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Professional Certifications of a University Master's Degree and Employability: Impact on Students' Perception

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Abstract: Professional certifications represent for many university degrees, especially postgraduate degrees, a recognition of their academic quality and the future employability of the graduates. This article contributes to the analysis of the impact of external accreditations on students' perception of employability and satisfaction. We offer a case of study, a Master of Science (MSc) in Banking and Finance that became the first academic degree in Spain to obtain the two professional accreditations required for employees in financial institutions since 2019. A survey to a sample of students who graduated two academic years before and two years after the MSc was recognised is used to measure students' motivations for enrolment and satisfaction. The results provide significant evidence that professional accreditation became a key motivation for students to enrol the master, is associated with a more diverse geographical origin of students, and students highlight the higher quality and better coordination of the teaching staff.

Keywords: *Educational innovation, postgraduate degree, professional certification.*

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Introduction

The deployment of the European Higher Education Area (EHEA) led to common standards across European countries in terms of qualifications, quality control, and certification and accreditation systems. Specifically, it involved the adoption of European Standards and Guidelines (ESG) for Quality Assurance in the European Higher Education Area as a common framework for the quality assurance systems of the different degrees.

Complementary to these evaluation systems are external professional certifications. For many university degrees, especially postgraduate degrees, these certifications represent recognition of their academic quality, which in turn has an impact on the employability of graduates. Universities see professional certifications as a badge of skills achievement (Tsai et al., 2011), while the literature on educational innovation recognizes that ensuring quality employment for students is key to enhancing innovation and competitiveness in the economy (Jackson, 2016; Jackson & Michelson, 2015). In addition, it is a trend in higher education to improve employability through service learning and other interactive experiences, and recent studies analyse the role of professional certifications as a factor in educational innovation (Gallagher & Villwock-Witte, 2018; Knapp et al., 2017; Laguador & Refozar, 2020; Moreo et al., 2018). However, when it comes to analyse the impact on motivations and satisfaction, most recent studies focus on teachers' accreditations. The aim of this article is to contribute to the analysis of the impact of external accreditations on students' perception of employability and satisfaction.

We offer a case of study. In Spain, the financial and banking crisis brought new training requirements to be met by financial institutions: namely, two certifications, one by the Comisión Nacional del Mercado de Valores (CNMV, National Securities Market Commission) on investment advising, and another by the Banco de España (BdE, Bank of Spain) to market mortgage loans. For university degrees in Spain, this implied a teaching innovation effort to adapt contents and methodologies to the quality standards now required. For the MSc in Banking and Finance (MUBF) of Universidade da Coruña (UDC) in particular, it improved its position in the existing academic offer, since in July 2019 it became the first

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academic degree in Spain to obtain both accreditations. By September 2022, 62 institutions have been recognized by CNMV and only 14 degrees are accepted by BdE,[†]

To analyse to what extent these accreditations influenced the ex-ante perception of MUBF students on the quality of the degree and employability prospects, the degree of fulfilment of these expectations during the course, and their overall satisfaction once the course was completed, a survey was conducted among students of the 2019-20 and 2020-21 academic years – the two first years after the MSc was granted both certifications – and students of the two previous years. The main contributions of this research are in order.

First, the study is especially timely, since it is difficult to find research about the impact of certifications on student perception, particularly in terms of future employment possibilities. To the best of our knowledge, most existing studies focus, in fact, on teacher accreditation. This is puzzling, because public evaluation systems are opaque to students and do not discriminate between the entire offer of existing degrees and master's degrees, while professional accreditations are of recognized prestige, are linked to their perception of employability, and allow to discriminate between those degrees that obtained the accreditation and those that did not.

Second, we provide a complete descriptive analysis in four areas: the impact on the profile of students enrolled; the importance given by students to the new accreditations as a major reason for enrolling in the MUBF; the fulfilment of their expectations along the course in terms of organisation, contents, internship program and the teaching staff; and overall satisfaction after completing the course.

Finally, the research explores the potential causes behind the rise or fall in student satisfaction, including the perception of teaching quality, contents, evaluation, and others.

The structure of the article is as follows. We firstly review the literature on professional certifications as innovation factors in education, and the case of study is presented. In the following section we describe database and methodology. Following the section of findings, a discussion of results is provided. Finally, the conclusion section provides a summary of results.

Literature Review

Our study can be framed within the broader literature on factors of educational innovation in the University (see Schneider & Preckel, 2017, for a meta-analyses review). Our research is focused on three branches of this literature, which we briefly review in order: namely, the role of educational innovation in improving student employability, professional certifications as innovation factors in education, and the impact of these certifications on students' perception and satisfaction.

Education innovation and employability. Ensuring quality employment for students is key to achieve national competitiveness (Jackson & Michelson, 2015), and key to post-graduation employment is skill development (Jackson, 2016). Consequently, latest trends in higher education analyse how to enhance employability of graduates through different strategies, including experiential, case-based and interactive learning (Regehr, 2013), service learning (Huq & Gilbert, 2013) and e-learning (Valdés et al., 2018). Moreover, Birch et al. (2017) highlight that students are often educated only to be employees, so educational innovation strategies should be oriented to provide them with the required skills to be entrepreneurs as well. In this line, Kucel et al. (2016) show that higher levels of entrepreneurial skills reduce the probability of over-education for university graduates.

Professional certifications as educational innovation strategies. Several studies deal with the importance of professional certifications for educational innovation, showing that it is helpful for students to obtain a professional certificate before entering the workforce or starting a new venture. This includes Knapp et al. (2017) in the cybersecurity industry, Moreo et al. (2018) in the hospitality industry, Gallagher and Villwock-Witte (2018) in the transportation sector, and Laguarda and Refozar (2020) in the accountancy sector.

