

Quality assessment of a Master in Documentation, Library and Archives Management of the Complutense University of Madrid.

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ABSTRACT

This study offers an importance- satisfaction analysis of a master's degree program, whose objective is twofold: to assess students' ability to identify those attributes where actions are needed to improve the quality of the master's program, and the suitability of this feedback instrument in assessing the impact of these actions. The study employed three groups of students enrolled in the MA program in Documentation, Libraries and Archives Management of Complutense University of Madrid. The control group consisting of students enrolled before 2011 were asked to rate the importance of and their satisfaction with set of

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30 attributes indicative of the quality of the master's program. Once the most important attributes were identified, the program implemented a series of improvement initiatives. The impact of these actions were assessed by the other two groups of students enrolled in the 2011-12 and 2012- 13 school years, respectively. The results show that the three groups rated the importance of each attribute similarly and that there has been a positive impact on student satisfaction as a result of the actions implemented.

Keywords: Quality of service, quality of postgraduate education, student survey, importance-performance matrix, educational marketing

RESUMEN

Evaluación de la calidad del Máster en Gestión de la Documentación, Bibliotecas y Archivos de la Universidad Complutense de Madrid

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Este estudio describe la aplicación del análisis de importancia-satisfacción en un programa de máster universitario con la finalidad de conocer, por un lado, su capacidad para identificar, desde el punto de vista de los estudiantes, aquellos atributos sobre los que sería más necesario actuar con el fin de mejorar la calidad del máster y, por otro, su viabilidad como instrumento de retroalimentación para verificar el impacto de dichas actuaciones. El estudio se llevó a cabo en tres grupos de estudiantes matriculados en el máster en Gestión de la Documentación, Bibliotecas y Archivos de la Universidad Complutense de Madrid. El primer grupo, considerado como grupo control, estuvo constituido por los estudiantes matriculados antes del año 2011. A estos alumnos se les solicitó que valorasen los grados de importancia y de satisfacción con el desempeño de un conjunto de 30 atributos que resumían la calidad del máster. Tras la identificación de los atributos sobre los que era prioritario actuar, la organización del título implementó una serie acciones de mejora, cuyo impacto se evaluó en los otros dos grupos de estudiantes matriculados en los cursos 2011/12 y 2012/13 respectivamente.

Los resultados obtenidos muestran, en primer lugar, que los tres grupos han otorgado una valoración similar al grado de importancia de cada atributo y, en segundo lugar, se ha constatado el impacto positivo en la mejora de la satisfacción de los estudiantes como consecuencia de las acciones implementadas

Palabras clave: Calidad de servicio; Calidad en la formación postgraduada; Encuesta a estudiantes; Matriz de importancia-satisfacción; Marketing educativo..

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INTRODUCTION

The current economic crisis in Spain is exerting a large impact on the operation of public universities, both in terms of their finances and in matters of the demands on admissions. In this context, it is for the first time since the outset of the crisis, a shift from ongoing growth in enrollment between 2008-2011 to a retreat of 0.6% in the classes of 2012-2013 and 2013-2014 (Ministerio de Educación, Cultura y Deporte, 2013). One of the likely causes of this decline is the rising rate of enrollment to 19.7% between the latter two classes and the decline in the supply of scholarships. With regard to master degree, the reduction in demand was 16%, largely because the increase in the cost of tuition in some case as much as 100%.

Faced with this situation, public universities are adopting structural reforms aimed at adjusting their broad course offerings to actual demand and improving their competitive position versus other universities and thereby attract more students. Likewise, they are developing methodologies aimed at evaluating the satisfaction of students with regard to their educational experience in order to adapt the degree offering to the needs and expectations of the same, in order to secure a better competitive position with respect other universities that offer similar courses of study.

Most of the strategies enacted by these universities for evaluating the quality of the educational offerings through student perceptions are based on

measuring student satisfaction with diverse aspects of the teaching, support services, environment of the same, etc., without taking into account that for most students not all of the attributes carry the same importance, a fact that universities should take into account, because, according to Elliot and Healy (2001), the university should achieve maximum satisfaction of their students in those requirements associated with the teaching services and the educational environment, which are most important to them.

One of the most useful and simple approaches for simultaneously measuring the importance of the diverse attributes of a service and the satisfaction of the student as a result of their use is the importance-satisfaction analysis introduced in 1977 by Martilla and James. This technique has as its purpose facilitating the selection of those features of the service whose improvement should maximize client satisfaction. The analysis is based on the hypothesis that satisfaction is a variable that depends on two components: the importance of the product or service to the client and the performance of the organization in supplying this product and service; and thereafter, one queries the user of the service to learn their opinion regarding the importance of each of these attributes and the degree of satisfaction in accord with their experience in the use of the product or service.

