



## &lt;Research article&gt;

**SIHEM-UB: A scale to assess higher-education management skills**

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## //Abstract

**INTRODUCTION.** University management and governance is a complex matter and differs from the management and governance of other institutions, since the structure, organisation and complexity of the university make it a unique institution. Moreover, teaching staff members with individual management roles are not professional managers, as is the case in other institutions. This raises the question of whether all university teachers can be effective managers of their institutions. The goal of this paper is therefore to create a scale to assess higher-education management skills (SIHEM-UB).

**METHOD.** The initial scale consisted of 129 items, and after a review by expert judges and the pilot study, the final scale was reduced to 30 items and was administered to a sample of 690 university teachers.

**RESULTS.** The scale was checked for reliability, internal consistency, and content, criterion, discriminant and construct validity.

**CONCLUSION.** All indicators demonstrated the suitability of the proposed scale in relation to reliability and validity in all facets analysed.

## //Keywords

Higher-education management; Scale; Management skills; Leadership capacity; People management; Psychometric properties.

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## //Recommended reference

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//Títol

SIHEM-UB: inventari d'habilitats de gestió en educació superior

//Resum

**INTRODUCCIÓ.** La gestió i política universitària és una qüestió complexa i diferent de la gestió en altres institucions, ja que l'estructura, organització i complexitat de la universitat la converteixen en una institució poc comuna. A més, els professors amb càrrecs de gestió unipersonals no són directius professionals, com passa en altres institucions. Aquest fet planteja la pregunta de si tot el professorat universitari pot ser un bon administrador de la seva institució. L'objectiu d'aquest treball és generar una escala, l'inventari d'habilitats de gestió en educació superior (SIHEM-UB), que ajudi a avaluar les habilitats de gestió del professorat universitari.

**MÈTODE.** L'escala inicial estava formada per 129 ítems, que després de la revisió dels jutges experts i la prova pilot va quedar configurada per 30 ítems, els quals van ser administrats a una mostra de 690 docents d'universitat.

**RESULTATS.** Es va verificar tant la fiabilitat com la consistència interna, i la validesa de contingut, de criteri, de constructe i discriminant.

**CONCLUSIÓ.** Tots els indicadors obtinguts mostren l'adequació de l'escala proposada pel que fa a fiabilitat com a consistència interna i a validesa en totes les facetes estudiades.

//Paraules clau

Gestió en educació superior; Escala; Habilitats de gestió; Capacitat de lideratge; Gestió de persones; Propietats psicomètriques.

//Título

SIHEM-UB: Inventario de habilidades de gestión en educación superior

//Resumen

**INTRODUCCIÓN.** La gestión y la política universitaria es una cuestión compleja y además es diferente de la administración en otras instituciones, puesto que la estructura, la organización y la complejidad del sistema universitario hacen que la universidad sea una institución nada común. Asimismo, el profesorado con puestos de gestión unipersonales no son directivos profesionales, como ocurre en otros organismos. Este hecho plantea la pregunta de si todos los docentes universitarios pueden ser buenos administradores de sus instituciones. Por lo tanto, el objetivo de este trabajo es generar una escala —Inventario de habilidades de gestión en educación superior (SIHEM-UB)— que ayude a evaluar las habilidades de gestión de los profesores universitarios.

**MÉTODO.** La escala inicial estaba formada por 129 ítems que, tras la revisión por parte de los jueces expertos y la prueba piloto, quedó configurada por un total de 30 ítems que se administraron a una muestra de 690 docentes.

**RESULTADOS.** Se verificó su fiabilidad como consistencia interna y la validez de contenido, de criterio, discriminante y de constructo.

**CONCLUSIÓN.** Todos los indicadores muestran la adecuación de la escala propuesta en relación con su fiabilidad como consistencia interna y con su validez en todas las facetas estudiadas.

//Palabras clave

Gestión en educación superior; Escala; Habilidades de gestión; Capacidad de liderazgo; Gestión de personas; Propiedades psicométricas.