These certifications allow to maintain an up-to-date and competitive curriculum (Knapp et al., 2017). And, in industries where such a certification is yet to be provided, authors stress the need to promote them. Thus, in therapeutic education, Papadakos et al. (2019) observe that no formal professional accreditation exists in Canada and discuss the competencies to be included in a certification program. Likewise, De Los Ríos-Carmenado et al. (2015) show how teaching aimed across different educational levels facilitates training in the competences required to obtain a professional certification on Project Management.

The impact of professional certifications on students' perception and satisfaction. Despite the above, there is few research on the impact of these certifications on students' perception. Cheng et al. (2012) compare four intention-based models to understand what drives undergraduates to obtain a certification in business and management. More attention has been paid to the accreditations obtained by the teaching staff. Thus, Bush (2013) analyses the impact of the National Professional Qualification for Headship (NPQH) as a professional qualification for headteachers in UK.

[†]The full lists are available at <https://www.cnmv.es/portal/Titulos-Acreditados-Listado.aspx> for CNMV and at www.bde.es/bde/es/secciones/servicios/Particulares_y_e/Servicio_de_Recl/ for BdE.

Indeed, the quality of the teacher workforce is related to these certificates (Feng & Sass, 2017), and they help postdocs learn the theory of teaching, develop confidence and a reflective teaching practice (Nowell et al., 2020). However, Johnston et al. (2016) observe that certifications that are given to teachers for participating in short-term training programs have no positive impact on students' technical skills.

Dealing about perception on educational innovation and satisfaction with degrees, a large stream of the literature has focused on the implementation of the EHEA and the Bologna process overall, either based on student perception (Sabater-Sempere et al., 2011; Fernandez-Sainz et al., 2016; Lupak et al., 2020) or teacher satisfaction (Lagoa-Varela et al., 2018; Quevedo-Blasco et al., 2015). Therefore, there seems to be a lack on studies oriented to measure students' satisfaction due to professional accreditation obtained in higher education studies, particularly in terms of possibilities for future employment.

Methodology

Case of Study

In Spain, the global financial crisis of 2008 and the collapse of the local housing boom dragged down the financial sector and public debt, especially from 2010 onwards. Credit to households and firms dropped, and the impact of the sovereign and banking crises led to a complete restructuring process of the banking industry: the more than fifty banks and saving banks before 2009 were transformed into ten groups holding 80% of the assets, and savings banks disappeared (Peón & Guntín, 2021).

In this context, Spanish regulators imposed new employee training requirements to be met by financial institutions in the future. On the one hand, the CNMV, since 2017, has published a list of academic degrees in Spain that are recognised to provide students with the knowledge and skills necessary to provide personal finance advisory services. On the other hand, the BdE, since 2019, provides a list of those degrees that provide students with the knowledge required to market mortgage loans.

These recognitions introduced a de facto accreditation for any degrees that are included in both lists. To obtain each of them, the university concerned must request an evaluation of the academic degree by the corresponding authority to confirm that the contents taught coincide with those required by the regulator. This requires a great effort by the teaching staff to adapt contents and methodologies to the quality requirements demanded by the different accreditations, as well as additional coordination among the teaching staff.

More specifically, this allowed the Master in Banking and Finance (MUBF) of the UDC to position itself prominently in the existing academic offer by becoming in July 2019 the first academic degree in Spain to have both accreditations. The purpose of this research is to confirm whether this positioning influenced the employability perspective of students at the MUBF. To this end, a survey was conducted from 2019 to 2021 among students from various academic courses before and after the MSc obtained both certifications. All details are provided in the Findings / Results section.

Hypotheses Development

Using the MUBF as a case of study, the research seeks to provide empirical evidence to the following set of hypotheses. First, in terms of the impact on admission and enrolment figures, a positive impact after the MUBF obtained the accreditations is expected in terms of the number of applications and enrolments, while the academic background of students may be expected to be more concentrated in finance degrees:

- H1a: The number of applications / enrolments increased after the accreditations.
- H1b: The number of applications / enrolments outside Galicia increased afterwards.
- H1c: The academic background of students changed towards a profile more concentrated in finance careers.

Second, in terms of student motivation to enrol the MUBF, we pose a key hypothesis:

- H2: The granting of the professional accreditations became a relevant motivation factor for students to enrol the master.

We will also compare this factor against a set of alternative ones, based on utilitarianism, interest in finance, course syllabus, internship program, previous students' opinion, and home bias.

Third, we analyse the fulfilment of students' expectations once they enrolled in the master, with a set of hypotheses:

- H3a: Student perception on admission and coordination procedures improved after the accreditations.
- H3b: Student perception about the quality and adequacy of the course syllabus improved after the accreditations.
- H3c: Student perception about the quality and adequacy of the teaching staff improved after the accreditations.
- H3d: Student perception on employability improved after the accreditations.

Fourth, we analyse the impact on overall satisfaction with the following hypothesis:

- H4: Overall student satisfaction improved after the accreditations.

Finally, all factors above that measure students' perception will be considered as related to overall satisfaction with the MUBF. Thus, we pose the following set of hypotheses:

- H5a: Student perception on admission and coordination procedures is positively related to the improvement in overall satisfaction.
- H5b: Student perception about the quality and adequacy of the course syllabus is positively related to the improvement in overall satisfaction.
- H5c: Student perception on the quality of the teaching staff is positively related to the improvement in overall satisfaction.
- H5d: Student perception on improved employability with the accreditations is positively related to the improvement in overall satisfaction.

Sample and Data Collection

We work with two sources of data. First, at the population level, using the admission data of MUBF to measure the impact of accreditations on enrolment – in particular, the number and profile of students enrolled in the MSc. Second, we use a sample of students who graduated each of the four academic years and who completed a survey designed to measure students' motivations for enrolment and their degree of satisfaction.