To perform the analysis of importance-satisfaction of the served or product, a two-dimensional graph is used that plots satisfaction on the X axis and importance on the Y axis. This graph, (Figure1) is divided into four quadrants, using a reference point that is the average value for the scale employed, or the global mean obtained for satisfaction and importance (for a discussion on the type of measure that is best, see Oh, 2001 and Olujide and Mejabi, 2007). Each quadrant combines the degree of importance and satisfaction assigned by the client for each attribute of the product or service, and the strategy that best serves to improve client satisfaction. In this way, the attributes located within quadrant A are those where importance is rated high and satisfaction low. This quadrant is labeled “concentrate here,” meaning that these are the attribute that require urgent action and which should be deemed priorities.

The item located in quadrant B are those that are rated high in importance and high in satisfaction: these may well be deemed strengths of the organization and they should be upheld. For this reason quadrant B is labeled “keep up the good work.” Quadrant C group together those attributes of low importance and low satisfaction, and is therefore labeled “low priority.”

Finally, quadrant D brings together those attribute of low importance with high satisfaction. This quadrat is labeled: “likely waste of resources.”

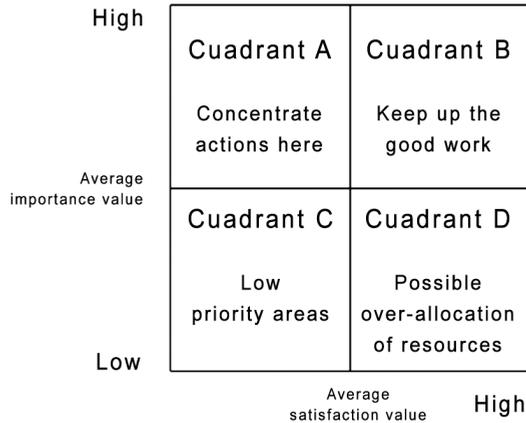


Figura 1. Importance-satisfaction matrix (Adapted from Martilla and James, 1977)

Since Joseph and Joseph (1997) and Ford, Joseph and Joseph (1999) first used the importance-satisfaction analysis to assess the perception of students as to the quality of education they receive in universities in New Zealand, this technique had been used on numerous occasions in areas including curricular assessment (Nale et al., 2000); quality of e-learning (Martinez-Caro, Cegarra-Navarro and Cepeda-Carrión, 2014); quality of university digital library service (Wright y O’Neill, 2002); evaluation of teaching (Yu and Ueng, 2012); quality of university educational service (Elliot and Healy, 2001; Pike, 2004; Douglas, Douglas and Barnes, 2006; Angell, Heffernan and Megicks, 2008; Silva and Fernandes, 2010; Yildiz, 2014); evaluation of the most important attributes in the choosing a university (Joseph, Yakhou and Stone, 2005; Bionel Tejedor, 2013), quality of services offered by university administrative departments (Kitcharoen, 2004; O’Neill and Palmer, 2004), attributes needed by a business degree graduates in the opinion of employers (Daud et al., 2011).

Even when the potential of the importance-satisfaction analysis is quite broad, there are two areas in which its use has so far been somewhat limited.

The first of these areas is post-graduate studies, where we find only a study by Angell, Heffernan and Megicks (2008) who used the approach to assess the service offered by the Faculty of Social Science and Business of the University of Plymouth (UK). If we consider, however, that the application of this methodology to postgraduate studies is useful in light of the differences that exist, at least in Spain, between undergrad and post-grad programs, including the higher tuition fees of the latter and that this cost is most often absorbed by the students themselves. Likewise, most master's degree students often work at jobs, which means they demand more flexibility in learning approaches and curricular content that supports their professional competencies allowing them to move up professionally and generally improve their professional trajectory. In the second place, it would be helpful to have more experiences regarding the usefulness of this technique as a mechanism for following up improvement initiatives implemented after the identification of weakness in the quality of services. In this sense, only Yu and Ueng (2012) have employed this approach to evaluate the impact of a project aimed at improving the quality of teaching delivered by professors.

This study presents the results of the application of the importance-satisfaction analysis in the Master's degree Programs in Documentation, libraries and Archives offered by the

Universidad Complutense de Madrid (Spain), for the purpose of verifying, in the first place, its usefulness in the process of selection of those attributes management needs improve; and in the second place, its role in the follow up and analysis of the effectiveness of said improvements.

METHODOLOGY

The questionnaire employed in this study was developed through a two-stage process. In the first stage, 22 students currently studying or nearly finished with their master's degrees were selected. Using an informatics support, each student was presented nine thematic blocks that address 31 aspects associated with the master's degree studies. (*Table 1*). Regarding these aspects, the student is required to indicate those requirements they "like or would like" in the program, and those they "dislike or would dislike."

