

An instrument to evaluate the impact of the higher education accreditation system: Validation through exploratory factor analysis

Instrumento para valorar el impacto del sistema de acreditación en educación superior: validación mediante análisis factorial exploratorio

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Abstract:

Introduction: interest in evaluating the improvements resulting from external evaluation processes in higher education has revealed that there is a lack of objective instruments available for this purpose. Consequently, this study presents the design and validation of an instrument for evaluating the improvement effect of the accreditation system of Spanish university degrees. Methodology: a 108-item questionnaire was prepared and was applied to a sample of 1964 subjects from different university groups (students, teachers, management, etc.). Its reliability and construct va-

lidity were analysed using exploratory factor analysis (EFA). Results: analysis of the instrument's technical characteristics showed high reliability, both overall and at the dimensional level, with Cronbach's α and McDonald's ω being greater than .95. The EFA identified eight factors that contained the 105 items finally included, explaining 77.37% of the variance in R. Discussion and conclusions: these results all indicate that the instrument designed is reliable and valid, with a solid multidimensional structure that makes it possible to evaluate the impact of the accreditation system on various aspects of Spanish university degrees.

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Keywords: measurement instrument, evaluation of impact, accreditation, higher education, exploratory factor analysis.

Resumen:

Introducción: el interés por evaluar los efectos de mejora derivados de los procesos de evaluación externa en educación superior ha puesto de manifiesto la escasez de instrumentos objetivos disponibles para este fin. Así, este trabajo presenta el diseño y la validación de un instrumento que permite valorar el impacto de mejora del sistema de acreditación de los grados universitarios españoles. Metodología: se elaboró un cuestionario de 108 ítems que fue aplicado a una muestra de 1964 sujetos de diferentes audiencias universitarias (estudiantes, profesores, equipos directivos, etc.). Se analizó su fiabilidad y validez

de constructo a través de un análisis factorial exploratorio (AFE). Resultados: el análisis de las características técnicas efectuado mostró la elevada fiabilidad del instrumento, tanto a nivel global como dimensional, con coeficientes α de Cronbach y ω de McDonald superiores a .95. El AFE identificó ocho factores que agrupaban los 105 reactivos finalmente incluidos, lo que explicó el 77.37% de la varianza de R. Discusión y conclusiones: todos estos resultados indican que el instrumento diseñado es una herramienta fiable y válida, con una sólida estructura multidimensional que permite evaluar el impacto del sistema de acreditación sobre diversos ámbitos de los grados universitarios españoles.

Descriptor: instrumento de medida, evaluación del impacto, acreditación, educación superior, análisis factorial exploratorio.

1. Introduction

The Sorbonne (1998) and Bologna (1999) declarations laid the foundations for the European Higher Education Area (EHEA), the origins of which are in the *Magna Charta Universitatum*, which was signed in 1988, in Bologna, by the rectors of various European universities. One of the principal objectives of this new way of understanding higher education in Europe was to adopt an education system that would make it possible to align qualifications between countries, thus favouring employability and the mobility of professionals and students, also increasing the competitiveness and international recognition of our higher education compared

with that of the rest of the world (Ibáñez-López et al., 2020).

This “educational globalisation” required monitoring that would ensure ongoing alignment with the change to which the affiliated countries (49 at present) had committed. So, Matarranz (2021) states that, following the meeting of ministers in Prague in 2001, some operational aspects were added to the six initial objectives of the Bologna Process, notably the need to develop quality assurance systems and certification and accreditation mechanisms. In this context, the European Quality Assurance Register for Higher Education (EQAR) was established in Brus-

sels in 2008 with the aim of harmonising these mechanisms and offering guidance on them. The quality agencies of thirty different countries, which have committed to comply with the current *Standards and guidelines for quality assurance in the European Higher Education Area* (ENQA, 2015), are registered in it.

In this regard, and although implementation of the EHEA in Spain did not start until 2008 with the first bachelor's degree qualifications, the Agencia Nacional de la Calidad y la Acreditación (National Quality and Accreditation Agency, ANECA) was founded in 2002. It is one of the Spanish bodies that is a member of EQAR, along with nine other agencies from some of Spain's autonomous communities. Its central objective is "to promote and assure the quality of Spain's higher education system through processes of guidance, evaluation, certification and accreditation, contributing to the development of the European Higher Education Area" (Royal Decree 1112/2015, p. 6).