Table 1. MUBF Admission and Enrolment Data, Academic Years 2017/18 to 2020/21

Variable	Values	N	%
Applications	2017/18	69	
	2018/19	55	
	2019/20	71	
	2020/21	74	
Internat. Applications	2017/18	22	
	2018/19	17	
	2019/20	33	
	2020/21	23	
Students enrolled	2017/18	20	21,1%
	2018/19	22	23,2%
	2019/20	26	27,4%
	2020/21	27	28,4%
Gender	Woman	43	45,3%
	Man	52	54,7%
Age	< 25	58	61,7%
	25 – 30	28	29,8%
	> 30	8	8,5%
Region	Galicia	72	75,8%
	Spain	4	4,2%
	International	19	20,0%
UDC	Yes	55	57,9%
	No	40	42,1%
Degree	Business Management & Admin (BMA)	43	45,3%
	Economics	31	32,6%
	Business Science	11	11,6%
	Other	10	10,5%

During the academic years 2017/18 to 2020/21, a total of 195 students applied to study the MUBF, of which 123 were Spaniards and 72 were international students. Of these, 95 students enrolled the MUBF – which are the main target of our research.‡ Table 1 provides demographic statistics of students who applied and who eventually enrolled the MSc.

Total applications are much higher in 2019/20 and 2020/21, with 71 and 74 students respectively, compared to an average of 62 the previous years. International applications showed a substantial increase in 2019/20 from 17 to 33 applications, but they fell to 23 in the context of the COVID pandemic in 2020/21 – still higher than the 19.5 average of

‡ Students under Erasmus programs and other mobility agreements are not included.

the previous two years. Finally, enrolment data shows an increasing pattern as well, from 20 and 22 the years before the master received both accreditations, to 26 and 27 the years after the master obtained both accreditations. Most students are recent graduates (more than 60% are 24 years old or younger) from Galician universities (75%) – mostly from the UDC itself (57.9%). A t-test shows that the increase in the number of enrolments is statistically significant ($p < .05$), satisfying H1a, but not the number of applications.

Participants in the survey: The 95 students enrolled were the target of the survey. A cover letter with a link to the questionnaire was sent to each graduate student via email asking them to fill it out online via Google Forms. A total of 33 students, 34.7% of the enrolled students, completed the survey – descriptive statistics provided in Table 2. The sample is divided in two periods: Previous (1), with a sample of 15 students who graduated in the 2017/18 and 2018/19 academic years (45.5% of the sample, representing 35.7% of the students enrolled those years), and Current (2), with a sample of 18 students who graduated in 2019/20 and 2020/21 (55.5% of the sample, representing 34.0% of the students enrolled those years).

The latter group (2) is our treatment group, made up of students who enrolled in the MSc after it was promoted in advertising campaigns and on the university website as “the only master's degree in Spain with both professional accreditations from the CNMV and BdE.”

Table 2. Descriptive Statistics of the Sample

Variable		N	%
Period	Previous (1)	15	45.5%
	Current (2)	18	54.5%
Gender	Woman	13	39.4%
	Man	20	60.6%
Age	< 25	23	67.6%
	25 - 30	8	23.5%
	> 30	2	5.9%
Region	Galicia	27	81.8%
	Spain	3	9.9%
	International	3	9.9%
Degree	Business Management	21	63.6%
	Economics	10	30.3%
	Other	2	6.1%
Professional experience	Yes, related to banking and finance	9	27.3%
	Yes, not related to banking and finance	13	39.4%
	No	11	33.3%

Variables: The survey variables were designed to evaluate three topics: motivations for enrolling this course, fulfilment of expectations, and degree of satisfaction with the services provided. Evaluations used a 1 to 5 Likert scale on the degree of agreement and disagreement with the statements, being 1 "strongly disagree" and 5 "strongly agree". The statements were grouped into six themes: Enrolment in the MSc, admission and organisation, subjects, master's thesis and internship program, teaching staff, and overall satisfaction. These themes are described in more detail below.

Motivations (M): Including one theme:

- *Enrolment motivations.* A number of potential motivations for applying and enrolling in the master are considered, including, among others the relevance of the professional accreditations obtained by the MUBF, and the internship program.

Fulfilment of expectations (F): Including four themes:

- *Admission and organisation.* Once the students enrolled, they had to deal with the administrative and organizational processes of the UDC and the master's degree. These questions measure the students' perception of the quality of information, communication, and help services available.
- *Syllabus.* The student's perception of the syllabus, skills, competences, and the level of satisfaction with the contents and the methodologies applied is evaluated.
- *Teaching staff.* Here, the statements focus on student perception of the coordination of the syllabus among professors, the attention provided by them, and the knowledge evaluation processes.
- *Employment.* Addressing employability as a crucial issue for postgraduate students, we measured the students' opinions on the usefulness and degree of satisfaction with the thesis project and the internship programs available.

Degree of satisfaction (S): Including:

- *Overall satisfaction.* The overall quality of all the contents and services of the master's degree is evaluated in terms of training, skills and knowledge acquired.

Analysing of data

As mentioned, a survey was conducted on Google Forms for data collection, distributed via emails from 2019 to 2021 among students of different academic years. It required evaluations on different questions using a 1 to 5 Likert scale on the degree of agreement and disagreement with the statements, with about ten minutes to complete. The collected data were tallied and treated in Excel, and statistically processed using R-Studio software. For hypothesis testing, the data were analysed using a Student's t-test (for difference in means of two independent samples), a Pearson chi-square test of independence (to determine whether two categorical variables are likely to be related or not), and a Cramer's V (to measure of the relative strength of an association between two variables, the coefficient ranging from 0 to 1 (perfect association), with a minimum threshold of .10 suggesting a substantive relationship between two variables for $k = 1$ degrees of freedom, being k the number of rows and columns minus one). To test the impact on variables before and after the certification, a Wilcoxon signed-rank test and an asymptotic linear-by-linear test were used to test the association among variables in a contingency table with ordered categories. Finally, to test some variables as drivers of the increased student satisfaction, the null hypothesis of independence between the potential drivers and the satisfaction measures was tested by means of the asymptotic linear by linear association test and Cramer's V coefficient.