Tabla 1. List of thematic blocks and topics to consider in each block

Thematic block	Topics
Access to MA studies	MA program information and publicity Ability to become a candidate from diverse undergrad areas Pre-enrollment process Enrollment process
MA program objectives	Theoretical and practical knowledge students should acquired Professional competencies students should acquire
MA program of studies	Contents Content organization Content level Relationship between theory and practice
Development of teaching-learning processes	Teaching of theory in classroom Practical activities in the classroom (presentations, case studies, etc.) Non-classroom activities (information searches, group work, etc.) Activities using online platform Site visits Seminars and workshops Conferences Didactic materials Tutorials
Evaluation process	Attributes of a good assessment in coursework
Professor	Attributes of good professor
Support services	Library Complaints, claims and suggestions process Faculty and MA program administration Student liaison office Cafeteria
Infrastructure	Classroom Internet access Computer room and software available

In the second stage, the commentaries of each of the students on each aspect queried were analyzed and turned into requirements or attributes that, in the view of the participants in the study, they would like to see in the master's degree program. Of the total set of quality requisites identified, thirty were selected and presented to the same group in order to verify their degree of clarity and comprehension. In this way, the final questionnaire of thirty items was developed, in which each question required respondents to assess the degree of importance of the requirement and the degree of satisfaction with the same on a scale of one to ten.

Using an informatics application that employs email as a communications medium, the questionnaire was sent to 123 students that had been enrolled in the program in 2008-09, 2009-10 and 2010-11. Sixty-three students (51%) responded and six of these questionnaires were discarded because they were incomplete. This same questionnaire was sent to students enrolled in 2011-2012 and 2012-2013, in order to measure the impact of the improvement actions implemented in 2011 and 2012. The number of students enrolled in 2011-2012 was 66, and it was responded by forty students, a 60.6% response rate. For the 2012-2013 class, the number of students enrolled was 52, of which 44 responded to the questionnaire, a response rate of 84.6%.

To verify the reliability of the questionnaire, the Crombach alfa coefficient was calculated for the importance and satisfaction scales, which came to a value above 0.94, accepting their reliability in accord with the criteria cited by Hair et al. (2009).

The data gathered in the questionnaire were processed using version 19 of the IBM-SPSS statistical program. The mean value and standard deviation for each item were calculated and, in order to discover whether there were differences in the valuations made by the respondents, two contrasting hypotheses were posited. The first hypothesis test is performed for the purpose of contrasting the existence or non-existence of differences in valuations of each item on the questionnaire. For this purpose, a confidence interval of 95% ($\alpha=0.05$) was considered for the mean values of importance and satisfaction. Since of the number of respondents in each group was greater than 30, the Central Limit Theorem was used to calculate the confidence interval.

The second hypothesis test employed run performed for the purpose of contrasting the existence or non-existence of the differences between the values of the global averages of importance and satisfaction between the three groups of students. The confidence intervals were built using methodology of Wu and Shieh (2009), for the case of distance variances.

RESULTS

In this section, the first thing to be analyzed is the stability of opinions regarding the importance of each requisite of the master's degree program. In the lines below, the opinions of students enrolled in course before 2011 are

analyzed. Finally, the results obtained from this group of students, which was used as a control, are compared to the results from students enrolled in the two next courses, i.e., 2011-2012 and 2012-2013. This is done for the purpose of analyzing the impact of the improvement actions implemented by the administration in the master's degree program.

Opinion on the degree of importance of the quality requirements of the master's degree program.

Table 2 shows the means of importance and satisfaction for each of the quality requirements of the master's degree program, according to the opinions of students enrolled before 2011 and the classes of 2011-2012 and 2012-2013.

Table 2. Average values of importance and satisfaction of MA student classes enrolled before 2011, for the class of 2011/12 and for 2012/13

Attributes of the master's degree program	Before 2011		2011-2012		2012-2013	
	Imp.	Sat.	Imp.	Sat.	Imp.	Sat.
A1. The information on the Master's degree program is clear, sufficient and well structured.	7.93	5.49	8.26	6.41	8.59	6.43
A2. The information on course content is available during the pre-enrollment and enrollment periods.	7.54	5.19	8.4	6.78	8.84	6.35
A3. The master's degree program offers up to date knowledge on the technological tools (TIC) applied to documentation	8.98	5.69	9.05	6.35	9	6.36
A4. The master's degree program trains the student to hold a job immediately that responds to current demands.	8.98	5.33	8.98	5.43	9.3	5.5
A5. The master's program offers sufficient opportunities for specialization.	9	6.64	8.67	6.62	9.02	7.23
A6. The master's degree program course contents are of a higher level than those offered in undergraduate coursework.	9.17	5.68	8.57	5.14	8.85	5.95
A7. Teachers explain to students how to perform each of the practicums associated with the coursework and how these are related to theory.	8.94	6.82	8.67	7.55	9.16	6.84
A8. The time devoted to practical activities of coursework should be more than that devoted to theory.	7.83	6.13	7.75	6.87	8.41	6.5
A9. The distribution and organization of the master's degree program coursework ensure the progressive acquisition of knowledge for the student.	9	5.78	8.8	6.28	8.86	6

