approximately 50% of the students' jobs in the sample related to their degree programs.
- *Number*: This variable measures the number of different jobs that students held during their degree program. On average, the students in the sample held 1.42 different jobs.

3 Empirical Model

As previously mentioned, the main goal of this study is to describe how students assess various aspects of their academic experience. Due to the nature of the variables, we use an ordered discrete choice model. In this type of model, the independent variable Y is usually labeled $0, 1, \ldots, J$. Given certain explanatory variables $X = (X_1, \ldots, X_k)'$, the researcher is usually interested in analyzing whether one or more of the proposed explanatory variables are significant or not, and/or in providing accurate estimates of the conditional probabilities $\Pr(Y = j \mid X = x)$, which may be interesting in and of themselves or may be initially required in a first stage to derive a two-stage estimator. The parametric model that is more frequently used for an ordered discrete choice variable is derived by assuming the existence of a latent continuous dependent variable Y^* for which a linear regression model $Y^* = X'\beta_0 + u$ holds. Assuming independence between u and X, the following specification for Y is induced,

$$\Pr(Y = j \mid X) = F(\mu_{0j} - X'\beta_0) - F(\mu_{0,j-1} - X'\beta_0), \quad \text{for } j = 0, 1, \ldots, J, \tag{1}$$

where $F(\cdot)$ is the distribution function of u, which is usually referred to as "link function", and μ_{0j} is a threshold parameter. In order to identify the model in a parametric framework, it is usually assumed that the first threshold parameter μ_{00} is zero. The key assumptions in a parametric ordered discrete choice model are: (1) linearity in the latent regression model; (2) the form of the link function $F(\cdot)$ (specifically, its symmetry and its behavior at the tails); and (3) the independence between u and X in the latent regression model (which in turn implies that it is homoskedastic). Consequently, it is assumed that $F(\cdot)$ is entirely known and follows a standard normal distribution (so we will estimate an "ordered probit model"). In this context, the natural way to estimate the vector of parameters θ is by means of the maximum likelihood principle (ML). The log-likelihood of the model can be written as

$$\ln L(\theta) = \sum_{i=1}^{n} \sum_{j=0}^{J} D_{ji} \ln p_{ji}(\theta),$$

where $D_{ji} \equiv I(Y_i = j)$, for $j = 0, 1, \ldots, J$, where $I(\cdot)$ is the indicator function; and, $p_{0i}(\theta) \equiv F(-X_i'\beta)$; $p_{Ji}(\theta) \equiv 1 - F(\mu_{J-1} - X_i'\beta)$; and $p_{ji}(\theta) \equiv F(\mu_j - X_i'\beta) - F(\mu_{j-1} - X_i'\beta)$, for $j = 2, \ldots, J-1$.

We select various estimation models, each of which corresponds to a given satisfaction variable. In each model, we consider three different specifications for each of the satisfaction variables described in Sect. 2. The first specification excludes employment variables, i.e., it is the only specification that is directly comparable with the existing related literature. This specification is used to verify the robustness of our findings. In addition, the first specification includes the above mentioned personal and academic characteristics only as explanatory variables. In the second and third specifications, a group of variables describing the students' employment status is included, together with the variables used in the first specification. The second specification includes the *Academic years working* variable, while in the third specification, we replace *Academic years working* with the following variables: (1) *Employment status*, indicating whether students undertook paid employment; (2) *Frequency*, indicating the frequency or extent of part-time employment during the degree program; (3) *Number*, indicating the number of different jobs held by the respondent; and (4) *Job type*, indicating whether the paid employment related to the respondent's field of study.

Estimates of the parameters and standard deviations are reported in Tables 3, 4, 5, 6. The fitted probabilities in Table 7 are designed to clarify the performance of the various specifications.

4 Results

The estimation results for the general satisfaction variable S_G are provided to underscore the new results obtained by introducing the group of variables relating to student employment status. In the following discussion, we analyze additional satisfaction variables focusing on what we believe are the most noteworthy effects. It should be noted that despite the small sample size, the test statistics show that our results are robust.

4.1 General Satisfaction

Table 3 presents the estimates obtained for the three specifications. In the first specification, which does not control for student employment status, the standard results from the existing literature hold. More specifically, the estimates show that students with higher GPAs are generally more satisfied with their degree program. In the same respect and although not statistically significant, the gender coefficient shows women to be more satisfied. These results are in line with those of Pike (1991) and Umbach and Porter (2002).