Results

The responses to the survey are summarized in Table 3 with some descriptive statistics. The greatest improvements from period (1) to period (2) are observed in students enrolling in the MSc because of the opinion of previous students (variable M5, +92.0%) and based on the professional accreditation obtained by the MSc (M1, +54.5%). Only four variables (three of them in the Fulfilment of Expectations theme) show little reduction (less than 10%) in average terms.

Impact on the profile of enrolled students. The profile of students interested in the MUBF comes from areas of knowledge related to finance and banking, mainly from Business Management (BM) and Economics degrees. The background before accreditation was mostly BM (54.8%) and Economics (35.7%). The inclusion of professional accreditation could have changed the interest of students reflecting a preference for the financial sector. However, in terms of the degree of access, admission data in Table 4 shows how the degrees of the new students have hardly changed. There is a minor increase in Economics students, to the detriment of students from other degrees other than BM and Economics. Through the chi-square test, we verify that the variables Degree and Group do not reject the null hypothesis of independence (p-values of 1 and .84). Cramer's V, interpreted as a measure of the relative strength of an association between two variables, shows a small association value of .0605, reflecting a very weak relationship between the variables. In summary, we may conclude that the professional accreditation has not changed significantly the academic profile interested in the MUBF.

Table 3. Set of Variables

Topic	Question	Previous (1)				Current (2)				Δ Mean	Δ Mean
		N	Mean	Median	St. Dev.	N	Mean	Median	St. Dev.		
Motivations (M)											
You have enrolled in the MUBF ...	M1. based on the professional accreditation granted by the CNMV and BdE	15	2.7	3.0	1.39	18	4.2	4.5	1.00	1.5	54.47%
	M2. because of your interest in finance	15	4.6	5.0	0.63	18	4.4	5.0	0.78	-0.2	-3.38%
	M3. based on its study plan	15	3.0	3.0	0.53	18	3.3	3.0	1.08	0.3	11.11%
	M4. because of the compulsory internship program	15	3.9	4.0	1.10	18	4.4	5.0	0.92	0.5	11.58%
	M5. based on the opinion of students from previous classes	15	1.5	1.0	0.83	18	2.9	3.0	1.55	1.4	92.03%
	M6. because of its proximity to the place of residence	15	3.4	4.0	1.30	18	3.8	4.0	1.10	0.4	12.75%
Fulfilment of Expectations (F)											
Admission and coordination	F1. Correct information about the enrolment process	15	3.0	3.0	1.07	18	3.7	4.0	0.97	0.7	22.22%
	F2. Adequate information on competences to acquire	15	3.5	4.0	0.64	18	3.8	4.0	0.81	0.2	6.92%
	F3. Admission process correctly implemented	15	3.6	4.0	1.18	18	4.2	4.0	0.86	0.6	15.74%
	F4. Adequate information about programs, calendars, etc.	15	3.1	3.0	1.22	18	3.6	3.5	1.09	0.5	17.75%
	F5. Adequate mechanisms for communication, complaints, and inquiries	15	3.3	4.0	1.33	18	3.1	3.0	1.35	-0.2	-6.46%
Syllabus	F6. Subjects offered adapted to expectations	15	3.5	3.0	0.74	18	3.8	4.0	0.81	0.3	8.97%
	F7. Workload adapted to the number of credits	15	2.9	3.0	1.33	18	3.1	3.0	1.39	0.1	4.17%
	F8. Subject overlap is not a problem	15	2.4	2.0	1.30	18	2.8	3.0	1.11	0.4	15.74%
Employability	F9. Adequate skills for integration into the labour market	15	3.5	4.0	0.74	18	3.5	4.0	0.79	0.0	0.96%
	F10. Completion of thesis according to my expectations	15	3.6	4.0	1.35	18	3.8	4.0	1.20	0.2	6.48%
	F11. The guidance received in the thesis was appropriate	15	4.1	5.0	1.28	18	3.9	4.0	1.26	-0.1	-3.01%
	F12. The internship program carried out is adequate	15	2.7	2.0	1.49	18	3.0	3.0	1.53	0.3	9.76%
	F13. The internship program is useful to access the labour market	15	3.1	3.0	1.75	18	3.8	4.0	1.31	0.7	23.19%
Teaching staff	F14. Adequate coordination between teachers	15	2.2	2.0	1.15	18	3.0	3.0	0.84	0.8	36.36%
	F15. Correct level of teaching received	15	3.0	3.0	0.85	18	3.8	4.0	0.71	0.8	27.78%
	F16. Adequate attention received in tutorials	15	3.8	4.0	0.68	18	3.7	4.0	0.84	-0.1	-3.51%
	F17. Adequate learning assessment	15	3.3	3.0	1.05	18	3.8	4.0	0.88	0.4	13.33%
Satisfaction (S)											
Overall satisfaction	S1. Satisfied with the level of knowledge acquired	15	3.3	3.0	1.03	18	3.8	4.0	0.88	0.5	15.65%
	S2. Overall, you are satisfied with the master's degree	15	3.4	4.0	1.06	18	3.6	4.0	0.86	0.2	4.58%
	S3. I would recommend this master to other students	15	3.0	3.0	1.36	18	3.6	4.0	0.85	0.6	20.37%