A10. The selection of specialties or schedules should not require a student to choose a specific turn.	9.2	4.4	8.46	4.03	8.47	6.51
A11. The coursework practicum requires candidates to increase their use of ICT and Web 2.0.	8.46	5.83	8.5	6.33	8.45	6.39
A12. The organization of the mater's program offers students sufficient time to carry out non-classroom requirements (library research and study, etc.) for the purpose of broadening their knowledge.	8.66	6.02	8.93	6.28	9	6.3
A13. The professors use the virtual campus as a tool for teaching.	8.26	6.48	8.65	8.05	8.73	7.59
A14. The organization of the master's program favors student visits to professional organizations and entities so they can experience the genuine professional environment.	8.44	6.24	8.65	5.68	8.84	6.95
A15. The organization of the master's program favors the use of workshops and seminars for acquiring professional abilities.	8.31	5.58	8.7	6.28	8.59	6.57
A16. The master's program should offer the opportunity to hear the experiences of acknowledged professionals.	8.47	6.35	8.73	6.38	8.45	6.8
A17. The didactic materials used in coursework and provided to students to support study and practicums (notes, presentations, practicum guides, exercise, etc.) are clearly presented and well organized.	9.15	6.17	9.03	6.68	9.16	6.93
A18. The master's degree program offers online tutoring.	8.3	4.87	7.62	6.79	8.05	6.25
A19. The methods of evaluation of the master's program are ongoing and are largely performance or project based.	8.54	6.8	8.7	7.62	8.8	7.36
A20. The evaluation criteria are known at the outset of all program courses and classes.	8.89	6.46	9.07	7.18	9.23	6.59
A21. The teachers are accessible and polite in and outside of the classroom.	9.43	8.37	9.23	8.95	9.41	8.59
A22. The teachers have deep knowledge of their subjects, as well as experience in the professional or research field.	9.51	7.67	9.5	8.33	9.55	7.91
A23. The teachers have communication skills needed to transmit knowledge.	9.38	7.2	9.53	7.53	9.41	7.3
A24. The library participates in teaching activities of the master's program (offering course and coursework practicums, etc.)	8.31	5.54	7.67	4.9	8.26	5.49
A25. The complaints, claims and suggestion process is effective and has the power of reach resolution.	8.64	5.29	8.32	5.81	8.9	6.92

A26. The Student Liaison Office has the faculties needed to orient students and resolve administrative problems associated with graduation.	9.13	5.63	9.1	7.1	9.02	6.76
A27. The standard classrooms provide sufficient conditions in terms of temperature, lighting, internet access, electrical outlets, seating, work tables, projectors, blackboard, and projection screens.	8.83	6.34	9.13	6.85	9.16	7.25
A28. The general conditions of the computer rooms --in terms of numbers of computer units, printers, projectors, screens seats, tables, maintenance, air conditioning, availability and internet connection offer sufficient degree of quality to allow non-classroom activities to be performed adequately under good conditions must ensure adequate quality to prevent teaching problems	9.08	6.26	9.05	6.93	9.16	7.57
A29. The general conditions of the computer rooms --in terms of numbers of computer units, printers, projectors, screens seats, tables, maintenance, air conditioning, availability, internet connection and hours of service-- offer sufficient degree of quality to allow non-classroom activities to be performed adequately under good conditions must ensure adequate quality to prevent teaching problems	8.69	5.94	8.85	6.38	8.86	7.25
A30. The faculty offers facilities such as Wi-Fi and internet connections.	9.44	7.47	9.2	8.26	9.57	8.98
Overall average value	8.75	6.12	8.73	6.67	8.90	6.84

As shown in *Table 2*, the valuations of students of these three groups of the importance of each of the quality requirements are very close, with significant differences at a confidence level of 95% on requirement number 2 between the control group (mean value of 7.54) and the 2013-2013 class (mean value of 8.84). There were no significant differences between the global mean values of the importance assigned by each group.

Opinion of students enrolled in 2011-2012 class

Table 2 shows the most important master’s degree program requirements from the point of view of students are those associated with the attributes that professor must bring to the table, such as knowledge, experience, availability and communication abilities, which were also those that obtain a higher satisfaction.

In Figure 2 shows the results of the mean values of importance and satisfaction. In this graph data have been distributed across the four quadrants, which are built in accord with a separation frontier comprised of the aggregate mean values of importance (8.75) and satisfaction (6.12) of the data obtained from students enrolled in the master’s program before 2011. These values are those that are used as a control in order to see the impact of the actions to be implemented in the classes of 2011/2013 and 2012/2013.