Other specific effects also appear. For example, Computer-systems majors (the *Degree* variable) and students who took longer to complete their degree (the *Duration* variable) tend to be more satisfied with their degree program overall. Our interpretation of these two variables is as follows. The *Degree* variable has a significant positive effect on overall satisfaction. This means that Management majors are less satisfied with the program than Computer-systems majors. It should be noted that the Computer-systems academic "track" deals exclusively with computer science-related topics (hardware and software), while the academic "track" for Management features a combination of computer science (software) and economics and management courses. The Management major is therefore academically more diversified than the Computer-systems program, which focuses exclusively on one field of study. The lower level of satisfaction reported by Management major students could be interpreted from different angles. First, it could be that students prefer to learn intensively rather than extensively. Extensiveness is the main feature of diversified degree

programs in which students cover more subject areas in less depth. This kind of approach can create a sense of overextension among students, which could be assessed negatively. Relative low satisfaction can thus be interpreted as indicating that students prefer specialized as opposed to diversified studies. Second, at the outset of their studies, students have certain expectations about the skills or capabilities that the degree should provide them with. As we mentioned above, the Management major includes more topics but in less depth; it therefore seems more likely that students enrolled in this degree consider that their expectations either concerning computer skills or economic skills are not being fulfilled. Clearly, when these expectations are not met, their reported level of satisfaction could tend to be lower.

As regards the *Duration* variable, which displays a positive effect on overall satisfaction, we can also suggest certain possible interpretations. Students that take many years to complete their degree program may eventually feel overextended; in turn, this may lead them to assess their college experience negatively. In addition, however, the program duration may lead students not only to develop an opinion on their program's shortcomings, but also on its positive aspects.

We now examine the main contribution of this paper, i.e., how employment variables affect student satisfaction. As previously noted, we proposed two further specifications. The first specification consists of the variable termed *Academic years working* variable, while for the second specification we have replaced this variable with the following: *Employment status*, *Frequency*, *Number* and *Job type*. The idea of the former specification is to disentangle the information accumulated in the *Academic years working* variable. It should be noted that the effects of the variables *Degree*, *Duration* and *GPA* are equivalent to those obtained in the first specification.

As regards the *Academic years working* variable, we find that the estimated parameter, when significant, is negative. This suggests that part-time students have lower overall satisfaction than full-time students. We would like to highlight a number of different interpretations behind the sign of this estimated coefficient.[5] First, part-time students are less likely to fully experience the opportunities and positive externalities that college life offers, e.g., peer relationships, student networking, living arrangements, social activities, etc. Second, part-time students in paid employment are able to directly compare the relevance of course content with "real-world" job requirements. In this case, a lower reported level of satisfaction may derive from students perceiving that their applied lectures have little relevance to their real-world experiences of the work place. Moreover, they may also believe that the applied lectures are not adequately designed so as to ensure the requisite quantity and quality.[6] Third, part-time students face significant time constraints, that is, their studies carry a huge opportunity cost. If they consider that the skills provided by the degree are not useful to performing their jobs, they will be more likely to report a lower level of satisfaction. The negative sign of the estimated parameter would be the result of all these intuitions interacting. It therefore appears that the part-time students felt the design of the BPC program to be geared far more towards the needs and characteristics of full-time students.

[5] In order to provide a deeper interpretation of our results we should consider a selection procedure (like the Heckman's method). This procedure would allow us to identify the variables driving the decision about working or not by a student. Unfortunately, the data that can be extracted from the student survey at our disposal does not allow us to construct the variables needed to implement that selection procedure. Therefore, we limit ourselves to suggesting different interpretations of the estimation results.

[6] Students may perceive that applied lectures and working hours are substitute rather than complementary activities.

When we replace the variable *Academic years working* with *Employment status*, *Frequency*, *Number* and *Job type*, we find that the aggregate negative value of this variable reflects the negative effect of each of the other four variables. The interpretation of the estimated parameters in the third specification is therefore comparable to that of the second specification, as discussed above. However, the effect of *Employment status* outweighs that of *Academic years working*. We thus infer that the employment status is more relevant than the number of years worked. Furthermore, the negative value of the variable *Frequency* indicates the additional effect of working continuously or intermittently during the degree program.

Additionally, the fitted probabilities in Table 7 were included to ascertain whether the specifications accurately predict overall satisfaction. The result demonstrates that the frequencies are well predicted. This means that the predicted probabilities and the actual data assign similar weights to the values in question.

