An Analysis of Student Satisfaction: Full-Time versus Part-Time Students*

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Abstract

This paper examines how students' characteristics affect their level of satisfaction with their academic degree. For this analysis we draw data from a survey answered by graduate students. This survey was conducted at a public university in Spain from 2001 to 2004. The fact that students simultaneously work and study emerges as one of the most important determinants of student satisfaction. In particular, our results show that alumni who had a part-time job while they were studying are more likely to report being less satisfied with their college experience.

JEL code: I2, J2.

Keywords: Student Satisfaction, College Graduates, Higher Education, Part-time Student, Employment Status

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1 Introduction

The main goal of this article is to examine the impact that students' employment status has on their reported satisfaction with their degree. The analysis of the determinants regarding students' satisfaction with their college experience has received much attention in the literature over the years as universities have come under increased pressure to be more competitive and efficient in order to attract more students. Therefore, the relevance of student satisfaction analysis is supported by the fact that if students are viewed as consumers of college education, their satisfaction is important to institutional success because effective institutions would have satisfied customers and because satisfaction supports the recruitment of additional customers.

Previous research on student satisfaction has focused on identifying the characteristics of students and institutions that can determine satisfaction. Some articles find evidence to suggest that satisfaction is related to the student's academic performance, although they also point out the complexity of this relationship. Following this line, Pike (1991) examines the relationship between grades and satisfaction. His results indicate that satisfaction exerts a stronger influence on grades than grades do on satisfaction. In Aitken (1982), academic performance is measured by means of expected grades reported by students in order to capture how well the student felt about what he or she was doing academically at the time the questionnaire was completed. The author also concludes that academic performance is one of the most important variables for explaining student satisfaction.[1]

Other works focus on analyzing the effects on satisfaction of social factors such as student relationships, student-faculty relationships, and students' self-evaluations. The articles of Gregg (1972), Terenzini and Pascarella (1980) and Benjamin and Hollings (1997), among others, are a good example of this line of research. Many other authors try to analyze the role that faculty or department readiness plays as a determinant of student satisfaction. The works of Thomas and Galambos (2004) and Umbach and Porter (2002) illustrate this approach. They find that in departments where faculty focus on research, students report a high level of satisfaction. Moreover, there also exist some works that analyze faculty satisfaction (Grunwald and Peterson, 2003), the

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

perceived differential treatment based on gender (Rienzi et al., 1993) or race (Einarson and Matier, 2005; Helm and Sedlacek, 1998) and some other general factors related to student satisfaction (Terenzini and Pascarella, 1991; Benjamin, 1994; and Sanders and Chan, 1996). Finally, the notable work of García-Aracil (2008) investigates satisfaction rates with higher education studies among young European higher education graduates including more individual characteristics and more specific variables (like quality of learning) than previous works.

The current study analyzes the complex relationship between satisfaction, students' characteristics and college experiences in greater depth by incorporating student employment status as a new determinant of their level of satisfaction. Specifically, this article aims to assess the importance that work experiences have on students' level of satisfaction. Some attention has already been paid to the study of this relationship in the literature. In general, studies show that alumni are satisfied with both their jobs and their college experiences. Moreover, they believe that their academic experiences were relevant to their occupations (Pace, 1979; Moden and Williford, 1988; Pettit, 1991). Also noteworthy is the work of Pike (1994), who finds evidence that alumni who are more satisfied with their jobs are more likely to report being satisfied with their educational experiences. In the line of the previous work, more recently Ginés-Mora et al. (2007) aim at clarifying the role of educational factors in explaining the job satisfaction of higher education graduates.

Our analysis differs from others in the following aspects. First, we include information about the employment status of students at the time they were students, that is, as an explanatory variable we include information concerning whether the student was enrolled full-time or whether she was working while studying (part-time student). We also include information about the type of job. Second, we use data from recent graduate students to ensure that their answers are based on well-remembered experiences. This fact could provide more detailed and accurate information since students are not biassed by a fuzzy time effect.[2] Finally, we have included the usual variables found in the literature to check the robustness of our findings.