Since its foundation, ANECA's mandates have included monitoring whether the qualifications offered by Spanish higher education institutes (HEIs) comply with the European norm (something known as the *verification system*) and to do so it carries out the ensuing monitoring to ensure that the verified reports (official documents setting out the content of degree programmes) are complied with (*accreditation system*) through the ACREDITA programme launched in 2014 (Galindo, 2014). In this sense, the recent Organic

Law 2/2023, of 22 March, on the University System, states that:

The functions of accreditation and evaluation of university teachers, institutional accreditation, evaluation of university qualifications, monitoring of results and reporting in the university sphere, and any others attributed by the laws of the state and of the autonomous regions, correspond to the national quality evaluation and accreditation agency (ANECA) and to the evaluation agencies of the autonomous regions that are entered in the European Quality Assurance Register (EQAR). (p. 18)

The great importance placed on all of these quality assurance systems is illustrated by the fact that they have been the object of direct attention in the legislative changes that have taken place in Spain since they were first mentioned in 2001 at the Prague meeting. Although listing these changes goes beyond the objectives of this study, it is enough to note that the most recent update in this regard appears in Royal Decree 822/2021, in which chapter VII proposes procedurally reconsidering the verification, monitoring, and renewal of the accreditations of qualifications with the aim of simplifying the processes involved and reducing their level of bureaucracy.

In this way, and in the specific case of the accreditation process in Spanish HEIs, which is the main focus of this work, they are renewed every six to eight years depending on the number of credits in the degree, while master's qualifications are accredited every four years and doctoral ones, every six. In this sense, Vázquez (2015) and Díaz et al. (2019) affirm that this pe-

riodical monitoring has made it possible to achieve a double objective: establishing an institutional culture of quality and putting into practice the instruments and systems needed to be able to guarantee it.

Outside Spain, Ulker and Bakioglu (2018) found that external evaluations appear to contribute to improving institutional processes and practices (especially in institutions that have been operating for under 20 years), also indicating that the initial accreditation is more effective than the successive re-accreditations. Martínez-Iñiguez et al. (2020), however, obtained results that indicate that these evaluation processes essentially mean that HEIs accumulate evidence that enables them to comply with the quality indicators proposed by the external bodies, even if they doubt the effective impact they might have on the educational programmes.

This variety of results, as well as the great attention paid by governmental institutions in this respect, justify the need for further in-depth study of the effects of external evaluation processes in higher education (HE), which has inspired works that enable the identification of the scope perceived by the groups involved (Márquez & Zeballos, 2017; Torres-Salas et al., 2018; Parra et al., 2019; Ferreira et al., 2020; Martínez et al., 2022). Especially striking in this regard are the studies that find that accreditation systems are necessary and do contribute to improvements in qualifications, even though they are often seen as obligatory red-tape that can result in an excessive workload for the groups involved due to their complexity and high level of

bureaucracy (Martínez et al., 2017; Monarca et al., 2018; Ibáñez-López et al., 2020).

In any case, addressing the evaluation of their impact is an important aspect for improving organisations and intervention processes, and there are few studies that do so in the literature. In addition, in some cases, the impact in the sense of immediate results is alluded to, although our definition of this concept can be found in Fernández-Díaz (2013), as will be explained below.

In this context, the criteria that make it possible to identify areas in which accreditation systems should have a positive impact are set out in the revised version of the *European standards and guidelines for quality assurance in the European higher education area* (ESG, approved in Yerevan in May 2015) and in their Spanish implementation (included in the Resolution of 7 March 2018, of the General Secretariat for Universities, currently substituted by the Resolution of 3 March 2022). So, in the design of the instrument presented here, we used an integral focus based on identifying the major dimensions in which the impact is manifested and on analysing the structure, functioning, and organisation of university centres (Cetzal et al., 2012; Lorenzo, 2011; Thurler & Maulini, 2010; Trujillo, 2007; Rodríguez, 2006). The subdimensions that encompass the content to evaluate are identified on the basis of these broad dimensions, as are finally the indicators and the corresponding items that make up the scale.

A detailed bibliographic analysis has shown that there are very few tools for

evaluating the impact on the matter that concerns us here, with exceptions such as those recorded by Fernández-Díaz et al. (2016), Egido et al. (2016), or Fernández-Cruz et al. (2016). In any case, and based on the contributions proposed in the different studies analysed (Martínez-Zarzuelo et al., 2022; Rodríguez-Mantilla et al., 2021a; Rodríguez-Mantilla et al., 2021b; Fernández-Díaz et al., 2016; Egido Fernández et al., 2016; Fernández-Cruz et al., 2016; Fernández-Díaz, 2013; Cetzal et al., 2012; Lorenzo, 2011; Thurler & Maulini, 2010), the four large areas (and sub-areas) of impact included in our measurement instrument have been identified, and are described below:

- a) Organisation and management: the qualification accreditation systems should have an effect on the structuring, organisation, and management of the different actions that ensure the appropriate functioning of the institution. This area might encompass aspects relating to the organisation and management of classrooms and spaces, ICT resources and services, teaching and research staff (TRS) and services and administration staff (SAS), processes for enrolment and recognition of modules, student support and guidance services (SSG), mobility and external internship programmes, the website, and internal communications.
- b) Planning: this area relates to the organisation of the educational practice implemented with regards to the appropriateness of the competences, the content and the structure of the qualifications in modules, subjects, and courses. Ultimately, following the syl-

labus and organisation of the teaching of the qualifications.