4.2 Additional Satisfaction Variables

As regards additional satisfaction variables, we consider three different groups: variables relating to course content; variables relating to university resources and facilities; and one variable relating to the course content's labor market relevance. Although all of the estimated parameters are reported in Tables 4, 5 and 6, we mainly focus on the effects of the employment variables in our analysis.

4.3 Learning Variables

This group includes the level of satisfaction of theoretical lectures (S_{TL}) and level of satisfaction of the quantity and quality of applied lectures (S_Q and S_{QL}, respectively). From Table 4, we observe that *Academic years working* still has a negative effect on S_{TL} and S_Q. In this case, the breakdown of this variable provides further insight. The variables *Employment status* and *Frequency* affect levels of satisfaction of applied lecture quality as well as quantity.

The interpretation of these effects is as follows. Two different effects can be seen with regard to theoretical lectures. On the one hand, since theoretical lectures are given according to a fixed schedule throughout the program, part-time students are often unable to attend them and therefore may lack the necessary information to assess them. On the other hand, since part-time students usually undertook employment of a practical nature, they may have decided that the theoretical lectures were irrelevant. In contrast, part-time students can rapidly assess the relevance of applied lectures, especially if they are insufficient in number or quality. Therefore, one possible recommendation would be to increase the quantity and quality of the applied lectures. Finally, the effect of the *Degree* and *Duration* variables is positive, as in S_G, although this only applies to the quality of applied lectures.

4.4 Labor Market Relevance

In this category, we only consider one variable: satisfaction with labor market relevance (S_A). Table 6 presents the corresponding estimate. Although the values of the estimated parameters behave similarly to the other cases, there are virtually no significant effects. This could be due to the fact that the data were obtained from very recent graduates. In

other words, the respondents may not have yet spent enough time in paid employment to provide an accurate answer. The only variable that appears to be positive and significantly different from zero is *GPA* The interpretation of the effect of this variable is straightforward. Students with higher GPAs are either more capable or put in more effort. Therefore, it seems reasonable to expect that they would be promoted more quickly in the labor market.

4.5 Other Satisfaction Variables

This group of variables includes levels of satisfaction of faculty (S_F), library services (S_{LI}) and computer laboratory facilities (S_{CL}). The results are shown in Table 5. It should be noted that the introduction of variables concerning student employment status does not affect the level of satisfaction of computer laboratory facilities, with the exception of S_{CL}. In that case, the effect of *Employment status* and *Frequency* is negative and appears related to the level of satisfaction of applied lectures since the computer laboratory is where applied lectures are held. The interpretation here is straightforward. Part-time students compare the computers available on campus with those used in their workplace. Given the negative values of the estimated parameters, the university computers are inferior. Again, the *Degree* and *Duration* variables have a similar effect on overall satisfaction.

Two effects appeared that had not been previously observed. First, the *Age* variable turns out to have a negative effect, i.e., older students are less likely to provide higher levels of satisfaction of the library and the computer laboratory facilities. Second, the *Job type* variable negatively affects satisfaction with the computer laboratory. In other words, if a student's job is related to his/her field of studies, he or she will provide a lower level of satisfaction of the computer laboratory. Again, being in a position to compare on-campus and workplace equipment has a negative effect. The second result shows that Computer-systems majors give faculty members a higher level of satisfaction than Management students do. This stems directly from the fact that Computer-systems majors had higher GPAs.

5 Summary and Discussion

Measuring student satisfaction is an excellent way of assessing the relevance of various factors influencing curriculum design. The existing literature cites a wide range of such factors, including faculty–student interaction, intellectual development, academic performance, demographic characteristics and so on. The main contribution of this study is that information on student employment status is included (expressed as independent variables) in order to analyze the role of these variables in determining student satisfaction. As expected, labor market variables are among the most important satisfaction factors. In general, part-time students are less satisfied than full-time students. This confirms our hypothesis concerning the negative effect of part-time work on students' overall level of satisfaction of their college experiences. Clearly, part-time students cannot take full advantage of the facilities and amenities available to full-time students. Lack of access or participation may lead part-time students to assess their academic performance more negatively. It is also important to emphasize that our findings regarding the impact of variables such as gender and GPA are consistent with those reported in previous literature, e.g., in general, female students are more satisfied than male students, while students with higher GPAs assess theoretical lectures and faculty members more positively.

In summary, our main findings are as follows. First, part-time students are more likely to report being dissatisfied with their degree programs. Second, students prefer specialized rather than diversified studies. Finally, high GPAs and short degree completion times positively affect students' overall satisfaction.