[2] Other studies such as Pike's (1994) consider data from individuals who have been working for at least ten years since they finished their degree.

Simultaneously, our study aims to deal with another topic. In 1999, the European Union Committee for Education signed the Bologna Declaration with the goal of setting some common criteria for all member states with respect to higher education.[3] This agreement focuses on: (1) the progressive convergence of the overall framework of degrees and cycles in an open European area for higher education; (2) a common degree level system for undergraduates (Bachelor's degree) and graduates (Master's and doctoral degree); (3) promoting and facilitating student and teacher mobility and (4) improving the recognition of degrees and academic qualifications. In its commitment to this new framework, the Spanish Ministry of Education has begun to redefine degrees and the manner in which students' learning process is evaluated. One of the measures adopted by universities consists of assessing the academic achievements of students on a continuous basis rather than by means of a final exam. Our data set comes from a Bachelor's degree program where applied lectures are given higher priority than theoretical ones, thus implying that both the learning process and the assessment process are more similar to those proposed by the Bologna Declaration. This analysis can therefore offer us some insight as to how students will perceive the new setup defined by the Bologna Declaration. Additionally, this study can serve as a departure point for recommendations in order to undertake this incipient educational reform in the best manner possible.

Given the above aims, this study poses the following major questions:

1. Are there any differences in student satisfaction between full-time students and students that not only study but also work?

2. Do students prefer sequential or simultaneous curricula?

3. What other factors affect students' overall satisfaction?

4. Which type of lectures do students value most: theoretical or applied lectures? Are the determinants of both types of lectures the same?

5. How are faculty assessed and what are the main determinants?

Although our main objective is to answer questions 1 and 2, we include the three remaining questions in order to set our study within the framework of the literature

[3] The Bologna Declaration was signed by 31 representatives of 29 EU member states and ascension candidates in Bologna on 19 June 1999.

described above. Our main findings show that part-time students are more likely to report being dissatisfied with their educational experiences. Moreover, the results suggest that students have a preference for sequential rather than diversified studies.

The rest of the paper is structured as follows. In Section 2 we describe the data set. The empirical model is presented in Section 3. In Section 4 we present and discuss the results, while the article concludes in Section 5. The tables are relegated to Appendix A.

2 Data Set

The data set was drawn from a graduate student opinion questionnaire conducted at a public university in Spain from 2001 to 2004. The respondents were selected from among students who had graduated from the Bachelor's program in Computing (BCS) at the Autonomous University of Barcelona. The criteria for considering a student a graduate included having passed a number of official requirements and having paid the official fee. The sample includes 116 observations.

The reason to select this bachelor's program is that we need a program which facilitates students to work during the degree. That is, the contents and topics of the Bachelor's program in Computing rapidly give to students enough abilities to enter in the job market without finishing their degree. In fact, as we will show later on, a large percentage of the students has been working during the degree. This feature has another implication in terms of the sample size. Since students are working during the degree they take more time to finish their studies. Despite of the fact that students have been interviewed during four years, a small proportion has completed the degree.

In order to have a detailed summary of the sample, we have included more variables in the table than in the subsequent regression analysis. Table 1 summarizes the descriptive statistics of the main variables and the students' characteristics. In the questionnaire, students are required to evaluate not only the undergraduate program in general but also a number of additional aspects related to their experience at the university. All of the values of the satisfaction variables are categorized from 0 to 10. From among those variables and in order to be consistent with the related literature, we chose as dependent variables: overall satisfaction with the undergraduate