- c) Teaching-learning process: the accreditation should have an impact on the elements inherent to the teaching-learning process, that is to say, on the development of the teaching and of the educational activities provided in the centres and on their results. Specifically, this domain would encompass sub-areas related to the planning of teaching, its evaluation, and the didactic methodology and resources used.
- d) Quality management: finally, it is essential that any external evaluation considers aspects relating to the efficacy of the actions carried out in the quality office and in the internal quality assurance system (IQAS), such as: general functioning, evaluating the satisfaction of the people involved, external internships, mobility, labour integration, information systems, and managing complaints, claims and suggestions.

All of these aspects are in line with the dimensions supervised during the accreditation processes identified in the ENQA's ESG guidelines (2015) and, in part, with the recently published quality indicator scoreboard developed by the Smart-Qual (2022) project.

Given the obvious complexity of supervising all the aspects listed above, it is critical to establish whether the time and results invested in this process are directly reflected in improved HEIs (Sarasola et al., 2015); in other words, the potential improvement that external evaluation processes should

provide still needs verified evidence that prove it. Furthermore, bearing in mind that the quality of the information collected is fundamental in any process of evaluation in which measurement is a basic requirement, it is not only necessary to carry out studies that make it possible to establish whether the accreditation systems result in improved HE qualifications, but also to do so by using reliable and valid instruments designed for this purpose. Accordingly, the detailed analysis of empirical data that instruments like the one presented here make it possible to collect, can be used, among other things, to reflect on the strengths and weaknesses present in the different qualifications offered by HEIs and, thus, to have a direct impact on improving the quality of the training they provide. Ultimately, and to contribute to this process, the primary aim of this work is to present the design and validation of an instrument for measuring the impact of the implementation of the accreditation system on improvements in degree qualifications, from the point of view of all of the groups involved (management teams, coordinators, teachers, students, etc.), with this *impact* understood to be the changes that occur in the medium or long-term in the organisations and become consolidated as a consequence of concrete interventions (Fernández-Díaz, 2013), with a minimum period of three years being required for evaluation (Rodríguez-Mantilla et al., 2021a).

2. Method

2.1. Participants

The sample comprises 1964 subjects selected by non-probabilistic convenience

sampling. Consequently, there was a subject-to-item ratio of 18.18 (greater than the range of 5-10 recommended by Hair et al., 2014). The subjects who participated were from different university populations, with the prior requirement that they had worked or studied in the centre for at least four years (recommended by Rodríguez-Mantilla et al., 2021a). So, 5.2% of the participants were from the management and coordination teams of the collaborating institutions, 9.8% were teachers, 5.4% were members of SAS, and the remaining 79.5% were final-year bachelor's degree students.

A total of 13 publicly-owned (83.8%) and privately-owned (16.2%) Spanish universities from the Region of Valencia (13.3%), from the Region of Madrid (64%), and from Castilla y León (22.8%) were involved. The distribution by qualifications shows that 54.6% of the sample were from the Primary Teacher Training degree, 5.1% from Computer Engineering, 17.4% from Nursing, 17.7% from Biology, and 5.1% from Philosophy (qualifications chosen to represent the five major areas of knowledge: social and legal sciences, engineering, health sciences, and arts and humanities). 31% of the study sample were male and the remaining 69%, female.

2.2. Design of the Instrument

The questionnaire presented here was designed to find out the impact of implementing the accreditation system on improvements to qualifications and the training of university students. To configure the system of dimensions and subdimensions that underpin it, a solid national and international theoretical foundation was used as a basis (the references are given in the

introduction to the present work), thus contributing to its content validity. Table 1 and the Annex to this work show the final dimensions, subdimensions and items.

The items were drawn up based on these dimensions and subdimensions (following Rodríguez-Mantilla et al., 2021a). The instrument initially comprised a total of 108 items but after the analysis of

the factorial solutions obtained, three were eliminated. These are marked with an asterisk in the Annex. Each item was designed for evaluation on a five-item Likert-type scale, with (0) corresponding to “No improvement” and (4) to “Much improved”. A series of sociodemographic variables about the subjects surveyed were also collected (university, faculty, degree, ownership of the centre, age, and gender).