In terms of policy implications, these findings could contribute significantly to the ongoing debate in Europe concerning the most appropriate approach to higher education reform. Nowadays, academic programs are more transversal than sequential because their main objective is to provide students with general knowledge rather than specialized training in certain topics. In particular, our findings suggest that students prefer more specialized degree programs. This preference is at odds with the widely-held belief that broad-based learning is better than intensive training centered on a small number of topics.

Based on our main finding (i.e., that part-time students are less satisfied with their degree programs), two key recommendations may be made. First, if students are viewed as consumers of college education, their satisfaction is inherently important to institutional success; more effective institutions will have more satisfied students and will thus be able to recruit additional students more easily. Second, degree programs should be redesigned with a view to ensuring the satisfaction of part-time students. We are thus faced with a new challenge: can students' preferences be aligned with institutions' academic objectives? We certainly hope they can since it is very difficult to design a successful academic program without taking students' viewpoints into account.

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Appendix A

Table 1 Descriptive statistics of satisfaction variables

Concept	Notation	Mean (SD)
General	S_G	7.13 (0.97)
Theoretical lectures	S_{TL}	6.90 (1.13)
Applied lectures (quality)	S_{QL}	6.97 (1.42)
Applied lectures (quantity)	S_Q	6.34 (1.92)
Faculty	S_F	7.09 (1.20)
Labor marker relevance	S_A	5.94 (1.83)
Library services	S_{LI}	7.57 (1.44)
Classroom facilities	S_C	7.18 (1.50)
Computer laboratory facilities	S_{CL}	6.65 (1.67)

Note: Standard errors in parentheses

Table 2 Descriptive statistics

		Freq.	Mean (SD)
Personal characteristics			
Age			24.10 (2.93)
Gender (Men)		80.17	
Academic characteristics			
Access	PAU	73.79	
	Professional	22.33	
	Other	3.887	
Degree (systems)		56.03	
Other degree		43.36	
Type of other degree	Advanced Comp. Eng.	52.08	
	Master's in computing	12.50	
	Specific computer courses	10.42	
Duration			5.10 (2.26)
GPA			1.72 (0.41)
Labor characteristics			
Academic years working			2.24 (1.53)
Employment status		80.17	
Frequency	Continuously	19.83	
	Discrete	14.66	
Job type	Related	52.00	
Number			1.42 (0.75)

Note: Standard errors in parentheses

Table 3 Order probit estimation of general satisfaction (S_G)

Gender	0.192 (0.295)	0.305 (0.304)	0.188 (0.309)
Age	−0.059 (0.061)	−0.021 (0.065)	−0.042 (0.064)
Access	−0.018 (0.276)	−0.023 (0.276)	−0.265 (0.310)
Degree	0.442** (0.217)	0.446** (0.217)	0.467** (0.233)
Other degree	0.080 (0.235)	0.136 (0.238)	0.068 (0.270)
Duration	0.140* (0.080)	0.142* (0.080)	0.155* (0.086)
GPA	0.238* (0.127)	0.177 (0.132)	0.239* (0.143)
Academic years working		−0.147* (0.088)	
Employment status			−1.308* (0.675)
Frequency			−0.789** (0.343)

Table 3 continued

Number	0.117 (0.168)
Job type	0.308 (0.249)

Note: Standard errors in parentheses

** and * stand for statistical significance at the 5% and 10% level respectively

Table 4 Order probit estimation of learning satisfaction variables

	S_{TL}		S_{QL}		S_Q	
Gender	−0.058 (0.310)	0.010 (0.316)	0.018 (0.315)	−0.011 (0.319)	0.234 (0.305)	0.256 (0.314)
Age	0.043 (0.068)	0.018 (0.067)	−0.095 (0.069)	−0.113 (0.069)	0.046 (0.068)	0.044 (0.067)
Access	0.192 (0.290)	−0.026 (0.322)	−0.045 (0.289)	−0.376 (0.323)	−0.013 (0.278)	−0.398 (0.317)
Degree	0.230 (0.222)	0.099 (0.238)	0.382* (0.227)	0.200 (0.243)	0.321 (0.217)	0.328 (0.234)
Other degree	0.106 (0.249)	0.036 (0.283)	0.317 (0.253)	0.183 (0.284)	0.365 (0.243)	0.322 (0.277)
Duration	0.010 (0.081)	0.023 (0.088)	0.139* (0.083)	0.161* (0.089)	−0.003 (0.081)	0.040 (0.087)
GPA	0.050 (0.140)	0.077 (0.152)	0.023 (0.145)	0.067 (0.156)	0.119 (0.132)	0.091 (0.141)
Academic years working	−0.172* (0.090)		−0.182* (0.094)		−0.124 (0.089)	
Employment status		−0.517 (0.697)		−1.284* (0.738)		−1.258* (0.668)
Frequency		−0.491 (0.351)		−0.789** (0.363)		−0.847** (0.338)
Number		−0.329* (0.176)		−0.110 (0.177)		0.075 (0.168)
Job type		0.262 (0.258)		0.296 (0.263)		−0.037 (0.253)