## 1. Introduction

University teaching is a complex, demanding task, from both a personal and an institutional perspective, and requires specific ongoing training (Rodríguez Espinar, 2003). Currently, all Spanish universities offer their teaching staff training plans (Amador Campos *et al.*, 2012). In the field of research, doctoral programmes offer learning opportunities in the necessary competencies (Sales, Comeau, Perrone, Palmer and Lynn, 2007) and research requires constant learning to keep skills up to date. However, universities rarely offer specific management training (Evans, 2017). Some authors note that being a good university teacher requires one to be a good researcher and vice versa (Hattie and Marsh, 1996); others point out the need for a good balance between these two fields (Leisyte, Enders and de Boer, 2009). However, few authors stress the need to train teachers who will act as university managers throughout their professional careers (Rasmussen, 2000). Therefore, a university teacher's training plan should address the three main fields of intervention, namely, teaching, research and university management (Amador Campos *et al.*, 2012; Brown and Atkins, 1986). Certain authors have even added a fourth concept, which is community service (Opayemi and Balogun, 2011).

There is growing acknowledgement among university teachers of the need for university governance and management training. If university teachers devote part of their professional career to management tasks, they should receive training that provides them with tools to improve their skills and make them accountable to society (Melo, Sarrico and Radnor, 2008; Mungiu-Pippidi and Dusu, 2011; Whitley, 1988), especially when one considers the unique nature and unusual organisation of universities (Morantes and Acuña, 2013). This aspect may require a university management professionalisation process that is based on a so-called new model of university governance (Kehm, 2011).

But how do teachers access university management and governance? Are all university teachers required to work as university managers? Answering these questions is not straightforward. Management skills are not innate, but are acquired throughout one's professional life. Additionally, it is important to distinguish between a university manager and a politician; the former focuses more on the organisation or administration of the institution, whereas the latter focuses more on governing or running it.

Certain authors consider leadership skills to be necessary for teachers in charge of university management and governance, but these are not the only traits required (Irtwange and Orsaah, 2010; Williams, 2010). Williams (2010) claims that some leadership strategies may work in one institution but not in others. He also claims that 15 % of teachers' professional success in this field may be attributed to their knowledge and skills, but the remaining 85 % must be attributed to their attitude and how they interact with others. Irtwange and Orsaah (2010) note that not all leaders are managers and not all managers are leaders. In fact, they consider that a good manager should be able to prepare formal plans, quickly design organisational structures and monitor the results of the plans they have designed, whereas a leader should have empowerment, intuition, self-awareness and value congruence skills.

Durand and Pujadas (2004) consider that, to adapt to the difficult context of academic governance, it is necessary to have management skills, especially with respect to the quality of collective decision-making to create complex teams. In this regard, Opayemi and Balogun (2011) consider that a good university teacher must be extroverted, thorough and a good manager. In the opinion of Yu, Guan, Yang and Chiao (2005), managers must have skills in communication, initiative, business ethics, fluency in foreign languages, global

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learning, adaptation and self-control; Branson, Franken and Penney (2016) consider that middle leadership at universities must constitute relational leadership that involves relations up, down and across organisational structures and networks.

One could therefore claim that there is no clear consensus on what makes a good university manager or politician.

With respect to the skills and resources required of teachers who work at public universities in individual university management positions (i.e. elected offices such as rector, dean and secretary), these are not the same as those required of a company executive, except for managers at other levels of the education system or in public hospitals. These differences in the model can be summarised in the following points:

- According to our experience, technical management is mistaken for governance in the university sphere. To counter this, the relationship between university management and governance should be seen as a continuum. When university teachers first start working as managers, their task probably involves more bureaucracy than resource management (funds, human resources, etc.). However, as time passes they gradually start carrying out tasks related more to the strategic governance of the institution.
- Teachers' management tasks rely on a professional profile geared mainly towards their key roles, i.e. teaching and research (Hattie and Marsh, 1996; Leisyte *et al.*, 2009). While it is true that the three dimensions of university teaching staff (four if knowledge transfer is included) have been discussed at length in recent years, it is only a model, and the reality is that research activity outweighs teaching and, obviously, management activity.
- There are no clearly defined criteria based on specific skills and competences for selecting good candidates for university management. In any case, at senior levels of university management, this effect is mitigated by the extensive experience acquired by people holding such positions throughout their professional career (Evans, 2017).
- The management positions held by university teachers are temporary. This adds a certain level of complexity to the definition of the position and the person holding it. Indeed, it should be noted that the professional career of university teachers does not have to involve management tasks, unless we propose the choice of professional managers.