program (S_G), satisfaction with the theoretical lectures (S_{TL}), satisfaction with the quality and quantity of applied lectures (S_{QL} and S_Q), satisfaction with faculty (S_F), satisfaction regarding the adequacy of the degree subjects for labor market requirements (S_A), satisfaction with library services (S_{LI}), satisfaction with classroom facilities (S_C) and finally, satisfaction with laboratory facilities (S_{CL}). We observe that the variable S_A obtains the worse assessment with 5.94, while the variable that obtains the highest level of satisfaction is library services with a value of 7.57. The overall assessment of the degree adds up to 7.13. Table 3 shows that there is a high correlation between satisfaction with theoretical lectures and faculty satisfaction, between quality and quantity of applied lecture assessments, between quality of applied lecture assessments and satisfaction with the adequacy of the degree subjects for labor market requirements, and finally, between satisfaction with computer laboratory and library and classroom facilities. The student opinion survey includes ten outstanding questions about satisfaction variables that are specified in Appendix B.

We consider three types of explanatory variables: academic variables, personal variables and labor market-related variables. The inclusion of this last group is the main contribution of this paper. The group of variables used to describe students' academic characteristics include:

- *Degree*: There are two majors within the BCS program: Management and Systems. The main difference between them is that the Management major adopts an economic/business approach that emphasizes software knowledge combined with economic topics, while the Systems major takes a more technical approach with an emphasis on hardware.[4] The data reveals that the respondents are split almost equally between the two majors (around 44% of the sample is enrolled in the Management major).

- *Access via*: In the Spanish educational system there are two different ways of being admitted to this degree program. The first one consists of passing a general test upon graduating from high school. The test is called the PAU and is equivalent to the SAT. Both the grades obtained on the PAU and the final grade point average received at high school comprise a proxy of intellectual ability, motivation

[4] In the Management major, economic topics account for about one-third of the total course content.

and academic skill level. The second way to be admitted to the program is by obtaining the required grade point average in a professional training program. Almost all the respondents (about three quarters of the sample) enter the degree program by means of the PAU test.

- *Duration*: This variable measures the total number of years required to finish the degree. The mean duration of the studies is about five years, exceeding the official period of study by two years.

- *Grades*: The grades range from 1 to 4, which correspond to a grade of C to a grade of A, respectively.

- *Other degree*: The students were asked to report whether they were also studying or had studied another degree. About 40% of the respondents stated that they were doing some other type of studies that in almost all cases were closely related to their original degree[5].

Although a wide variety of personal variables can be included, we have restricted our selection to those of most interest to our study: *Gender* and *Age*. In the sample there are about 80% men with an average age of 24.10 years old.

Finally, we include a group of variables that describes student employment status . We define a *full-student* as a student who only studied and a *partial-student* as a student who worked while enrolled in the degree program. In particular, we have taken into account the following variables:

- *Academic years working*: This variable reflects the number of academic years that the student was simultaneously working and studying. This variable takes values from 0 to 3. The value 0 means that the student was a full-time student while values 1, 2 and 3 reflect the number of academic years worked by a part-time student. On average, part-time students worked for two academic years.

- *Working status:* This variable only takes two values: value 0 which means that the student was never a part-time student and value 1 otherwise. The fraction of

[5]The three most frequent cases include an advanced degree in computer engineering, Master's programs in computing or other specific computer courses such as Java.

part-time students, that is students who were working during the degree, accounts for almost eighty percent of the sample.

- *Periodicity:* This variable provides information about whether the part-time student was working during the entire academic period or for only some years during the degree. This variable takes values from 0 to 2. Value 0 means that the student was a full-time student, while value 1 indicates if the student worked only intermittently during the duration of the degree program . Finally, value 2 tells us that the student worked during the entire degree period. About forty percent of the part-time students worked throughout the entire duration of the degree.

- *Type of job:* This variable tries to capture if the students worked in a job that was related to their degree. It takes a value 0 if the job is not related and 1 otherwise. Around fifty percent of the jobs are related to the students' degree.

- *Number:* This variable measures the number of different jobs held during the degree. On average, the students worked in 1.22 different jobs.