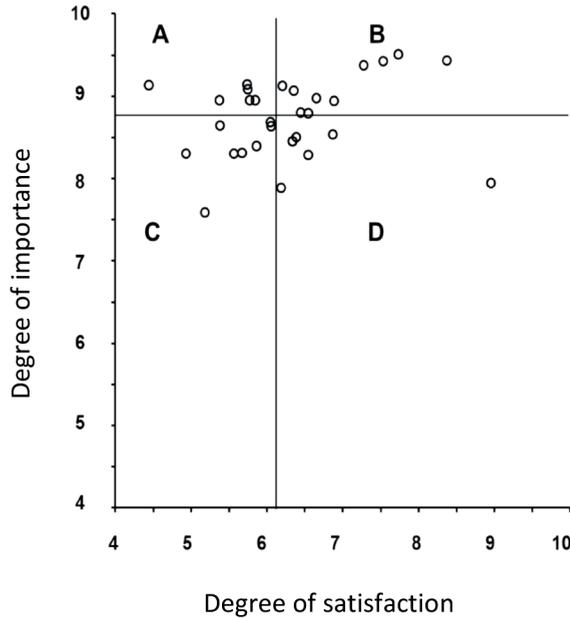


Figura 2. Importance-satisfaction matrix values of the group of students enrolled in course before 2001

As can be seen in *Figure 2*, there are six attributes located in quadrant A. These can be deemed these improvement priorities for increasing student satisfaction. These attributes are as follows, with the mean values of importance (I) and satisfaction (S) are provided in parenthesis:

- A10 The selection of specialties or schedules should not require a student to choose a specific turn ((I=9.20; S=4.40).
- A4 The master’s degree program trains the student to hold a job immediately that responds to current demands (I=8.98; S=5.33).
- A6 The master’s degree program course contents are of a higher level than those offered in undergraduate coursework (I=9.17; S=5.68).

- A26 The Student Liaison Office has the faculties needed to orient students and resolve administrative problems associated with graduation (I=9.13; S=5.63).
- A3 The master's degree program offers up to date knowledge on the technological tools (TIC) applied to documentation (I=8.98; S=5.69).
- A9 The distribution and organization of the master's degree program coursework ensure the progressive acquisition of knowledge for the student (I=9.00; S=5.78).

Figure 2 shows the existence of three attributes that are located very close to quadrant A. Because of the small sample size of 65 students and the degree of variability, we may believe that their inclusion in this quadrant is somewhat less than solid. Said attributes as A17, falling in to quadrant B, and A29 and A12 which fall into quadrant C:

- A29 The general conditions of the computer rooms --in terms of numbers of computer units, printers, seats, tables, maintenance, air conditioning and hours of service-- offer sufficient degree of quality to allow non-classroom activities to be performed adequately under good conditions (I=8,69; S=5,94).
- A12 The organization of the mater's program offers students sufficient time to carry out non-classroom requirements (library research and study, etc.) for the purpose of broadening their knowledge (I=8,66; S= 6,02).
- A17 The didactic materials used in coursework and provided to students to support study and practicums (notes, presentations, practicum guides, exercise, etc.) are clearly presented and well organized (I=9,15; S=6,17).

The attribute receiving the worst satisfaction valuation in this group of students is A10 of *Table 2*. This could be because the master's degree program is offered in the morning and afternoon shift, with different specialization courses offered in each shift. This situation caused considerable dissatisfaction among students in the focus group participating in the selection of attributes. As shown in the observation of *Table 2* and *Figure 2*, the deficiencies most frequently cited have to do with the attributes associated with the organization of activities, the course contents, the facilities used and the role of the support services of the Student Liaison Office.

Impact of the implementation of actions to improve quality of master's degree program.

The aforementioned results provide the basis for analyzing the effects of a series of actions implemented by the degree program administration in 2011 and 2012. These actions are described *Table 3*. The objectives of these actions are, on one hand, to improve the satisfaction of students regarding those attributes falling into quadrant A in *figure 2*, and, on the other, to potentiate the use of information and communication technologies by the faculty, competencies needed to improve the use the of the virtual teaching platform.

Table 3. Improvement actions implemented by the faculty administration of the master's program.

Actions with effects in 2011-12	Actions with effects in 2012-13
<ul style="list-style-type: none"> • Revision of MA program modules in order to update and increase technological content. • Increased time devoted to practical activities. • Improvement of knowledge regarding the MA program held by student liaison office and improved communication between program authorities and personnel. • Improved information targeted to students through revising and modifying web page and issue of program pamphlet. • Installation of two new computer rooms for MA candidates. • Supporting professors' use of the e-learning platform in order to deliver tutoring, materials and information, and other communication activities. 	<ul style="list-style-type: none"> • Reorganization of program courses offering into two semesters so that the required courses are organized by specialization and the number of electives is increased to three. • Reorganization of coursework calendar in order to provide enhanced cohesion to learning. • Offering all of the specializations of the MA program in a single afternoon schedule in order to help candidates who work in the morning. • Improving professors' knowledge of how to use the new e-learning platform in order to offer the MA program in mixed online-classroom modality in the short term. • Expanded informatics resources.