Table 4. Academic Degree, Gender, and Origin to Access the MUBF

By gender

Group	Men	Women	Total
(1) Previous	23	19	42
	54.8	45.2	100.0
(2) Current	29	24	53
	54.7	45.3	100.0
Total	52	43	95
	54.7	45.3	100.0

Pearson Chi2 = 0 p = 1 Cramer's V = .00044

By academic degree

Group	Business Management	Economics	Other	Total
(1) Previous	23	15	4	42
	54.8	35.7	9.5	100.0
(2) Current	31	16	6	53
	58.5	30.2	11.3	100.0
Total	54	31	10	95
	56.8	32.6	10.5	100.0

Pearson Chi2 = 0.3484 p = .8401 Cramer's V = .0605

By origin

Group	Galicia	International	Rest of Spain	UDC	Total
(1) Previous	5	10	1	26	42
	11.9	23.8	2.4	61.9	100.0
(2) Current	12	9	3	29	53
	22.6	17.0	5.7	54.7	100.0
Total	17	19	4	55	95
	17.9	20.0	4.3	57.9	100.0

Pearson Chi2 = 2.8633 p = .4132 Cramer's V = .1736

In terms of gender, the degree maintained the proportion of men and women without variations. According to the admission data, male students are more both before and after professional accreditation, with a similar percentage (54.8% and 54.7%, respectively). Pearson's chi-square test and Cramer's V reflect independence between the variables.

However, unlike the previous characteristics, the origin of students does vary after the professional certification: most students came from Universidade da Coruña in both periods, but the percentage has decreased from 61.9% in period (1) to 54.7% in period (2). In contrast, the relative weight of students from other Spanish regions has grown after the accreditations, from 2.4% to 5.7%, and the largest increase comes from students from other Galician universities, which doubled their weight from 11.9% to 22.6%. This result would confirm the greater appeal of the MUBF following its positioning as the first master's degree in Spain to obtain both professional certifications by CNMV and BdE. Here, although the chi-squared test does not reject the null hypothesis of independence ($p > .1$), Cramer's V (.1736) is above .1, hence reflecting some association between Group and Origin.

Professional certification and motivation factors of MUBF enrolment. Focusing now on the 33 students who completed the surveys, we observe that before the MUBF obtained both certifications, students' motivations for enrolling were their interest in finance (M2), followed by the internship program (M4) and the proximity of the university to their home (M6) – see Figure 1. In 2018/19, the MUBF had already obtained the CNMV certification, but it does not yet appear as a motivation (see values of M1 ranging from -47% to +40% in the previous period). Likewise, the opinions of students who graduated in previous years (M5) was neither a relevant motivation.

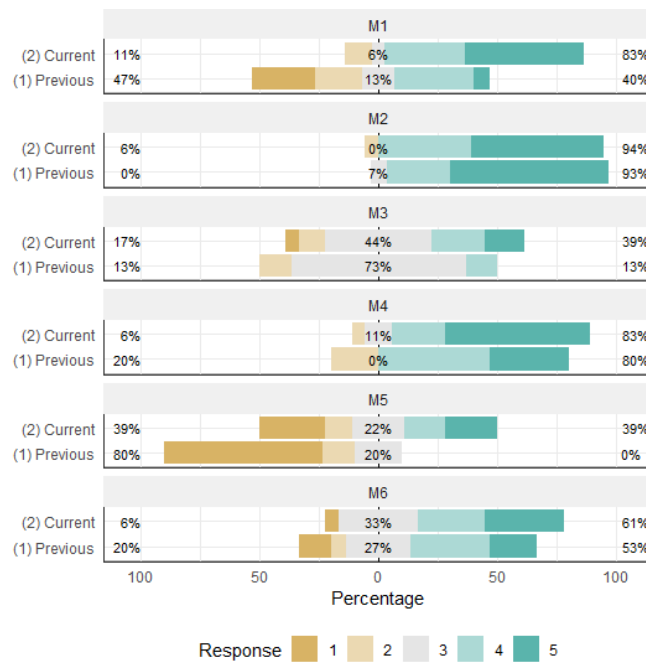


Figure 1. Motivation Factors to Enrol in MUBF Before/After the Certification

After the introduction of the certification, the survey results show considerable variations from previous years. The professional accreditation (M1) becomes a key motivation – responses now ranging from -11% to +80%–, along with interest in finance (M2) and the internship program (M4). Both the Wilcoxon and Linear-by-Linear tests (see the significant values in Table 5) show that the increases in M1 and M5 from before professional accreditation to after professional accreditation are significant.

Table 5. Motivation Factors of MUBF Enrolment Before/After the Certification

Variable	Previous	All periods	Current	Wilk Test	<i>p</i>	L-b-L test	<i>p</i>
M1	2.7	3.5	4.2	51.50	.0018**	-3.0555	.0022**
M2	4.6	4.5	4.4	149.00	.5707	0.6245	.5323
M3	3.0	3.2	3.3	107.00	.2667	-1.0807	.2798
M4	3.9	4.2	4.4	99.00	.1633	-1.2849	.1988
M5	1.5	2.2	2.9	64.00	.0069**	-2.7901	.0052**
M6	3.4	3.6	3.8	110.50	.3667	-1.0379	.2993

Significant values are indicated with .01 '***' .05 '**' .1 '*'

Professional certification and fulfilment of expectations. The degree of fulfilment of expectations is analysed in terms of the services provided during the admission process, the classes and syllabus, the employability expectations following the master thesis and the internship program, and diverse qualities of the teaching staff – see Figure 2.