In view of the above, the goal of this paper is to develop an instrument to assess the capabilities, skills and knowledge required by a university teacher to be a good manager and/or politician, given that no specific measurement instruments are available. The Principal Instructional Management Rating Scale (PIMRS), for example, focuses more on school leaders (Fromm, Hallinger, Volante and Chung Wang, 2017). With this and the abovementioned bibliography in mind, we have developed the Skill Inventory for Higher Education Management (SIHEM-UB).

The bibliography led us to conclude that the main skills required of university managers are leadership, the ability to relate up, down and across structures, and knowledge of organisational structures. Bearing this in mind, we developed the SIHEM-UB to measure management skills in higher education through three

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dimensions or factors: leadership capacity, people and team management skills, and knowledge of the institution.

The dimension of leadership capacity is defined by the following facets: strategic and tactical vision, vision of goals and objectives, and anticipation of problems.

The dimension of people and team management skills is defined by the capacity to promote reflection within work groups, honesty, sympathy and understanding of others, skills to develop a suitable work environment that encourages participation and trust among the different members of a work team, skills to delegate functions and responsibilities, and the ability to identify the strengths and weaknesses of team members and people in general.

The dimension of knowledge of the institution refers to knowledge of the regional, national and European regulations governing the university, knowledge of the institutional structure, knowledge of the protocols, knowledge of the governance and promotion systems, and knowledge of people and influence groups.

## 2. Method

### Participants

A sample of 690 teachers and researchers from the Spanish university system was used for the final study. Sample selection was conducted through single-stage cluster sampling. The 48 Spanish public universities were classified into three groups, according to the number of undergraduate students: small (11 universities with fewer than 10,000 students); medium (18 universities with between 10,000 and 20,000 students); and large (19 universities with over 20,000 students). Two universities were randomly chosen from each group. The universities selected were the *Universitat de Girona* and *Universidad Pablo Olavide* from the small universities, the *Universidad de Alcalá de Henares* and *Universidad Rey Juan Carlos* from the medium universities, and the *Universidad Castilla-La Mancha* and the *Universitat d'Alacant* from the large universities. For each university, the email addresses of the teaching staff were gathered between 14 and 15 June 2017, and the SIHEM-UB questionnaire designed on the Google Drive platform was emailed to them to complete. We emailed a total of 9,728 addresses, and 690 replies were received between June and September 2017, which translates into a reply rate of 7.09 %. Therefore, the final sample was accidental.

A total of 57.8 % of the teaching staff members who completed the questionnaires were men with an average age of 47.6 years,  $SD = 9.3$  years. They have worked at the university for an average of 17 years ( $SD = 10.1$  years), 31.9 % have tenure, 18.8 % are associate professors, 18.7 % are permanent associate professors, and 30.6 % hold the remaining academic positions in the Spanish university system.

### Instruments

The instrument used in the current study consists of two sections: firstly, sociodemographic data and information about university management experience are collected, and several aspects related to

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teaching staff members' work at the university are assessed. The second section is the SIHEM-UB scale itself (see the Annex).

The SIHEM-UB scale consists of 30 items grouped into three domains or subscales:

- Leadership capacity: 3, 4, 5, 8, 10, 15, 17, 19, 22, 24, 26 and 29.
- People and team management skills: 1, 7, 9, 12, 13, 16, 18, 20, 23, 25, 27 and 30.
- Knowledge of the institution: 2, 6, 11, 14, 21 and 28.

### Procedure

Creation of the SIHEM-UB included the usual stages involved in developing scales. A team of university teachers experts in teaching, research and management prepared a total of 129 items to assess the three domains included in the SIHEM-UB.

In March 2017, an email was sent to seven expert judges in the field of university management (with at least eight years' experience of academic management) to ask them to classify the 129 items into the corresponding dimensions (leadership capacity, people and team management skills, and knowledge of the institution). The replies were received between March and May 2017 from six out of the seven judges contacted.

Applying the same logic as the content validity index to determine the importance of the item and measure the construct of interest, it was determined that at least 80 % of the expert judges had to agree on the relevance of an item (Polit and Tatano Beck, 2006). Accordingly, in this case, 80 % agreement was chosen as the cut-off point for classification of the item into one of the three dimensions (i.e. five or six judges), which led us to keep a total of 77 items out of the original 129. An item relating to knowledge of a foreign language did not make the cut, but we decided to keep it, as we felt it was relevant for interacting with other universities.