To learn the impact of these action, students were surveyed using the same questionnaire used with the control group one month after the conclusion of the course. *Table 2* shows the results for the degree of importance of each of the program quality requirements and the degree of satisfaction expressed by the students.

Opinion of student enrolled in class of 2011-2012

The group enrolled in 2011-2012 expressed a more favorable opinion than that of the control group, with a global satisfaction score of 6.71 versus 6.12 for the control group. This difference was significant, with a confidence interval of 95%.

Figure 3 shows the distribution of the mean values of importance and satisfaction of students enrolled in the class of 2011-2012. An examination of these results allows us to make the following observations:

- There is only one attribute that remains in quadrant A. This attribute is A4 The master's degree program trains the student to hold a job immediately that responds to current demands (I=8.98; S=5.43).
- Of the other five attributes that had been in quadrant A for the control group, three of these have moved to quadrant B (A3, A9 and A26), while the other two (A10 and A6) shifted to quadrant C as a result of the decreased importance score reported by students of the 2011-2012 cohort. Nevertheless, there are not significant differences between the valuations of the two groups of students for these five requirements.

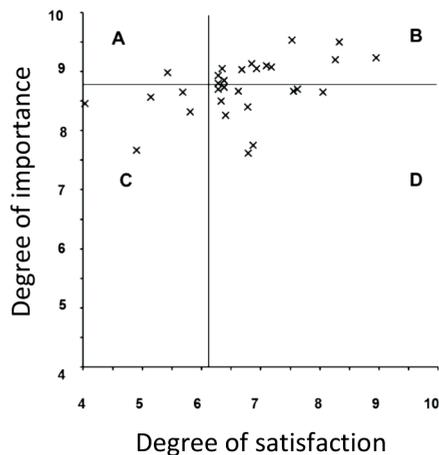


Figura 3. Importance-satisfaction matrix values of the group of students enrolled in 2011-2012 course

Moreover, there are two other attributes for which students of the 2011-12 cohort exhibit a mean degree of satisfaction that is higher than that for the control group. This value is significant with a confidence interval of 95%):

- A2 “The information on course content is available during the pre-enrollment and enrollment periods” (satisfaction of 6.78 this 5.19). This requirement moves from quadrant C to D.
- A13 “The professors use the virtual campus as a tool for teaching” (satisfaction of 8.05 versus 6.48). This requirement remains in quadrant D.

In short, we can assert that improvement plans implemented during the 2011-2012 period exerted a more significant impact on those attributes that are directly related to the improvement actions initiated, such as the training of faculty in the use of technologies and the improvement made to the program's webpage. Only requirement A4 (The master's degree program trains the student to hold a job immediately that responds to current demands) still needs actions to improve satisfaction of students. Moreover, the result indicate that when actions are implemented to improve technological contents, the practicum sessions were insufficient to ensure improvement in satisfaction.

Results of students enrolled in class of 2012-2013

The students from the 2012-2013 cohort are generally more persons expressing satisfaction with the performance of quality attributes of the master's program than the previous two groups. In fact, the aggregate mean satisfaction came to 6.84 with a 95% confidence interval, significantly higher than the control group of 6.12, and slightly higher than the value of 6.71 of the student from the 2011-2012 cohort. (*Table 2*).

Figure 4 shows the distribution of the mean values for importance and satisfaction of the students enrolled in the 2012-2013 academic course. In accord with *Figure 4* and the result of *Table 2*, three attributes are found in quadrant A:

- Attribute A4, (The master's degree program trains the student to hold a job immediately that responds to current demands) remained in this quadrant for the three groups of the students analyzed, perhaps owing to the fact that in the view of the students no direct improvement action has been implemented.
- Attribute A6 (The master's degree program course contents are of a higher level than those offered in undergraduate coursework) undergoes a series of shifts. The control group had this attribute in quadrant A, while the 2011-2012 cohort has it in quadrant C as the mean value of importance declined. Nonetheless, there were no significant differences in the mean values of importance and satisfaction assigned by the three groups of students for this attribute.
- As for A9 (The distribution and organization of the master's degree program coursework ensure the progressive acquisition of knowledge

for the student), the control group fell into quadrant A, while the 2011-2012 cohort sample put it in quadrant B with a higher mean satisfaction value. In this case, it is important to note that one of the projects implemented in this class was specifically aimed at improving the results of this attribute, which suggests that the new organization proposed has not been effective in the eyes of students. Nonetheless, it is important to note that there were no significant differences in the mean values for importance and satisfaction in the three groups of students for this attribute.