TABLE 1. Structure and composition of the questionnaire.

DIMENSIONS	SUBDIMENSIONS	ITEMS	N Total
1. ORGANIZATION AND MANAGEMENT	1.1. Classrooms and special spaces	1-2	46
	1.2. ICT resources and services	3-10	
	1.3. TRS and SAS	11-15	
	1.4. Enrolment and module recognition processes	16-19	
	1.5. SSG	20-23	
	1.6. Mobility and external internship programmes	24-31	
	1.7. Website	32-42	
	1.8. Internal communication	43-46	
2. PLANNING	2.1. Syllabus structure	47-49	9
	2.2. Organisation of teaching	50-55	
3. TEACHING-LEARNING PROCESS	3.1. Planning of teaching	56-63	20
	3.2. Evaluation	64-68	
	3.3. Didactic methodology	69-72	
	3.4. Teaching resources	73-75	
4. QUALITY MANAGEMENT	4.1. Quality office	76-77	33
	4.2. IQAS	78-108	

2.3. Process

The instrument was self-administered and was completed on paper and online. In the case of students only, the questionnaire was administered in person in the classroom

supervised by a member of the research team who provided the necessary instructions and resolved any doubts. To gain access to the participating subjects, we initially made contact by email with the people in charge of



quality in the faculties and universities selected as potential collaborators. This email requested their cooperation, informed them of the objectives of the project, and assured the confidentiality and anonymity of the data collected. In later meetings, after they had agreed to participate, the sessions in which the instrument would be administered to the students were organised and the links to access the digital format of the instrument were provided for the other groups of interest.

2.4. Data analysis

The responses to the instrument were coded and analysed using the IBM SPSS (version 25) software package. The reliability of the instrument was initially studied by calculating Cronbach's alpha (α) and McDonald's omega (ω), which reflect the internal consistency of the scale, both for the items as a whole and for each of their dimensions. To analyse the construct validity, we used exploratory factor analysis (EFA), a data reduction technique that enables the identification of the internal structure of the evaluation instrument and the nature of the constituent factors (Hair et al., 2014).

3. Results

3.1. Reliability

Reliability is a fundamental element of the quality of any measurement instrument, as it guarantees the stability and precision of its scores. As Table 2 shows, the reliability coefficients for the scores in the test as a whole and those referring to each dimension taken individually, show highly satisfactory values (Cronbach's α and McDonald's ω above .95), indicating the high internal consistency of the items in the questionnaire developed.

Similarly, the corrected homogeneity indexes of the items (ζ_{HI}) range from .854 for item 72 ("The accreditation systems have contributed to teachers adapting the activities to the characteristics of the group of students") to .495 for item 40 ("The accreditation systems have contributed to improving online access to information about the composition of the unit responsible for the quality assurance system"), indicating that the discriminating power of the items is very good.

TABLE 2. Reliability coefficients of the measurement instrument (108 initial items and 105 final items).

Dimensions	108 initial items		105 final items	
	McDonald's ω	Cronbach's α	McDonald's ω	Cronbach's α
Dimension 1. Organisation and management	.983	.983	.982	.982
Dimension 2. Planning	.956	.955	.956	.955
Dimension 3. Teaching-learning process	.956	.955	.957	.957
Dimension 4. Quality management	.980	.980	.980	.980
INSTRUMENT (OVERALL)	.993	.993	.992	.992

However, as noted below, the results of the communalities showed the advisability of eliminating three items (as they had values below .40), and so the final instrument comprised 105 items. Table 2 shows the results for the reliability of the final instrument (also satisfactory).

3.2. Construct validity

We used exploratory factor analysis (EFA) to analyse the construct validity. Use of this multivariate technique is justified if the existing correlations between the different items of the instrument are acceptable. On this occasion, the three statistics used to analyse the significance level of the correlation matrix (determinant of $R = 9.452E-105$, $KMO = .971$, and the Bartlett χ^2 sphericity test = 461605.019, $p < .001$) reflected high indices of interrelation between the items on the questionnaire, making it possible to reject the null hypothesis, and justifying their reduction and the search for latent factors that group them (López-Aguado & Gutiérrez-Provecho, 2019).

We used the unweighted least squares (ULS) method for factor extraction, with the eigenvalue criterion > 1 . We chose this method as it does not require normality of variables and it is appropriate for vari-

ables whose measurement level is “quasi-interval” (Weaver, 2015).

A total of eight factors were extracted, explaining 77.37% of the variance observed. The items displayed communalities between .425 and .999, except for items 45 (“The accreditation systems have improved the spread of information, internally, about complementary training for students on the qualification”), 46 (“The accreditation systems have improved the spread of information, internally, about job offers for students”), and 73 (“The accreditation systems have contributed to the use of technological resources by students in the completion of the classes”), which had values below .40, and so it was decided to eliminate them after evaluating the factorial solutions found with and without including them.