The results show that students are satisfied with the admission processes and the overall organization of the master. Fulfilment of expectations improved overall in period (2), especially on information about the enrolment process (F1) – which shows statistical significance according to the tests in Table 6 – followed by the admission process (F3) and information on the program and calendars (F4). In terms of contents (subjects), similar satisfaction levels are observed in both periods. Students are mostly satisfied with the adequacy of the subjects offered by the teaching program (F6). On the contrary, the overlapping of contents between subjects (F8) is a factor that both subsamples consider unsatisfactory, although it improved in period (2).

Employability expectations are also quite similar in both periods. Thus, the adequacy of skills to access the labour market (F9), the master's thesis (F10) and its guidance by the tutors (F11) were satisfactory in both periods. However, opinions on the adequacy of the internship program (F12) show polarized results. The most relevant improvement here comes from (F13), showing that students found the internship program better oriented to help them access the labour market after the MUBF obtained professional accreditation. However, the increase from 3.1 to 3.8 is not significant due to variability and the small number of observations available.

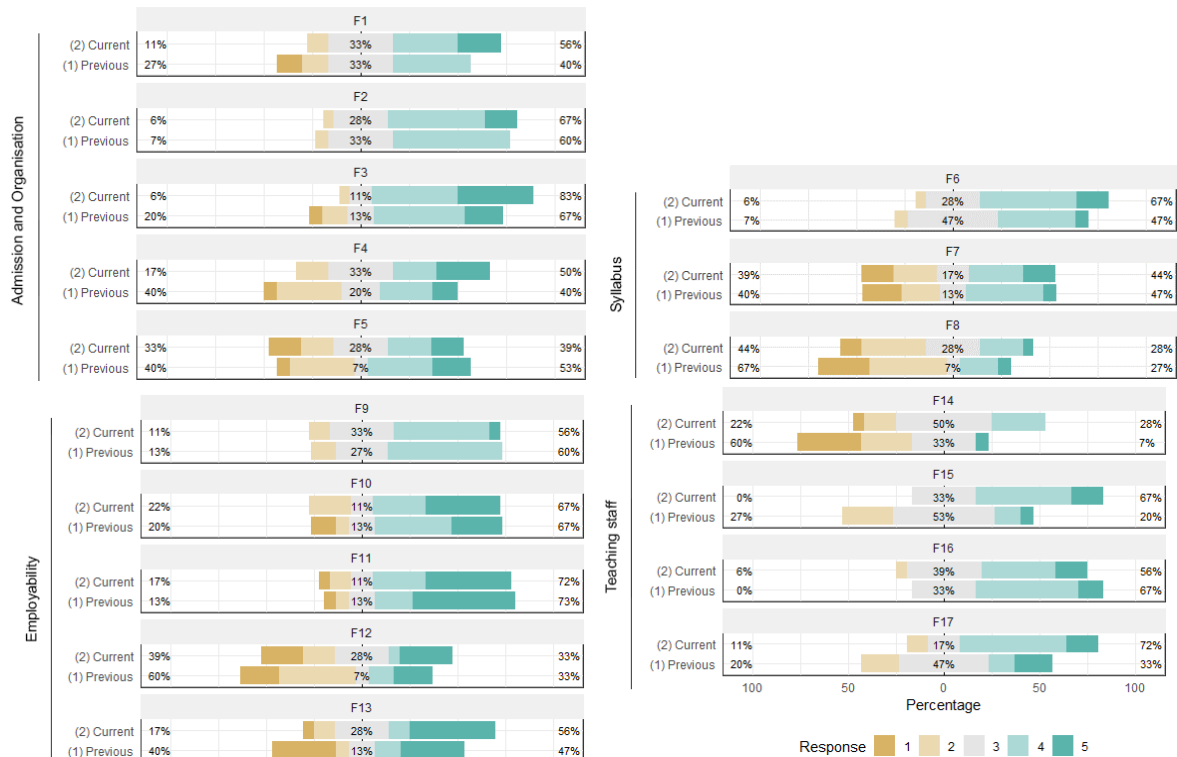


Figure 2. Fulfilment of Expectations of MUBF Before/After Professional Certification

Table 6. Fulfilment of Expectations of MUBF Before/After Professional Certification

Variable	Previous	All periods	Current	Wilk Test	p	L-b-L test	p
F1	3.0	3.4	3.7	93.0	.1161	-1.8070	.0707
F2	3.5	3.7	3.8	112.5	.3767	-0.9500	.3421
F3	3.6	3.9	4.2	97.5	.1530	-1.5559	.1197
F4	3.1	3.4	3.6	100.5	.2054	-1.3336	.1823
F5	3.3	3.2	3.1	147.0	.6701	0.4554	.6488
F6	3.5	3.7	3.8	104.5	.2413	-1.1360	.2559
F7	2.9	3.0	3.1	128.0	.8088	-0.2596	.7951
F8	2.4	2.6	2.8	107.0	.3028	-0.9024	.3668
F9	3.5	3.5	3.5	134.5	1.0000	-0.1262	.8995
F10	3.6	3.7	3.8	121.0	.6111	-0.5310	.5954
F11	4.1	4.0	3.9	145.0	.7127	0.2796	.7797
F12	2.7	2.9	3.0	120.0	.5907	-0.5102	.6099
F13	3.1	3.5	3.8	103.5	.2430	-1.3183	.1874
F14	2.2	2.6	3.0	73.0	.0194*	-2.1684	.0301*
F15	3.0	3.4	3.8	61.5	.0049**	-2.742	.0061**
F16	3.8	3.8	3.7	147.5	.6390	0.5009	.6164
F17	3.3	3.6	3.8	97.0	.1565	-1.3117	.1896

The greatest qualitative improvement is observed in terms of the quality of the teaching staff. Expectations were met in both periods in terms of the quality of the office hours provided (F16) and adequate learning assessment (F17). In period (1), students negatively noted the lack of coordination among the teaching staff (F14), but it improved significantly ($p < .05$) in period (2). The perceived quality of teaching provided by the staff (F15) improved likewise, with $p < .01$ according to both tests in Table 6.