3 The Empirical Model

As pointed out above, we attempt to explain how students assess different aspects of their academic experience. Due to the nature of these variables, we use an ordered discrete choice model. In this type of model, the independent variable Y is usually labelled $0, 1, ..., J$. Given certain explanatory variables $X = (X_1, ..., X_k)'$, the researcher is usually interested in analyzing whether one (or some) of the proposed explanatory variables is significant or not, and/or providing accurate estimates of the conditional probabilities $\Pr(Y = j \mid X = x)$, which may be interesting by themselves or 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 arises 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,

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

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 $j = 0, 1, ..., J$, 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 $j = 2, ..., J-1$.

We choose different models to estimate, each of which corresponds to satisfaction with a particular aspect. In particular, we have considered three different specifications of the model for each of the variables measuring satisfaction described in Section 2. In the first specification, we do not control for the employment variables in order to compare our sample to those existing in the literature. This means that we only include the personal and academic features described above as explanatory variables. In both the second and third specification, we have included the group of variables that describes the student's employment situation in addition to the variables included in the first specification. Concretely, in the second specification we have only introduced the variable *academic years working* while in the third specification we break down the variable *academic years working* into four variables: (1) the *working status* variable that measures only if students worked or did not work; (2) the *periodicity* variable that measures the assiduity with which a student worked during the degree; (3) the *number* variable that accounts for the number of different jobs that the student had and finally, (4) the *type of job* variable that measures whether the job was related to the degree.

The estimates of the parameters and the standard deviations are reported in Tables 2 and 3. We also present the fitted probabilities in Table 4 to gain some insight into the performance of our specifications.

4 Results

We present the estimation results for the general satisfaction variable S_G in order to underscore the new results that have been obtained by introducing a group of variables related to the students' employment status . For the discussion, we select the rest of the variables concerning satisfaction but only highlight those effects that we believe are the most remarkable. We would like to point out here that in spite of the sample size the test statistics show that our results are robust.

4.1 General satisfaction

Table 2 shows the estimates that were obtained in the three specifications. In the first specification, where we do not control for employment status, we find that the standard results of the literature hold. Specifically, the estimates show that students with higher grades and women are more satisfied with their degree in general terms (see for example Pike, 1991 and Umbach and Porter, 2002).

Other specific effects appear as well. For example, students in the Systems major (*degree*) and students that take more time to finish their degree (*duration*) tend to be more highly satisfied with the degree program overall. The intuition concerning these two variables is as follows. The variable *degree* has a positive and significant effect on overall satisfaction. This means that students who are enrolled in the Management major are less satisfied with the program than those enrolled in the Systems major. Note that the Systems major deals only with topics related to computer science (hardware and software), while the Management major combines topics specifically related to computer science (software) with economics courses. Management therefore has a more diversified academic program than Systems, which is focused only on a specific type of knowledge. One possible explanation for the first result could be that students prefer to learn intensively rather than extensively. Extensiveness is the main feature of diversified degrees in which students learn more topics but in a more superficial way. This kind

of approach can cause a scattered effect on students which is assessed negatively. This result can be interpreted as meaning that students prefer sequential studies instead of diversified ones, exactly the opposite of what the Bologna agreement aims to promote. Concerning the variable *duration* two different effects can be identified. On the one hand, if students take several years to finish their degree, they become fed up with their academic program. This feeling leads student to assess their college experience negatively. On the other hand, the years spent on the degree could produce a positive effect on satisfaction, since the student may not only perceive the shortcomings, but the positive aspects of the program as well. Given the positive sign of the estimated parameter, the positive effect more than offsets the negative one.

Now let us turn to the main contribution of this paper, that is, how employment variables affect student satisfaction. As pointed out above, to do so we have proposed two different specifications. In one specification we only include the *academic years working* variable, while in the other one we break this variable down into four different variables: *working status, periodicity*, *number* and *type of job*. Note that the effects of *degree*, *duration* and *grades* continue to be equivalent to the effects obtained in the first specification.