In parallel with the work of the expert judges, a pilot test was conducted to study the psychometric properties of the 129 items. The teachers in the sample were obtained through snowball sampling. To that effect, we contacted the teachers from different Spanish public universities who had experience in individual management positions and asked them to complete the questionnaire online (designed on the Google Drive platform). We also asked them to forward it to their co-workers. The email was sent in March 2017, and by April 2017 we had received a total of 65 replies.

Based on the information obtained from the expert judges and the pilot test (DI over .4), 77 out of the 129 initial items were kept, 40 in the dimension of leadership capacity, 23 in the dimension of people and team management skills, and 14 in the dimension of knowledge of the institution.

These 77 items were assessed by a group of five expert judges with over 10 years' experience in an individual management position who had not participated in the previous stage. They were asked to score if the wording of the item is understood and also its relevance to value a good university manager on a scale from 1 to 6. The replies were received in May 2017. Applying the same logic as the item's content validity index, it was determined that at least 80 % of the judges had to agree on



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the relevance of the item (Polit and Tatano Beck, 2006). Therefore, considering that, in both aspects, at least four out of the five judges had to score the item as a 6, we ended up with a 30-item scale: 12 for the dimension of leadership capacity, 12 for the dimension of people and team management skills, and 6 for the dimension of knowledge of the institution. Note that, in this case, only one item in the latter dimension met the established criteria; therefore, following a meeting of the working group, five items were recovered to ensure that the dimension would be properly represented.

The information was collected for the final study via the Google Drive platform between June and September 2017.

### 3. Results

Out of the 690 people who completed the questionnaire, 244 currently hold a university management position, with an average duration of 4.2 years ( $SD = 3.9$  years). Note that 169 of these are teachers with individual management positions. The remainder relate to management assignments (an assignment involves the assumption of management responsibilities without holding a specific organic position). When their full careers are taken into account, 404 teachers in the sample have held individual management positions during their time at the university, with a maximum of six positions.

The psychometric study in the SIHEM-UB scale was conducted based on classical test theory. Therefore, reliability was studied as internal consistency based on Cronbach's alpha coefficient, and the following validity facets of the scales were examined: criterion validity, discriminant validity and construct validity.

The reliability of the SIHEM-UB scale was obtained for the whole scale and for each dimension. The value of Cronbach's alpha coefficient is .924 for the total scale; .822 for leadership capacity; .905 for people and team management skills; and .770 for knowledge of the institution. Consequently, the reliability of the total scale and the dimension of people and team management skills is excellent; for the dimension of leadership capacity it is good; and for the dimension of knowledge of the institution it is adequate (Muñiz, 2005). It is noteworthy that the value of Cronbach's alpha coefficient remains relatively unchanged when the item is removed, and the discrimination indices of the items are over .4, except for five items: numbers 3, 4, 5, 6 and 11.

Criterion validity was studied based on Spearman's correlation coefficient for the scale's total score and for each dimension through the answers regarding assessment of the items relating to the different tasks conducted by teachers in their everyday activity. These correlations appear in Table 1. As shown, all coefficients are generally statistically significant, and the criterion validity can be considered to be sufficient, given that the majority of coefficients present values between .2 and .35 (Muñiz, 2005).

To study discriminant validity we worked with two subgroups of teachers from the sample; those with no university management experience (90 teachers) and those who have held over three individual management positions (42 teachers with extensive management experience). In these two groups, we compared the mean for the total scale and for the three dimensions on the basis of Student's *t* statistic for independent groups. As shown in Table 2, there are statistically significant differences in the four comparisons and the average score is always higher in the group of teachers who have held over three management positions throughout their university career.