Professional certification and global satisfaction. Student satisfaction is measured with three statements related to the knowledge acquired (S1), overall satisfaction after completion of the course (S2) and whether they would consider recommending the MUBF to other peers (S3) – see Figure 3.

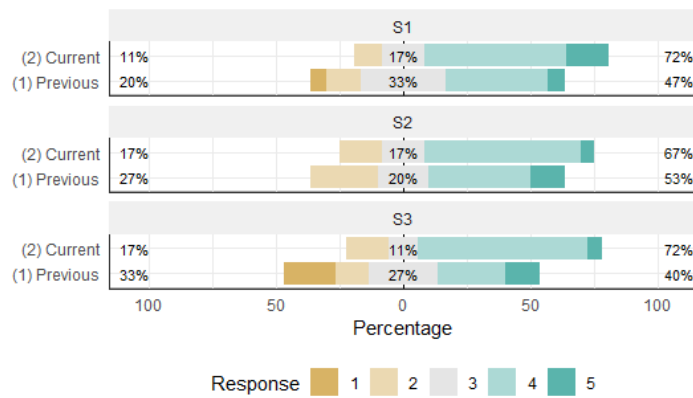


Figure 3. Satisfaction of MUBF Students Before/After Professional Certification

Table 7. Satisfaction of MUBF Students Before/After Professional Certification

Variable	Previous	All periods	Current	Wilk-test	p	L-b-L test	p
S1	3.3	3.5	3.8	96.0	.1354	-1.5054	.1322
S2	3.4	3.5	3.6	123.5	.6658	-0.4736	.6358
S3	3.0	3.3	3.6	98	.1585	-1.5380	.1240

Significant values are indicated with .01 '***' .05 '**' .1 '*'

Again, most indicators show clear improvements, but the sample size prevent us to obtain statistically sound results. After the MUBF obtained the professional accreditations, positive evaluations are in the range of 67% to 72%, compared to the 40% to 53% in the previous period, and the improvements in average results are substantial for indicators on satisfaction with the knowledge acquired (S1, 0.5 points) and, especially, recommending the MSc to other colleagues (S3, 0.6 points). However, both the Wilcoxon and Linear-by-Linear tests show the results lack of statistical significance – see Table 7.

Explanatory factors of student satisfaction: The last section aims to provide an interpretation of the drivers of the increased student satisfaction. As potential explanatory factors we have considered all the indicators on the fulfilment of expectations – F1 to F17, shown in Table 3 – grouped by categories. Notice that none of these factors includes the professional accreditations as motivator to apply for the MUBF (M1) – which is the main target of this research. The reason for this is that M1, as any of the other motivational factors, is based on previous expectations. However, if the professional accreditations validate the quality of the MSc, then any improvement in student satisfaction after the completion of the master’s degree should come from its perceived quality – which we measure with the Fs variables.

For each factor, we obtain the student’s average response to all variables in that category. Then, we test the null hypothesis of independence between the four fulfilment factors and the three satisfaction variables, according to the asymptotic linear by linear association test and Cramer’s V coefficient – see Table 8. Higher Cramer’s V and significant p-values on L-b-L test indicate a strong association of expectations met and student satisfaction.

Table 8. Asymptotic Linear-by-Linear Test and Cramer’s V for Fulfilment of Expectations and Student Satisfaction

Asymptotic linear-by-linear test

Factor	S1 test	P	S2 test	p	S3 test	p
Admiss & organiz (F1:F5)	2.1188	.0341 *	2.8414	.0044 **	3.4417	.0005 **
Syllabus (F6:F8)	1.5333	.1252	1.3918	.1640	1.7989	.0720 .
Employability (F9:F13)	2.7603	.0057 **	3.2658	.0010 **	3.0090	.0026 **
Teaching staff (F14:F17)	3.7010	.0002 **	3.3508	.0008 **	3.8033	.0001 **

Significant values are indicated with .01 '***' .05 '**' .1 '*'

Cramer's V

Factor	S1	S2	S3
Admiss & organiz (F1:F5)	.568	.649	.611
Syllabus (F6:F8)	.556	.582	.612
Employability (F9:F13)	.729	.639	.704
Teaching staff (F14:F17)	.750	.619	.696

The results show clear evidence of a positive association between student satisfaction and the fulfilment of expectations in the topics analysed – mostly, in terms of employability and the quality of the teaching staff. The asymptotic linear-by-linear test shows statistical evidence at $p < .01$ for employability and the teaching staff with all satisfaction measures, and for admission and organisation with overall satisfaction (S2) and recommending the MSc to other students (S3). On its part, all Cramer's V are above .5 – the minimum considered large enough (Cohen, 1988) for rows and columns of any size. All measures provide significant association, with employability and the quality of the teaching staff showing the highest significance with satisfaction with knowledge acquired (S1) and recommending the MSc to other students (S3). In an undisclosed analysis we performed similar tests to the individual F variables, and most of them show significant association with the satisfaction measures (S). The strongest associations are observed with the quality of the teaching staff (F15 and F17 in particular). Moreover, students' perception about subject contents (F6) is clearly associated with all satisfaction variables, but the poorer performance in terms of workload (F7) and overlap (F8) is responsible for the weaker evidence of syllabus at factor level.

Discussion

The results confirm an improvement in most indicators between the period before and after the MUBF was granted professional accreditation. The first set of hypotheses concerned the impact of accreditation on the number and profile of students enrolled. Admission data shows a substantial increase in applicants and enrolled students (averages from 62 and 20 to 73 and 28, respectively). This would confirm hypothesis H1a, with significant results particularly for enrolment data.