This initial solution underwent *promax* oblique rotation (which assumes a correlation between the resulting factors), with factor loadings of below .30 being rejected (Izquierdo et al., 2014). Table 3 shows the rotated factor matrix obtained after eliminating the three items with low communality, so that the remaining items are included in the component in which they achieved a higher factor loading.

TABLE 3. Configuration matrix for rotated factors (promax).

ITEMS	COMPONENTS							
	F1	F2	F3	F4	F5	F6	F7	F8
11	0.767							
12	0.771							
13	0.416							





14	0.710
15	0.690
27	0.908
40	0.958
41	0.935
42	0.944
43	0.680
44	0.829
47	0.813
48	0.789
49	0.836
76	1.025
77	1.031
78	1.026
79	0.888
80	0.995
81	0.988
82	0.884
83	1.009
85	0.968
88	1.001
89	0.967
90	0.974
91	0.879
92	0.966
93	0.990
94	0.969
95	0.587
96	1.026
97	1.036
98	1.040
99	1.039

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100	0.993						
101	1.004						
102	0.854						
103	0.950						
104	0.995						
105	1.002						
106	1.017						
107	1.011						
108	0.998						
56		0.658					
57		0.693					
58		0.739					
59		0.731					
60		0.749					
61		0.701					
62		0.688					
63		0.728					
64		0.788					
65		0.800					
66		0.699					
67		0.845					
68		0.838					
69		0.817					
70		0.595					
71		0.767					
72		0.785					
74		0.671					
75		0.641					
26			0.942				
29			0.951				
30			1.097				
31			1.121				
50			0.618				

51			0.608				
52			0.616				
53			0.813				
54			0.907				
55			0.734				
1				0.505			
2				0.473			
3				0.678			
4				0.668			
5				0.813			
6				0.791			
7				0.635			
8				0.597			
9				0.348			
10				0.462			
32					0.749		
33					0.745		
34					0.820		
35					0.722		
36					0.725		
37					0.623		
38					0.483		
39					0.426		
84						0.721	
86						0.849	
87						0.916	
16							0.599
17							0.587
18							0.886
19							0.833
20							0.408
21							0.482
22							0.490

23								0.496
24								0.814
25								0.865
28								0.735

The content of the items (described in the Annex) associated with each of the components shown in Table 3 made it possible to define the factors on which the impact of the accreditation systems is evaluated with this instrument:

1. Factor 1. Quality management, planning the structure of the syllabus, and organisation and management of SAS and TRS: this important factor comprising forty-four items explains 37.55% of the variance and includes all of the aspects relating to the improvement in the functioning of the quality office, the IQAS of the institutions and the evaluation of the learning process of students and teachers; this was combined with the impact on the information on the website regarding questions relating to quality, coherence, sequencing, and following of the syllabuses of the different qualifications, and, finally, the impact on the professional profiles, mobility programmes, and training activities planned for TRS and SAS.
2. Factor 2. Teaching-learning process (T-L): this factor reflects the impact of the accreditation systems for qualifications on the improvement in the preparation of module hand-

- books, evaluation, methodology, and teaching resources directly involved in the academic activities provided in the different degrees. This explains approximately 23% of the variance and retains nineteen of its twenty initial items after the elimination of number 73.
3. Factor 3. Organisation and planning of the external internships and the organisation of teaching: a component linked to the management of students' external internship and the institutional coordination and planning procedures for the teaching of the qualifications. It explains 7% of the variance based on the grouping of the ten items that comprise it.
4. Factor 4. Organisation and management of classrooms, special spaces, ICT resources and services: this captures the perceived improvement in the suitability, availability, and quality of the facilities and services needed for the development of the teaching-learning process, explaining 3% of the variability found. This includes the first ten items from the questionnaire.
5. Factor 5. Organisation and management of the website: this groups

together nine items relating to improvement in access to the information on the website on aspects of relevance for students, explaining 2.44% of the variance.

6. Factor 6. Management of the quality of the teaching work of the teachers: a component relating to the procedures underpinning the system for evaluating student satisfaction with teacher performance and with the training activities designed in response to the results of it. It is responsible for 1.93% of the variability observed and includes three items.
7. Factor 7. Organisation and management of the enrolment and module recognition processes: structured around the items that evaluate how accreditation improves this important subdimension. It is responsible for explaining 1.35% of the variance of the data. This retains the group of four items considered in its original subdimension.
8. Factor 8. Organisation and management of mobility programmes and the student support and guidance service: this includes the items relating to the improvement of the SSG and of the mobility programmes aimed at students. This explains 1.16% of the remaining variance, based on the association of seven items.