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Table 1. Spearman's correlation coefficient to study criterion validity (n = 690)

Variables	Total score	Leadership capacity	People/team management skills	Knowledge of institutions
University management is very important for my professional development at the university.	<b>.298 (&lt;.001)</b>	<b>.177 (&lt;.001)</b>	<b>.235 (&lt;.001)</b>	<b>.387 (&lt;.001)</b>
My research work is very important for my professional development at the university.	<b>.234 (&lt;.001)</b>	<b>.202 (&lt;.001)</b>	<b>.205 (&lt;.001)</b>	<b>.161 (&lt;.001)</b>
My undergraduate teaching is very important for my professional development at the university.	<b>.234 (&lt;.001)</b>	<b>.159 (&lt;.001)</b>	<b>.224 (&lt;.001)</b>	<b>.226 (&lt;.001)</b>
My postgraduate and doctoral teaching is very important for my personal development at the university.	<b>.277 (&lt;.001)</b>	<b>.220 (&lt;.001)</b>	<b>.244 (&lt;.001)</b>	<b>.248 (&lt;.001)</b>
I find my undergraduate teaching satisfying.	<b>.315 (&lt;.001)</b>	<b>.231 (&lt;.001)</b>	<b>.320 (&lt;.001)</b>	<b>.258 (&lt;.001)</b>
I find my postgraduate and doctoral teaching satisfying.	<b>.328 (&lt;.001)</b>	<b>.285 (&lt;.001)</b>	<b>.309 (&lt;.001)</b>	<b>.246 (&lt;.001)</b>
I find my research work satisfying.	<b>.296 (&lt;.001)</b>	<b>.290 (&lt;.001)</b>	<b>.282 (&lt;.001)</b>	<b>.157 (&lt;.001)</b>
I find my management tasks satisfying.	<b>.379 (&lt;.001)</b>	<b>.255 (&lt;.001)</b>	<b>.342 (&lt;.001)</b>	<b>.407 (&lt;.001)</b>
For a university teacher, management tasks are more important than teaching work.	.010 (.790)	-.059 (.121)	-.005 (.893)	<b>.105 (.006)</b>
For a university teacher, management tasks are more important than research work.	.042 (.273)	-.030 (.439)	.029 (.449)	<b>.127 (.001)</b>
For a university teacher, teaching work is more important than research work.	<b>.087 (.022)</b>	.064 (.091)	<b>.111 (.003)</b>	.050 (.189)

Note: The degree of significance appears in brackets. In bold and italics, we have highlighted the correlation coefficients with a degree of statistical significance below .05.

Table 2. Student's *t* statistic for independent groups to study discriminant validity

Variable	Group	n	Mean	t	p <sub>uni</sub>	CI		r
						l <sub>i</sub>	l <sub>u</sub>	
Total score	Over 3 positions	42	151.55	4.126	<.001	6.10	17.37	.356
	No positions	90	139.81					
Leadership capacity	Over 3 positions	42	60.67	3.849	<.001	2.25	7.02	.336
	No positions	90	56.03					
People and team management skills	Over 3 positions	42	61.36	2.418	.017	0.57	5.72	.218
	No positions	90	58.21					
Knowledge of the institution	Over 3 positions	42	29.52	4.726	<.001	2.30	5.62	.412
	No positions	90	25.57					

Note: n: sample size; t: value of Student's *t* statistic of independent groups; p<sub>uni</sub>: degree of unilateral significance associated to Student's *t* statistic of independent groups; CI: confidence interval of the difference of means; l<sub>i</sub>: lower limit of the confidence interval; l<sub>u</sub>: upper limit of the confidence interval; and r: effect size.

SIHEM-UB's construct validity was studied on the basis of a confirmatory factor analysis by taking account of the structure resulting from the study with the expert judges. This analysis was conducted with version 5.6 of the EQS statistic package. Factor loading was estimated by means of maximum likelihood based on the elliptic solution, given the ordinal scale of answers to the items and the asymmetric distribution of the



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answers from the teachers in the sample (Bentler and Dijkstra, 1985). Factor variance was set to one to provide the measurement scale for the three dimensions, and correlated factors were assumed. A total of 95.7 % of the standardised residuals present values of between  $-.1$  and  $.1$ , which indicates the adequacy of the proposed structure.