Regarding student profile, hypothesis H1b suggesting a more diverse geographical origin of students would only be validated in terms of the increased share of students coming from other Galician universities, which doubled their weight after the accreditation, while no changes are observed in terms of academic background (rejecting H1c). The greater interest of students observed in terms of number and diverse origin would be in line with extant literature suggesting that faculty who are certified before completing their terminal degree find employability a motivation for obtaining a professional certification (Bergner et al., 2022), and that the credibility, recognition and future usefulness of the professional certificate influence positively on the candidate's likelihood of applying for being certified (Ruiz-Molina et al., 2019). Yet, to the best of our knowledge, ours is the first study to compare these results before and after certification.

The above is confirmed by the key hypothesis to our research, H2, which focuses on the granting of the professional accreditations to the MUBF as a signalling factor of its quality. We obtain significant evidence that the professional accreditation has become a key motivation for students to enrol the master. This is in line with previous empirical evidence that utilitarianism is the dominant driver of the choice of higher education (Maringe, 2006), and that professional certifications are a helpful input to shaping and maintaining a curriculum (Knapp et al., 2017). Other relevant factors are their interest in finance (M2) and the internship program offered (M4).

The third group of hypotheses focused on the fulfilment of expectations once the students enrolled in the master, including their perception on admission and coordination processes (H3a), quality of the course syllabus (H3b) and teaching staff (H3c), and employability expectations (H3d). There is evidence of clear improvement in many of the 17 indicators used after the master received accreditation, but with statistically significant evidence only for the information received during the enrolment process (which validates H3a) and two variables about the quality and coordination of the teaching staff (validating H3c). This suggests an avenue to explore the link between overall course satisfaction and employability outcomes, in the line of recent research by Brown et al. (2022) and Healy et al. (2022).

Overall student satisfaction with the MUBF increased after professional accreditation, particularly in terms of satisfaction with the knowledge acquired (0.5 points in a 1 to 5 Likert scale) and recommending the MSc to other students (0.6 points). However, hypothesis H4 is not validated since the improvements are not statistically significant.

Finally, the last set of hypotheses related the indicators of fulfilment of expectations to overall satisfaction with the master's degree. The results show clear evidence of a positive association between student satisfaction and the fulfilment of expectations in the topics analysed – validating all H5 hypotheses, and with the strongest association observed in terms of the quality of the teaching staff (H5c) and employability (H5d). We link these results to the increasing interest in the literature on employability recently (García-Alvarez et al., 2022; Jackson & Tomlison, 2022; Mahajan et al., 2022; Tomlison et al., 2022). Our results would validate the hypothesis that students view their

employability as a crucial issue in their postgraduate studies (Lumina Foundation, 2020; Petruzzello et al., 2022; Tomlinson, 2007;), as well as the importance of the student-instructor relationship (Gerhardt, 2016).

Conclusion

We analysed the impact of professional accreditation obtained by the MUBF on student perception of employability and satisfaction. By means of a survey to postgraduate students, we assessed the results before and after accreditation for three groups of variables: motivations for enrolling in the master, the degree of fulfilment of expectations on organisation, syllabus, teaching staff and employability, and overall student satisfaction.

The results confirm professional accreditation as a motivational factor for students to choose this postgraduate course. Some statistically significant results include the accreditation being a key motivation to enrol the master, a more diverse geographical origin of students after professional accreditation, and the higher quality and better coordination of the teaching staff. However, the observed improvements on overall satisfaction after the completion of the course (about 0.5 points in a 1 to 5 Likert scale) lack of statistical significance.

Recommendations

The study highlights the relevance of professional accreditations by postgraduate courses not only as a motivational factor for students to enrol, but also as a signalling factor for future employability. The following are some proposals for universities to improve post-graduate degrees.

First, the universities should be aware of students' perceptions and satisfaction about professional certification in different industries, as these are a key motivation for students to enrol a post-graduate degree. Indeed, promoting the professional accreditation of the degree during the enrolment process may lead to obtain a larger number and a more diverse geographical origin of students. Educational authorities should be aware that professional accreditations contribute to the legitimacy of the different post-graduate degrees offered, as they also operate as complementary tools in their quality assurance systems. However, the link between overall course satisfaction and employability outcomes should be explored.

Finally, future research might focus on understanding the motivational factors that explain why students choose these professional certifications, something that would be of interest to professional associations and employers (Cumberland et al., 2018). Exploring these issues in the context of online education, and the impact of covid pandemic (Dougherty et al., 2022) might be as well recommendations for future researchers.

Limitations

The study has some limitations that should be highlighted. Our research consists of a case study where differences-in-differences are not applied: in such a case, information would be needed from one or more master's degrees that had not received similar accreditations acting as a control group. Though it can be argued that any improvements in satisfaction are positive information, without the context of a control group no results can be extrapolated (especially, the higher figures observed in applications and enrolments at the population level). Moreover, data are from responses of a small sample of students from the total MUBF student population. This has not only led to few statistically significant results, but also the voluntariness of the survey can generate biases. Furthermore, many confounding effects may intervene between the evidence that accreditation has been a key motivation for enrolling the master and linking the fulfilment of expectations to overall student satisfaction. Consequently, the results of our study should be seen as exploratory. The aim is to contribute to a neglected aspect in the literature (the lack of studies on student satisfaction with the professional accreditation obtained in higher education), but more studies are needed to validate the positive impact we observe in this case of study.

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Authorship Contribution Statement:

All authors have contributed in equal parts to the elaboration of this research. Peón: Concept, design, data acquisition and interpretation, drafting, supervision, final approval. Martínez-Filgueira: Data acquisition, statistical analysis. Rodríguez-Gómez: Data analysis, drafting manuscript, technical support.

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