Concerning the variable *academic years working* we find that the estimate of the parameter, when significant, is negative. This negative effect indicates that part-time students experience lower general satisfaction than full-time students. The intuition for this negative relationship is based on three different and offsetting effects that appear when the student is part time. First, a part-time student cannot perceive or enjoy the opportunities and positive external effects that the college campus offers, namely peer relationships, student networking, living arrangements, social activities, etc. This effect therefore lowers student satisfaction. Secondly, a part-time student compares the applicability of course content to actual job requirements. It seems reasonable to assign a negative sign to this effect since applied lectures usually have little to do with real working-life. Thirdly, there is a huge opportunity cost. Since the part-time student is time-constrained, she will positively value applied lectures if they are useful, but will assess them negatively if she considers them to be a waste of time. Given the negative sign of the estimated coefficient, we can infer that negative effects prevail over positive

ones. Obviously, students perceive applied lectures and working hours as substitute goods rather than complementary ones. This result suggests that part-time students are less satisfied because they believe that the academic program is badly designed in terms of both the quantity and the quality of the applied lectures. Finally, it should be said that the academic program assessed here is tailored to full time-students so it is not surprising that part-time students should feel less satisfied than full-time students.

When we break down the variable *academic years working* into the variables *working status*, *periodicity, number* and *type of job* we find that the negative sign of academic years working is the result of the aggregation of all the negative effects of each of these variables by themselves. Therefore, the interpretation of the estimated parameters in the third specification is equivalent to the one above. However, the effect of *working status* is larger than the effect of *academic years working*. Thus we can deduce that whether or not the student was working is more relevant than the number of years worked. Furthermore, the negative effect shown by the *periodicity* variable reflects an additional effect caused by working continuously or intermittently during the degree.

Additionally, in order to test whether the specifications can properly predict overall satisfaction, we have included the fitted probabilities shown in Table 4. The result is that frequencies are well predicted.

4.2 Other satisfaction variables

Among other variables concerning satisfaction assessment, we have considered three different groups: variables related to what can be learnt, variables related to university resources and facilities and finally a variable which represents adequacy of course content for the labor market. Although all the estimated parameters are reported in Tables 3.1, 3.2 and 3.3, we mainly focus our attention on the effects related to employment variables for the analysis of this section.

4.2.1 Learning variables

In this group we have included the assessment of theoretical lectures (S_{TL}) and the assessment of the quantity and quality of applied lectures (S_Q and S_{QL}, respectively). From Table 3.1, we observe that *academic years working* still displays a negative effect

on S_{TL} and S_Q. In this case, the breakdown of this variable provides further insight. The fact of whether or not the student can be considered a part-time student and whether or not he is working throughout the entire degree, affects not only the quality, but also the quantity of the applied lectures. Summarizing, we observe that the qualitative variables affect the quality of applied lectures, while the quantitative variables affect the quantity of both the theoretical and the applied lectures.

The intuition behind these effects is as follows. Two different effects can be seen with regard to the theoretical classes. On the one hand, since theoretical lectures are given according to a fixed schedule throughout the program, the part-time student is often unable to attend the lectures and therefore lacks the necessary criteria to assess them. On the other hand, since the student usually worked in jobs of a practical nature, she realized that the theoretical lectures were not useful. In terms of applied lectures, however, the part-time student can rapidly assess their utility *(or lack thereof)* when they are insufficient in number or quality. Therefore, one possible recommendation would be to introduce more and better applied lectures. Finally, the effect of the variables *degree* and *duration* is positive, as in S_G, but it only affects the quality of applied lectures.

4.2.2 Facilities variables

In this group we have considered the assessment of the faculty (S_F), the assessment of library services (S_{LI}) and the assessment of computer laboratory facilities (S_{CL}). The results are shown in Table 3.2. Note that the introduction of variables concerning the student's employment situation does not affect the assessment of facilities, with the exception of S_{CL}. In that case, the effect of *working status* and *periodicity* is negative and seems to be related to the assessment of applied lectures, since the computer laboratory is the place where applied lectures take place. The intuition here is straightforward. Part-time students compare the computers available at the university to those in their workplace. Given the negative signs of the estimated parameters, the university computers lose out. Again, the variables *degree* and *duration* have a similar effect to that found for overall satisfaction.