According to this, the factorial solution obtained coherently groups the sixteen sub-

dimensions proposed in the initial model into eight factors (a solution that is also obtained with an oblimin rotation, providing great robustness to the model). So, while the dimensions relating to organisation and management (dimension 1) and planning (dimension 2) maintain many of their initial subdimensions, those referring to the teaching-learning process (dimension 3) and quality management (dimension 4) are defined as major components in themselves.

4. Discussion and conclusions

This work has presented the design and psychometric properties of an instrument for evaluating the impact of the accreditation systems, developed with the aim of collecting the evaluations by the different groups involved of the impact of the improvements resulting from the implementation of the accreditation system in degree qualifications in Spanish HEIs. It should be noted that, in this work (given its characteristics), the sample size achieved is one of the key elements that enable this analysis (Hair et al., 2014).

The review of recent literature has revealed the small number of studies relating to the analysis of the impact of this system in Spain, considerably fewer than in Latin America and other international contexts (Guzmán-Puentes & Guevara-Ramírez, 2022; Martínez-Zarzuelo et al., 2022; Rodríguez-Mantilla, 2021a & 2021b; Fernández-Díaz et al., 2016; Fernández-Cruz et al., 2016). Moreover, even fewer studies use quantitative measurement instruments or centre on showing the design and validation of these tools (Martínez-

Iñiguez & Tobón, 2019). This justifies the interest in developing a proposal like the one presented here enables progress in both aspects.

This situation underlines the need to encourage research that makes it possible to increase the body of evidence through the use of objective and rigorous procedures (Fernández-Díaz, 2013). This can help determine whether periodic accreditations of qualifications do actually result in improvements that can be consolidated, in regard to the functioning of the institutions and the quality of the education they offer.

Given the wide variety of aspects that could benefit from these improvements, the instrument's design started from theoretical analysis of the areas that national and international agencies that evaluate the quality of HEIs consider to be suitable for monitoring. This made it possible to propose an initial model based on four large dimensions in which the changes caused by the system of accreditation of the qualifications can be evaluated: organisation and management, planning, teaching-learning process, and quality management. This structure provided the basis for the formulation of the original instrument, which comprised 108 items organised in sixteen different subdimensions (see Annex).

The analysis of the technical characteristics of the instrument has shown its high reliability, both at a global level and in each of its dimensions. For its part, the exploratory factor analysis (EFA) showed that the instrument has a solid and robust multidimensional structure, making it pos-

sible to identify the components in which the items are grouped. These results can be interpreted as an indicator of the adequate construct validity of the measurement instrument and of the appropriateness of the proposed dimensional structure.

The sixteen subdimensions that made up the initial areas have been reduced and grouped into eight single components. So, dimension 2, relating to the teaching-learning process, stayed as a single factor, while quality management (all of dimension 4) combined divisions initially associated with planning (dimension 2) and organisation and management (dimension 1). The other subdimensions from these latter dimensions kept their initial composition, albeit as factors in themselves. We should also recall that the study of the communality of the items suggested that three of the original items from the instrument should be eliminated (items 45, 46, and 73).

Having reached this point, and in view of what is set out above, the complexity of the processes that contribute to the development and functioning of qualifications and university institutions is obvious. Therefore, while we can conclude that the present study provides a valid and reliable instrument for the scientific field that makes it possible to evaluate the impact of the accreditation systems on degree qualifications, we feel that it would be advisable to use it in combination with more qualitative techniques in order to triangulate the data collection and so be able to consider in more depth aspects that are difficult to evaluate using the survey procedure. Similarly, it would be especially interesting within this

field of knowledge to complement the evaluation of the impact of the implementation of accreditation systems on the bachelor's degree qualifications with the resulting improvement in postgraduate qualifications to obtain a more complete image of the true improvement that these systems produce in all of the qualifications linked to HEIs. Accordingly, the instrument designed in this project can largely serve as a model to be applied to the populations involved in master's and doctorate qualifications (with the appropriate modifications and adaptations of content to what is demanded in these educational levels), obtaining evaluations

of the impact of the improvements that the accreditation process causes in postgraduate qualifications, providing an overview of the perceived utility of this process, and allowing for an evidence-based review of it.

These new objectives are undoubtedly a real stimulus for continuing with this line of work in future, as considering them in more depth will make it possible to optimise the time and resources that the educational community uses in external evaluation processes for qualifications and, ultimately, to improve the quality of higher education in Spain.

ANNEX.