Table 3 shows the fit indices obtained. As shown, the value of the chi-square statistic indicates that the fit of the factor structure is inadequate. However, as this indicator is highly sensitive to sample size (Bentler and Bonett, 1980), it is better to interpret the quotient between the value of chi-square and its degrees of freedom. In this case, the quotient is below 5, which indicates that the fit of the factor structure analysed is adequate (Bentler and Wu, 1995). According to Schumacker and Lomax (1996), values of  $\geq .90$  for BBNFI (Bentler-Bonett normed fit index), BBNNFI (Bentler-Bonett non-normed fit index), CFI (comparative fit index) and IFI (Bollen's fit index), and values of  $\leq .05$  for SRMR (standardised root mean square residual) and RMSEA (root mean square error of approximation) are considered a good fit. In fact, Browne and Cudek (1992) claim that if RMSEA presents values below  $.05$ , the fit of the model is good; if the value is between  $.05$  and  $.08$ , the fit is acceptable; and if the value is between  $.08$  and  $.10$ , the fit is marginal. Therefore, in our case, we can claim that the fit is acceptable, as many of the indicators present values of over  $.90$  and the value of RMSEA is  $.07$ .

Table 3. Fit indices of the confirmatory factor analysis

Index	Value
$\chi^2$ ; df; p	1650.976; 402; $<.001$
$\chi^2/df$	4.11
BBNFI	.940
BBNNFI	.950
CFI	.954
IFI	.954
MFI	.405
GFI	.825
AGFI	.798
RMR	.057
SRMR	.055
RMSEA (IC 90 %)	.067 (.064 - .070)

Note:  $\chi^2$ : value of the  $\chi^2$  statistic as proof of goodness of fit; df: degree of freedom of  $\chi^2$ ; p: significance level of  $\chi^2$ ; BBNFI: Bentler-Bonett normed fit index; BBNNFI: Bentler-Bonett non-normed fit index; CFI: comparative fit index; IFI: Bollen's fit index; MFI: McDonald fit index; GFI: LISREL fit index; AGFI: LISREL fit index; RMR: root mean square residual; SRMR: standardised root mean square residual; and RMSEA: root mean square error of approximation (90 % confidence interval).

Finally, Table 4 shows the factor loading matrix obtained. Convergence was met after 400 iterations, which may reveal the idiosyncrasy of the proposed structure. The 30 factor loads defined are statistically significant and of high intensity, which implies the adequacy of the proposed structure.

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Table 4. Standardised solution of the factor loading matrix CFA (n = 690)

Item	Leadership cap.	People/team management skills	Knowledge of institutions	R <sup>2</sup>
1		.693		.480
2			.564	.318
3	.295			.087
4	.177			.031
5	.349			.122
6			.417	.174
7		.698		.487
8	.665			.442
9		.642		.412
10	.665			.442
11			.537	.288
12		.642		.412
13		.658		.433
14			.572	.327
15	.647			.418
16		.623		.388
17	.668			.447
18		.745		.556
19	.676			.457
20		.808		.653
21			.758	.575
22	.620			.385
23		.559		.312
24	.712			.508
25		.697		.486
26	.786			.617
27		.617		.380
28			.764	.584
29	.533			.284
30		.622		.387

Note: Correlations between the dimensions: Leadership capacity – People and team management skills: .932; Leadership capacity – Knowledge of institutions: .608; People and team management skills – Knowledge of institutions: .625.

## 4. Conclusions

Based on the psychometric study, we can claim that the scale's reliability, or internal consistency, is excellent for both the total scale and the dimension of people and team management skills; good for the dimension of leadership capacity; and adequate for the dimension of knowledge of the institution (Muñiz, 2005). Moreover, the discrimination indices are high, and the value of Cronbach's alpha coefficient does not change dramatically when certain items are removed individually, which proves the adequacy of the 30 items in the proposed scale.

With respect to validity, four facets were examined: content validity, criterion validity, discriminant validity and construct validity. Note that content validity was guaranteed in the different processes conducted: the construct's conceptualisation along with its dimension, based on the theoretical framework prepared; and in the two studies conducted with expert judges to assess the items' adequacy and whether they belonged in the dimensions that make up the construct measured – management skills in higher education. Regarding

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criterion validity, we considered different statements as external criteria in which the teachers in the sample assessed the importance of the different tasks they are required to perform. We verified that most of the correlation coefficients are over the .20 threshold, which would suggest sufficient, and in some cases good, construct validity, as the correlation coefficient value is over the .35 threshold (Muñiz, 2005). Discriminant validity can be claimed to be adequate, as the subsample of teachers who have held over three positions present higher scores in the three dimensions, and also overall, than the teachers who have never held an individual management position in their university career. Lastly, with regard to construct validity, the structure derived from the second study with the expert judges has been confirmed by the confirmatory factor analysis conducted, as all factor loads estimated turned out to be statistically different from zero and generally of high intensity. In addition, the different goodness-of-fit indicators demonstrate the adequacy of the proposed structure.