Two effects appear that did not previously exist. First, the variable *age* turns out

to have a negative effect, that is, older students are less likely to positively assess both the library and the computer laboratory. Secondly, the *type of job* variable negatively affects satisfaction with the computer laboratory. This means that if the job is related to the degree, the student assesses the computer laboratory in worse terms. Again the possibility of comparison shows a negative effect. The second result shows that Systems students give the faculty a better assessment than the Management students. This result is a direct outcome of the fact that Systems alumni had better grades.

4.2.3 Adequacy for the labor market

Here we have considered only one variable, satisfaction regarding adequacy for labor market requirements (S_A). Table 3.3 gives us the corresponding estimate. Although the sign of the estimated parameters behaves in a similar manner to the other cases, there is almost no significant effect. This could be explained by the fact that the data correspond to students that have only recently finished their degree. That is, they have not yet spent enough time in the labor market to be able to give an accurate answer. The only variable that appears to be positive and significantly different from zero is the variable *grades.* The intuition of the effect of this variable is straightforward. Students with better grades are either more capable or have put in more effort. Therefore, it seems reasonable to expect that they are promoted at a faster pace in the labor market.

5 Summary and Discussion

Student satisfaction is an excellent tool for assessing the effects of different variables on students. The related literature includes many factors such as faculty-student interaction, intellectual development, academic performance, demographic characteristics and so on. However, there is still no consensus as to how satisfaction should be defined, how it can be measured and how its determinants can be assessed. Our main contribution to this literature has consisted of including information related to the employment status of students as independent variables in order to explore the role of this type of variables as determinants of student satisfaction. As we expected, labor market variables emerge as one of the most important factors in explaining student satisfaction. In general, part-time students are less satisfied than full-time

students. This result confirms our conjecture about the negative bias that part-time work introduces in the global assessment of college experiences. Obviously, a part-time student can not fully enjoy all the facilities that the university offers to full-time students. This lack of information prompts part-time students to perceive their academic performance in a worse manner. It is also important to remark that our findings regarding the impact of variables such as gender and grades are consistent with those obtained in the previous literature, namely that women in general are more satisfied than men and students who have better grades are willing to assess both theoretical lectures and faculty more positively.

This research could also make a significant contribution to the current debate about the most appropriate approach for pursuing the higher education reform that is currently underway in Europe. In particular, our results suggest that students prefer less diversified degree programs. This result runs counter to the widely-held belief that extensive learning is better than an intensive methodology centered on learning only a small number of topics. Nowadays, academic programs have become more transversal than sequential because their main objective is to give students general academic training rather than specializing in certain topics. We are therefore faced with a new challenge: is it possible to bring students' preferences into line with an institution's academic objectives? We certainly hope that the answer is affirmative as it is very difficult to design a successful academic program without taking into account the students' point of view.

Finally, we are aware that our data set might present a problem of bias since the respondents are self-selected and attended their graduation ceremony. Nevertheless, this bias does not differ widely from that associated with the traditional methodology in which respondents are asked to fill out questionnaires at home. In both cases, the respondents are more likely to assess their college program positively because they are willing to pay the fixed cost involved in going to a graduation ceremony or returning a completed questionnaire.