QUESTIONNAIRE TO EVALUATE THE IMPACT OF ACCREDITATION SYSTEMS ON DEGREE QUALIFICATIONS

1. ORGANISATION AND MANAGEMENT

How much, in your centre, have accreditation systems helped improve:

1.1. CLASSROOMS AND SPECIAL SPACES

- Item 1. The suitability of classrooms and special spaces for educational work.
 - Item 2. The possibility of using classrooms and special spaces for educational activities.
-

1.2. ICT RESOURCES AND SERVICES

- Item 3. The availability of ICT resources for educational activities.
 - Item 4. The updating of ICT resources for educational activities.
 - Item 5. The availability of the library service's facilities and resources.
 - Item 6. The quality of the library loan service.
 - Item 7. Advice on bibliographic searches and consulting databases.
 - Item 8. The system for booking classrooms and special spaces.
 - Item 9. The student administration service.
 - Item 10. The reprographics service.
-

1.3. TEACHING AND RESEARCH STAFF (TRS) AND SERVICES AND ADMINISTRATION STAFF (SAS)

- Item 11. The TRS increasing its participation in teaching innovation projects.
 - Item 12. The SAS staff levels being sufficient to be able to meet the different needs.
 - Item 13. The profile and professional experience of the SAS being appropriate for carrying out their activities.
 - Item 14. The accessibility of continuous training activities for TRS/SAS.
 - Item 15. Continuous training activities meeting the needs of the TRS/SAS.
-

1.4. ENROLMENT AND MODULE RECOGNITION PROCESSES

- Item 16. The accessibility of information and media in the student pre-registration process.
 - Item 17. The student enrolment system.
 - Item 18. Credit validation and recognition processes.
 - Item 19. Timescales for resolving credit validation and recognition processes.
-

1.5. STUDENT SUPPORT AND GUIDANCE SERVICE

- Item 20. The development of welcome systems for newly admitted students.
 - Item 21. The development of information activities for students who are already enrolled.
 - Item 22. The development of guidance and tutorial action plans for students.
 - Item 23. Coordination between the student support and guidance services.
-

1.6. MOBILITY AND EXTERNAL INTERNSHIP PROGRAMMES

- Item 24. Increasing agreements for study mobility programmes.
 - Item 25. Promotion of student mobility.
 - Item 26. Promotion of TRS mobility.
 - Item 27. Promotion of SAS mobility.
 - Item 28. Monitoring of mobility programmes for students and teachers.
 - Item 29. Carrying out increased monitoring of mobility programmes for students and teachers.
 - Item 30. Increased agreements with institutions to develop external internships.
 - Item 31. Increased monitoring of how students make the most of their external internships.
-

1.7. WEBSITE

How much the accreditation systems have improved online access to information about:

- Item 32. The description and rationale of the qualification.
- Item 33. The description of the entrance profile of students admitted to the qualification.
- Item 34. The admissions criteria for the degree.

Item 35. The documentation required for the process of student enrolment on the degree.

Item 36. The syllabus of the degree.

Item 37. The module handbooks for each module on the qualification.

Item 38. Credit recognition and transfer criteria.

Item 39. Requirements and processes for obtaining scholarships and bursaries.

Item 40. The composition of the unit responsible for the quality assurance system.

Item 41. The report of the qualification.

Item 42. The verification, accreditation, monitoring, and renewal reports for the qualification of the accreditation.

1.8. INTERNAL COMMUNICATION

How much accreditation systems have improved the internal distribution of information about:

Item 43. Training plans and courses for TRS/SAS.

Item 44. Mobility programmes for TRS/SAS.

Item 45(*). Complementary training for students on the qualification.

Item 46(*). Job offers for students.

2. PLANNING

2.1. SYLLABUS STRUCTURE

How much the accreditation systems have contributed to:

Item 47. The existence of a better alignment between the report of the qualification and the planning of the modules.

Item 48. The alignment and appropriateness of the distribution and sequencing of the modules throughout the qualification for the training of the students.

Item 49. The existence of more monitoring of academic planning (respecting schedules, evaluation criteria, hours of internship, etc.).

2.2. ORGANISATION OF TEACHING

How much the accreditation systems have helped improve the procedures that favour:

Item 50. Allocating spaces for the correct development of the modules.

Item 51. The adequacy of the profile of the teachers to the specific features of the modules they deliver.

Item 52. Coordination between teachers of modules in the same year.

Item 53. Coordination between teachers in theory and practical classes.

Item 54. Coordination between external internship tutors from the centre and those from the external centres.

Item 55. The system for setting schedules of duties and modules.

3. TEACHING-LEARNING PROCESS

The accreditation processes have contributed to:

3.1. PLANNING

Item 56. All of the module handbooks being reviewed every academic year.

Item 57. The learning outcomes being defined in the handbooks for all of the modules.