We can therefore conclude that the SIHEM-UB scale presents adequate psychometric characteristics and can thus be considered a good scale for assessing management skills in higher education. The next step should be to explore additional facets of the scale to assess reliability, e.g. the stability of measurement, or validity, e.g. consequential validity.

Finally, we would stress that, since the psychometric properties of the scale are adequate, this scale provides: i) a standardised system that can be used for selecting people to manage a university; ii) the possibility of improving weaknesses in the profiles of future managers; and iii) a better fit between management positions and candidate profiles.

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None.

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## Appendix: SIHEM-UB Questionnaire

Note: Given that the psychometric study was conducted with the Spanish version of the scale, the questionnaire has not been translated into English. The original version is provided, in case it needs to be translated into other languages.

### SIHEM-UB: A scale to assess higher-education management skills Escala de habilidades de gestión en educación superior

A continuación encontrará una serie de enunciados sobre habilidades relacionadas con el trabajo de los gestores universitarios (o de los profesores que hacen gestión en la universidad). No hay respuestas correctas o incorrectas; nos interesa su opinión sobre las habilidades relacionadas con la gestión. Toda la información recogida será utilizada de forma confidencial y solo con finalidad de investigación.

¡Muchas gracias por su colaboración!

Universidad: \_\_\_\_\_

Centro: \_\_\_\_\_

Sexo:

- Hombre
- Mujer

Edad: \_\_\_\_\_ años

Antigüedad como profesor universitario: \_\_\_\_\_ años

Categoría Profesional:

- Catedrático de universidad
- Catedrático de escuela universitaria
- Catedrático contratado
- Titular de universidad
- Titular de escuela universitaria
- Contratado doctor
- Ayudante doctor
- Profesor colaborador
- Profesor asociado

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- Investigador en formación
- Investigador
- Otros. Añadir categoría: \_\_\_\_\_

¿Actualmente ejerce algún cargo universitario?

- No
- Sí

En caso afirmativo indique cuál y la duración del mismo en años

Durante su carrera universitaria, ¿ha ejercido algún cargo unipersonal de gestión?

- No
- Sí

En caso afirmativo, indique que cargos ha ocupado y la duración de los mismos:

- |   |                      |
|---|----------------------|
| <input type="checkbox"/> Secretario departamento                            | Duración: _____ años |
| <input type="checkbox"/> Director departamento                              | Duración: _____ años |
| <input type="checkbox"/> Jefe de estudios                                   | Duración: _____ años |
| <input type="checkbox"/> Secretario de facultad o Escuela Universitaria     | Duración: _____ años |
| <input type="checkbox"/> Vicedecano o Vicedirector de escuela universitaria | Duración: _____ años |
| <input type="checkbox"/> Decano o Director de escuela universitaria         | Duración: _____ años |
| <input type="checkbox"/> Delegado de rector                                 | Duración: _____ años |
| <input type="checkbox"/> Secretario general                                 | Duración: _____ años |
| <input type="checkbox"/> Vicerrector  | Duración: _____ años |
| <input type="checkbox"/> Rector   | Duración: _____ años |
| <input type="checkbox"/> Director Instituto de Investigación                | Duración: _____ años |
| <input type="checkbox"/> Otros. Indicar: _____                              | Duración: _____ años |

Valore su grado de acuerdo con el siguiente enunciado (1 totalmente en desacuerdo a 6 totalmente de acuerdo):

Tengo un buen conocimiento oral y escrito del inglés (o de otro idioma de interés científico: francés, alemán, chino).	1	2	3	4	5	6
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Seguidamente encontrará una serie de enunciados sobre habilidades relacionadas con el trabajo de los gestores universitarios (o de los profesores que hacen gestión en la universidad). Le rogamos que conteste mostrando su grado de acuerdo con cada uno de los enunciados teniendo en cuenta la siguiente escala de medida:

Totalmente en desacuerdo						Totalmente de acuerdo
1	2	3	4	5	6	

	Enunciado	Escala de respuesta					
1	Sé cómo organizar equipos de trabajo.	1	2	3	4	5	6
2	Considero necesario conocer el organigrama de la universidad para llevar a cabo una adecuada gestión.	1	2	3	4	5	6
3	Tomo decisiones de manera autónoma en mi trabajo en la universidad.	1	2	3	4	5	6
4	Tengo problemas para expresar mi opinión ante los demás.	1	2	3	4	5	6
5	Anticipo las consecuencias políticas de las decisiones tomadas.	1	2	3	4	5	6
6	Considero que las normas universitarias ayudan a una mejor gestión.	1	2	3	4	5	6
7	Sé cómo motivar a las personas que trabajan conmigo en la universidad.	1	2	3	4	5	6
8	Mis colaboradores confían en mi capacidad para solucionar situaciones complicadas.	1	2	3	4	5	6
9	Promuevo un clima de colaboración entre las personas que trabajan conmigo.	1	2	3	4	5	6
10	Tomo decisiones teniendo en cuenta diferentes alternativas.	1	2	3	4	5	6
11	Pienso que saber qué personas ocupan cargos de responsabilidad es útil para realizar una óptima gestión.	1	2	3	4	5	6
12	Implico a mis colaboradores en la toma de decisiones.	1	2	3	4	5	6
13	Genero un buen ambiente cuando trabajo.	1	2	3	4	5	6
14	Creo que es conveniente conocer los procesos administrativos de la universidad.	1	2	3	4	5	6
15	Diseño un plan realista antes de desarrollar un proyecto.	1	2	3	4	5	6
16	Fomento que las personas con las que trabajo razonen sobre las decisiones que se deben tomar.	1	2	3	4	5	6
17	Tomo la iniciativa en los temas complicados.	1	2	3	4	5	6
18	Transmito a los demás la importancia de la unidad del equipo de trabajo.	1	2	3	4	5	6
19	Sé cuándo es necesario modificar mis planes de trabajo.	1	2	3	4	5	6
20	Tengo capacidad para organizar equipos.	1	2	3	4	5	6
21	Analizo cómo pueden afectar las nuevas normativas a mi trabajo diario.	1	2	3	4	5	6
22	Aporto soluciones originales a los problemas que surgen en mi trabajo.	1	2	3	4	5	6

(This table continues on the next page)





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	Enunciado	Escala de respuesta					
23	Pido ayuda a otras personas para realizar cambios en mis planes si estos no funcionan.	1	2	3	4	5	6
24	Soy capaz de tomar decisiones en condiciones de extrema presión.	1	2	3	4	5	6
25	Asigno tareas teniendo en cuenta las capacidades de cada persona.	1	2	3	4	5	6
26	Sé superar obstáculos.	1	2	3	4	5	6
27	Detecto las capacidades de las personas con las que trabajo.	1	2	3	4	5	6
28	Leo detenidamente las normas que rigen en la universidad.	1	2	3	4	5	6
29	Reconozco cuándo una situación plantea un conflicto ético en mi trabajo universitario.	1	2	3	4	5	6
30	Fomento la autonomía de las personas que trabajan conmigo.	1	2	3	4	5	6

Otra información:

It.	Enunciado	Escala de respuesta					
1	La gestión universitaria es muy importante para mi desarrollo profesional en la universidad.	1	2	3	4	5	6
2	Las tareas de investigación que realizo son muy importantes para mi desarrollo profesional en la universidad.	1	2	3	4	5	6
3	La docencia de grado que realizo es muy importante para mi desarrollo profesional en la universidad.	1	2	3	4	5	6
4	La docencia de postgrado y doctorado que realizo es muy importante para mi desarrollo profesional en la universidad.	1	2	3	4	5	6
5	La docencia de grado que realizo me resulta gratificante.	1	2	3	4	5	6
6	La docencia de postgrado y doctorado que realizo me resulta gratificante.	1	2	3	4	5	6
7	La investigación que realizo me resulta gratificante.	1	2	3	4	5	6
8	Las tareas de gestión que realizo me resultan gratificantes.	1	2	3	4	5	6
9	Para un profesor universitario las tareas de gestión son más importantes que las docentes.	1	2	3	4	5	6
10	Para un profesor universitario las tareas de gestión son más importantes que las investigadoras.	1	2	3	4	5	6
11	Para un profesor universitario las tareas docentes son más importantes que las investigadoras.	1	2	3	4	5	6

¿Desea añadir alguna otra cosa?

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Muchas gracias por su colaboración