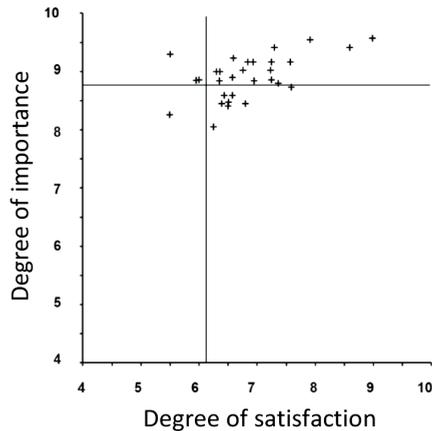


Figura 4. Importance-satisfaction matrix values of the group of students enrolled in 2012-2013 course

An analysis of the results obtained for each of these attributes, we find that there are six attributes with a mean valuation of satisfaction in a confidence interval of 95% greater for the 2012-2013 cohort sample than that reported for the control group:

- A2 (The information on course content is available during the pre-enrollment and enrollment periods) (satisfaction of 6.78 versus 5.19). The control group was in quadrant C, which shifts to quadrant B.
- A10 (The selection of specialties or schedules should not require a student to choose a specific turn) (satisfaction of 6.51 versus 4.40). The control group
- Had this attribute in quadrant A, which shifted to quadrant D, perhaps because all of the courses were offered in only one turn and is no longer a motive for dissatisfaction.

- A18 (The master's degree program offers online tutoring) (satisfaction of 6.25 versus 4.87). This attribute moves from C to D.
- A28 (The general conditions of the computer rooms --in terms of numbers of computer units, printers, projectors, screens seats, tables, maintenance, air conditioning, availability and internet connection offer sufficient degree of quality to allow non-classroom activities to be performed adequately under good conditions must ensure adequate quality to prevent teaching problems) (satisfaction of 7.57 versus 6.34). This attribute remained in quadrant B.
- A29 (The general conditions of the computer rooms --in terms of numbers of computer units, printers, seats, tables, maintenance, air conditioning and hours of service-- offer sufficient degree of quality to allow non-classroom activities to be performed adequately under good conditions) (satisfaction of 7.25 versus 5.94). This attribute moves from C to B.
- A30 (the Faculty offers facilities such as Wi-Fi and internet connections (satisfaction 8.98 versus 7.47). This attribute remains in quadrant B.

Likewise, with significance in 90% confidence interval, another four attributes for the 2012-2013 cohort sample show an average satisfaction valuation higher than the control group:

- A1 The information on the Master's degree program is clear, sufficient and well structured (satisfaction of 6.43 versus 5.49). The control group had it in quadrant C and this moved to quadrant D.
- A13 The professors use the virtual campus as a tool for teaching (satisfaction of 7.59 versus 6.48). This attribute remains in quadrant D.
- A25 The complaints, claims and suggestion process is effective and has the power of reach resolution (satisfaction of 6.92 versus 5.29). The control group has this attribute in quadrant C, and it has shifted to quadrant B.
- A26 The Student Liaison Office has the faculties needed to orient students and resolve administrative problems associated with graduation (satisfaction of 6.76 versus 5.63). The control group has this attribute in quadrant A, and it has shifted to quadrant B.

The preceding examples of significant improvements in student satisfaction in this class serve to reflect the impact of the actions implemented

in 2011/2012 and 2012/2013. Similarly, there are three attributes associated with the coursework contents, seasonal programming, and the relevance of the master's program in professional life that should be analyzed further in order to propose actions for their improvement.

CONCLUSIONS

This study proposes the use of analysis of the student valuations of the importance and satisfaction to identify the strengths and weaknesses of the organization in the performance of the quality attributes of the master's degree program. This analysis is used to verify the impact of the actions implemented by and organization it improve performance.

To achieve a better valuation with each requirement of the effects of the actions on satisfaction of the students, we have considered the sample variability of each of the mean values of importance and satisfaction, indicating the degree of probability when there is a difference in the valuations made by students belonging to the several academic cohorts. Taking into account these methodological aspects, we take not of the following three facts:

- The stability of time, and between the different groups of students, of the mean valuations of importance they assigned to each of the attributes of the Master's Degree Program in Documentation, Library and Archive Administration.
- The results presented suggest that the improvement in satisfaction of students with the performance of some quality attributes of the program are the consequence of the actions implemented, as was the case with the requirements associated with the installations, availability of information, freedom to choose a specialty, use of TIC to support teaching or the improvement in the operation of the student Liaison Office.
- There are other requirements of great importance to students, which do not modify their level of satisfaction. Among these, the most important is associated with the usefulness of the training provided in the master's degree program to students in view of current demands, as they attempt to move into the workplace immediately after graduation.

All of the actions implemented for improving satisfaction with this requirement have had a negative results and, possibly, it is owing to the short

duration of the master's program (two semesters), which on one hands does not allow inclusion more activities directly associated with the competencies needed to effectively hold a job successfully, and on the other, impede the introduction of a period of external practicums in order to provide the student with experience in a professional setting.

Finally, this methodology is useful for identifying those attributes that are crucial in the improvement of the satisfaction of students and as a feedback mechanism for following up on and objectively verifying the impact of actions aimed at improving the quality of the attributes deemed priority from the viewpoint of students.