- Item 58. The competences of the modules being aligned with the training that the degree aims to provide.
 - Item 59. The content of the modules matching what is set out in the qualification report.
 - Item 60. The content of the modules being kept up to date.
 - Item 61. Teachers on different modules coordinating to avoid overlaps in content.
 - Item 62. Teachers who teach the same module coordinating to teach the same content.
 - Item 63. The bibliography of the module handbooks being up to date.
-

3.2. EVALUATION

- Item 64. The most appropriate evaluation systems being used to evaluate whether the students have achieved the learning outcomes.
 - Item 65. The proposed evaluation system making it possible to evaluate the acquisition of competences by the students.
 - Item 66. The students being clear about the evaluation criteria of the modules .
 - Item 67. Use of a wider variety of evaluation techniques (self-evaluation, co-evaluation, hetero-evaluation).
 - Item 68. Use of a wider variety of evaluation instruments (essay-question exams, tests, projects, etc.).
-

3.3. DIDACTIC METHODOLOGY

- Item 69. Use of a wider variety of didactic methodologies that foster active learning.
 - Item 70. Promotion of students' autonomy.
 - Item 71. Students being dealt with in an individual and personalised way in classes.
 - Item 72. Teachers adapting the activities to the characteristics of the group of students.
-

3.4. TEACHING RESOURCES

- Item 73(*). Use of technological resources by students in-class (laptops, tablets, programs, etc.).
 - Item 74. Use of a wider range of teaching resources by teachers in their classes (audiovisual media, articles, laboratories, etc.).
 - Item 75. Teachers having sufficient material resources for the number of students they have.
-

4. QUALITY MANAGEMENT

4.1. QUALITY UNIT OR OFFICE

The accreditation processes have contributed to:

- Item 76. Increase the number of members of the quality unit or office to perform their allocated functions.
 - Item 77. Improve the training of these members to carry out their functions.
-

4.2. INTERNAL QUALITY ASSURANCE SYSTEM (IQAS)

Functioning

The accreditation systems in your centre helped improve:

- Item 78. The definition of the centre's operational processes and procedures.

Item 79. The alignment between what is established in the IQAS and the system for making decisions.

Item 80. Monitoring of the decisions made in the IQAS meetings.

Learning process and teaching work of teachers

Los sistemas de acreditación han contribuido a que en su centro mejore:

Item 81. The system for evaluating students' satisfaction with the learning process.

Item 82. The system for evaluating teachers' satisfaction with the learning process.

Item 83. The design of improvement steps based on the results of the survey of satisfaction with the learning process.

Item 84. The system of evaluation of the teaching work by the students.

Item 85. The system of evaluation of the teaching work by the teachers.

Item 86. The design of improvement steps based on the results of the survey of satisfaction with teacher performance.

Item 87. The design of training activities according to the areas for improvement identified in the survey of satisfaction with teaching.

External internships

The accreditation systems have helped to:

Item 88. Increase the number of hours of external internships to achieve the qualification's competences.

Item 89. Increase in the number of external internship places offered in different bodies.

Item 90. Improve the detailed monitoring of the external internships of students by the faculty tutors.

Item 91. Improve the coordination between the people in charge of the internships (external and internal).

The accreditation systems have helped increase the level of satisfaction with the internships:

Item 92. Of the students.

Item 93. Of the tutors from the qualification.

Item 94. Of the tutors from the external internship centres.

Item 95. The accreditation systems have helped improve the design of improvement steps based on the results of the external internship satisfaction surveys.

Mobility

The accreditation systems have helped improve:

Item 96. The results of the survey of students on the work done by the mobility support services.

Item 97. Mobility tutors' monitoring of students who participate in these programmes.

Item 98. The degree of satisfaction of students who participate in the mobility plan.

Item 99. The design of improvement steps based on the results of the surveys of satisfaction with the mobility programme.

Labour integration

The accreditation systems have helped improve:

Item 100. The system for collecting information about the labour integration of graduates from the qualification.

Item 101. The analysis of the labour integration results obtained and the design of steps to strengthen the identified areas for improvement.

Information systems

The accreditation systems have improved the system for evaluating students' satisfaction with:

Item 102. Information about students' access and admission on the institutional website.

Item 103. The description of the qualification on the institutional website.

Item 104. Information about the qualification's competences on the institutional website.

Item 105. Information about quality management on the institutional website.

Complaints, claims, and suggestions

The accreditation systems have improved:

Item 106. The definition of the procedures for action in response to complaints, claims and suggestions by students.

Item 107. Personal and public information about the status of complaints, claims and suggestions for improvement received.

Item 108. The development of strategies for improvement to respond to complaints, claims, and suggestions received.

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