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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)
Adequacy	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)

Table 1. (cont.): Descriptive Statistics

Academic Characteristics		Freq.	Mean (St. Dev)
Access via	PAU	73.79	
	Professional	22.33	
	Other	3.88	
Degree (Management)		43.97	
No Other Studies		56.64	
Type of other studies	Advanced Comp. Eng.	52.08	
	Master's in computing	12.50	
	Related courses	10.42	
Duration			5.10 (2.26)
Years with project			1.59 (0.98)
Years only project			0.65 (0.85)
Grades			1.72 (0.41)
Labor Characteristics			
Academic years working			2.24 (1.53)
Time looking for (in months)			7.13 (3.17)
Periodicity	Continuously	19.83	
	Discrete	14.66	
Type of job	Related	52.00	

Table 1.b Correlation$^{(a)}$.

	S_G	S_{TL}	S_{QL}	S_Q	S_F	S_A	S_{LI}	S_C
S_G	1.00							
S_{TL}	0.36*	1.00						
S_{QL}	0.34*	0.40*	1.00					
S_Q	0.35*	0.55*	0.32*	1.00				
S_F	0.57*	0.46*	0.26*	0.51*	1.00			
S_A	0.20*	0.22*	0.12	0.23*	0.04	1.00		
S_{LI}	0.33*	0.18	0.19*	0.21*	0.13	0.52*	1.00	
S_C	0.16	0.11	0.12	0.19*	0.06	0.22*	0.57*	1.00
S_{CL}	0.63*	0.60*	0.56*	0.56*	0.53*	0.32*	0.41*	0.29*

Table 2: 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 Via	−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)
Grades	0.238* (0.127)	0.177 (0.132)	0.239* (0.143)
Academic years working		−0.147* (0.088)	
Working Status			−1.308* (0.675)
Periodicity			−0.789** (0.343)
Number			0.117 (0.168)
Type of job			0.308 (0.249)

Table 3.1: Order Probit Estimation of Learning Satisfaction Variables

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

Table 3.2: Order Probit Estimation of Facilities Satisfaction Variables

	S_F		S_{LI}		S_{CL}	
Gender	−0.054	−0.065	−0.047	−0.026	−0.024	0.006
	(0.311)	(0.320)	(0.342)	(0.352)	(0.309)	(0.317)
Age	0.055	0.069	−0.139*	−0.092	−0.129*	−0.125*
	(0.068)	(0.068)	(0.075)	(0.074)	(0.068)	(0.067)
Access Via	−0.113	−0.365	0.381	0.568	0.197	0.089
	(0.284)	(0.323)	(0.320)	(0.375)	(0.283)	(0.320)
Degree	0.471**	0.431*	−0.041	−0.128	0.180	0.200
	(0.222)	(0.241)	(0.241)	(0.266)	(0.222)	(0.241)
Other Degree	0.233	0.159	0.225	0.398	0.381	0.228
	(0.245)	(0.279)	(0.272)	(0.314)	(0.246)	(0.279)
Duration	0.054	0.033	0.149*	0.096	0.197**	0.197**
	(0.082)	(0.089)	(0.090)	(0.095)	(0.083)	(0.089)
Grades	0.240*	0.263*	0.056	0.010	0.241*	0.202
	(0.136)	(0.147)	(0.147)	(0.166)	(0.144)	(0.159)
Academic years working	−0.096		0.134		0.060	
	(0.090)		(0.098)		(0.090)	
Working Status		−0.862		−1.205		−1.834**
		(0.681)		(0.861)		(0.754)
Periodicity		−0.588*		−0.521		−0.766**
		(0.347)		(0.435)		(0.373)
Number		−0.155		−0.222		−0.178
		(0.177)		(0.185)		(0.172)
Type of job		−0.178		−0.005		0.458*
		(0.256)		(0.283)		(0.262)

Table 3.3: Order Probit Estimation of Satisfaction of 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 Via	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)
Grades	0.219 (0.135)	0.270* (0.146)
Academic years working	−0.011 (0.088)	
Working Status		−0.714 (0.679)
Periodicity		−0.327 (0.343)
Number		0.078 (0.170)
Type of job		−0.008 (0.261)

Table 4: Fitted Probabilities

	S_G			
Value	Fitted1	Fitted2	Fitted3	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 (BCS) 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 assessment of graduate program	