REFERENCES

Angell, R. J., T. W. Heffernan y P. Megicks. 2008. "Service quality in postgraduate education", *Quality Assurance in Education* 16 (3): 236-254.

Bionel Tejedor, A. 2013. "Matriz de "importance performance analysis" de atributos críticos de satisfacción de alumnos en ciencias y tecnología y medidas correctivas frente a la meta-acreditación institucional", *Ciencia y Tecnología* 13: 11-24.

Daud, S., N. Abidin, N. M. Sapuan y J. Rajadurai. 2011. "Enhancing university business curriculum using an importance-performance approach: A case study of the business management faculty of a university in Malaysia", *International Journal of Educational Management* 25 (6): 545-569.

Douglas, J., A. Douglas y B. Barnes. 2006. "Measuring student satisfaction at a UK university", *Quality Assurance in Education* 14 (3): 251-267.

Elliot, K. M. y M. A. Healy. 2001. "Key factors influencing student satisfaction related to recruitment and retention", *Journal of Marketing for Higher Education* 10 (4): 1-11.

Ford, J. B., M. Joseph y B. Joseph. 1999. "Importance performance analysis as a strategic tool for service marketers the case of service quality perceptions of business students in New Zealand and USA", *The Journal of Services Marketing* 13 (2): 171-184.

Hair, J. F., W. C. Black, B. J. Babin y R. E. Anderson. 2009. *Multivariate Data Analysis*, 7a ed., Upper Saddle River, New Jersey: Prentice Hall.

Joseph, M. y B. Joseph. 1997. "Service quality in education a student perspective", *Quality Assurance in Education* 5 (1): 15-21.

- , M. Yakhou y G. Stone. 2005. "An educational institution's quest for service quality: customer's perspective", *Quality Assurance in Education* 13 (1): 66-82.
- Kitcharoen, K. 2004. "The importance-performance analysis of service quality in administrative departments of private universities in Thailand", *ABAC Journal* 24 (3): 201-216. Fecha de consulta: 10 de enero de 2014, http://ejournal.narotama.ac.id/files/ajvol24n3_article3.pdf
- Martilla, J. A. y J. C. James. 1977. "Importance-performance analysis", *Journal of Marketing* 41 (1): 77-79.
- Martínez-Caro, E., J. G. Cegarra-Navarro y G. Cepeda-Carrión. 2014. "An application of the performance-evaluation model for e-learning quality in higher education", *Total Quality Management*, <http://dx.doi.org/10.1080/14783363.2013.867607>
- Ministerio de Educación, Cultura y Deporte. 2013. *Datos básicos del sistema universitario español. Curso 2013/2014*, 10 de febrero de 2014, http://www.mecd.gob.es/dms/mecd/educacion-mecd/areas-educacion/universidades/estadisticas-informes/datos-cifras/DA_TOS_CIFRAS_13_14.pdf
- Nale, R. D., D. A. Rauch, S. A. Wathen y P. B. Barr. 2000. "An exploratory look at the use of importance analysis as a curricular assessment tool in a school of business", *Journal of Workplace Learning* 12 (4): 139-145.
- Oh, H. 2001. "Revisiting importance-performance analysis", *Tourism Management* 22: 617-627.
- Olujide, O. J. y O. V. Mejabi. 2007. "Methodological issues in importance-performance analysis: Resolving the ambiguity", *European Journal of Social Sciences* 4 (2): 7-21.
- O'Neill, M. A. y A. Palmer. 2004. "Importance performance analysis a useful tool for directing continuous quality improvement in higher education", *Quality Assurance in Education* 12 (1): 39-52.
- Pike, S. D. 2004. "The use of repertory grid analysis and importance-performance analysis to identify potential determinant university attributes", *Journal of Marketing for Higher Education* 14 (2): 1-8.
- Silva, F. y P. Fernandes. 2010. "Using importance-performance analysis in evaluating institutions of higher education: A case study", *Proc. 2010 International Conference on Education and Management Technology (ICEMT 2010)* 4: 121-123. Fecha de consulta: 20 de enero de 2014, <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=05657689>

- Wright, C. y M. O'Neill. 2002. "Service quality evaluation in the higher education sector: An empirical investigation of students' perceptions", *Higher Education Research & Development* 21 (1): 23-39.
- Wu, H. H. y J. I. Shieh. 2009. "The development of a confidence interval- based importance-performance analysis by considering variability in analysing service quality", *Expert Systems with Applications* 36 (4): 7040-7044.
- Yildiz, S. M. 2014. "Service quality evaluation in the school of physical education and sports: An empirical investigation of students' perceptions", *Total Quality Management* 25 (1): 80-94.
- Yu, K. T. y R. G. Ueng. 2012. "Enhancing teaching effectiveness by using the Six-Sigma DMAIC model", *Assessment & Evaluation in Higher Education* 37 (8): 949-961.

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