Note: Standard errors in parentheses

** and * stand for statistical significance at the 5% and 10% level respectively

Table 5 Order probit estimation of facilities satisfaction variables

	S_F		S_{LI}		S_{CL}	
Gender	−0.054 (0.311)	−0.065 (0.320)	−0.047 (0.342)	−0.026 (0.352)	−0.024 (0.309)	0.006 (0.317)
Age	0.055 (0.068)	0.069 (0.068)	−0.139* (0.075)	−0.092 (0.074)	−0.129* (0.068)	−0.125* (0.067)
Access	−0.113 (0.284)	−0.365 (0.323)	0.381 (0.320)	0.568 (0.375)	0.197 (0.283)	0.089 (0.320)
Degree	0.471** (0.222)	0.431* (0.241)	−0.041 (0.241)	−0.128 (0.266)	0.180 (0.222)	0.200 (0.241)

Table 5 continued

	S_F		S_{LI}		S_{CL}	
Other degree	0.233 (0.245)	0.159 (0.279)	0.225 (0.272)	0.398 (0.314)	0.381 (0.246)	0.228 (0.279)
Duration	0.054 (0.082)	0.033 (0.089)	0.149* (0.090)	0.096 (0.095)	0.197** (0.083)	0.197** (0.089)
GPA	0.240* (0.136)	0.263* (0.147)	0.056 (0.147)	0.010 (0.166)	0.241* (0.144)	0.202 (0.159)
Academic years working	−0.096 (0.090)		0.134 (0.098)		0.060 (0.090)	
Employment status		−0.862 (0.681)		−1.205 (0.861)		−1.834** (0.754)
Frequency		−0.588* (0.347)		−0.521 (0.435)		−0.766** (0.373)
Number		−0.155 (0.177)		−0.222 (0.185)		−0.178 (0.172)
Job type		−0.178 (0.256)		−0.005 (0.283)		0.458* (0.262)

Note: Standard errors in parentheses

** and * stand for statistical significance at the 5% and 10% level respectively

Table 6 Order probit estimation of satisfaction adequacy for labor market

	S_A	
Gender	0.169 (0.305)	0.181 (0.312)
Age	0.010 (0.068)	0.033 (0.068)
Access	0.015 (0.283)	−0.147 (0.319)
Degree	−0.010 (0.222)	0.151 (0.239)
Other degree	0.121 (0.246)	0.127 (0.281)
Duration	−0.079 (0.082)	−0.085 (0.089)
GPA	0.219 (0.135)	0.270* (0.146)
Academic years working	−0.011 (0.088)	
Employment status		−0.714 (0.679)
Frequency		−0.327 (0.343)
Number		0.078 (0.170)
Job type		−0.008 (0.261)

Note: Standard errors in parentheses

** and * stand for statistical significance at the 5% and 10% level respectively

Table 7 Fitted probabilities

Value	S_G			
	Fitted 1	Fitted 2	Fitted 3	Actual
4	1.02	0.92	1.11	0.86
5	4.96	4.94	5.48	4.31
6	16.66	16.88	16.98	17.24
7	39.82	39.90	38.50	42.24
8	30.45	30.14	29.73	29.31
9	7.08	7.19	8.18	6.03

Appendix B

The student opinion survey included ten questions about the graduate program and a number of additional items related to their experience at the university. Furthermore, each respondent answered personal, academic and job-related questions. The basic questions of the questionnaire were written as follows:

Mark each of the following issues related to your academic experience and university facilities for the Bachelor's Degree Program in Computing (BPC) at the Autonomous University of Barcelona from 0 (worst) to 10 (best):

Aspect	Mark
1. Academic program	
2. Quality of theoretical lectures	
3. Quality of applied lectures	
4. Faculty	
5. Quantity of applied lectures	
6. Adequacy of the degree subjects for labor market requirements	
7. Library services	
8. Classroom facilities	
9. Computer laboratory facilities	
10. Overall satisfaction of graduate program	

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