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COMPARING ALTERNATIVE INSTRUMENTS TO MEASURE SERVICE QUALITY IN HIGHER EDUCATION

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ABSTRACT

The purpose of this work is to examine the performance of five alternative measures of service quality in the high education sector – SERVQUAL (Service Quality), Importance-weighted SERVQUAL, SERVPERF (Service Performance), Importance-weighted SERVPERF and HedPERF (Higher Education Performance). We aim at determining which instrument has the superior measurement capability. Data were collected by means of a structured questionnaire containing perception items enhanced from the SERVPERF and HEdPERF scales and expectation items from the SERVQUAL scale, both modified to fit into the higher education sector. The first draft of the questionnaire was subject to a pilot testing through a focus group and an expert evaluation. Data were gathered from a 360 students' sample of a Portuguese university in Lisbon. Scales were compared in terms of unidimensionality, reliability, validity and explained variance. Managerial conclusions were also drawn.

Keywords: Service quality scales; higher education; reliability.

1 INTRODUCTION

The role of service quality in higher education (HE) has received increasing attention during the last two decades. HE institutions should ensure that all services encounters are managed to enhance consumer perceived quality. While there is a consensus on the importance of service quality issues in HE, the identification and implementation of the right measurement instrument is a challenge that practitioners who aim to gain a better understanding of the quality issues with an impact on students' experiences face. In fact, the use of the most appropriate measurement tool would help managers to assess service quality provided by their institutions, thus having the ability to use the results to better design service delivery. A review of the literature reveals that the most popular scales used to measure service quality are SERVQUAL – Service Quality (Parasuraman *et al*., 1988) and SERVPERF – Service Performance (Cronin & Taylor, 1992). However, additional dimensions that emanate from the HE could be included, as in the case of HedFERP – Higher Education Performance scale (Firdaus, 2006a). Nevertheless, despite the frequent use of instruments to assess service quality, few studies have been conducted in order to compare its measurement capabilities in the context of HE. The only exception in this scope is a study that compared the performance of SERVPERF, HedPERF and a merged SERVPERF-HEDPERF scale (Firdaus, 2006b).

The objective of this work is to compare empirically five alternative measures of service quality in HE, in terms of unidimensionality, reliability, validity and explained variance. This article is organised as follows. It starts by presenting the service quality concept in HE and identifying the available scales designed to measure the service quality construct. Then, it describes the methodology adopted. Afterwards, it assesses and compares the validity and reliability of the five scales and presents some managerial implications. Finally, some research conclusions are presented, including the identification of some implications, limitations and direction for future research. To carry out our study we gathered information from a sample of 360 students of a Portuguese University in Lisbon.

2 BACKGROUND

2.1 Service Quality in HE

The subject of service quality in HE has become popular in the literature. As students were considered to be the "primary customers" of a University (Hill, 1995), being the direct recipients of the service provided, student perceived service quality has turned out to be an extremely important issue for universities and their management.

Services are behavioural rather than physical entities, and have been described as deeds, acts or performances (Berry, 1980). If one is to consider that HE is a service, then it should exhibit all the classical features of services, which make the measurement of quality a complex issue (Hill, 1995). In fact, services are intangible and heterogeneous. Services also satisfy the perishability criterion since it is impossible to store them, despite the appearance of the video technology. Another distinctive aspect of services is the simultaneous production and consumption, requiring the participation of the customer (i.e., the student) in the delivery process. Consequently, the customer contributes directly to the quality of service deliveredy, and to his/her (dis)satisfaction. This idea that HE can be classified as a service motivated some authors (e.g. Mazzarol, 1998) to discuss the framework to research into services marketing from an educational perspective (Lovelock, 1983). In the services context, quality could be defined as a 'measure of how well the service level delivered matches the customer's expectations' (Lewis & Booms, 1983). Other authors also state that perceived service quality reflects the opinion of the customer regarding the superiority or global excellence of a product or service (Zeithaml, 1988).

Service quality literature suggests the importance for educational institutions to monitor the quality of the services they provide in order to commit themselves to continuous improvements. However, there is a considerable debate about the best way to define service quality in HE (Becket & Brookes, 2006). It is pointed out that the "education quality is a rather vague and controversial concept" (Cheng & Tam, 1997). Nevertheless, it is well recognized that "universities are increasingly finding themselves in an environment that is conductive to understanding the role and importance of service quality" (Shank *et al*., 1995).

As a result of the difficulty in defining quality, its measurement has also turned to be a controversial issue. In terms of measurement methodologies, some authors suggested that the service quality concept results from the comparison of performance perceptions with expectations (Parasuraman *et al.*, 1988), while others argue that it is derived from perceptions of performance alone (Cronin & Taylor, 1992), and that the expectations are irrelevant and even provide misleading information for a model intended to evaluate perceived service quality. Thus, the inclusion or not of the expectations as a determinant of the service has led to two distinct paradigms: the disconfirmation paradigm and the perception paradigm, respectively.

2.2 Service Quality Measurement in HE

A survey of the services marketing literature reveals two main approaches to measure service quality: SERVQUAL (Parasuraman *et al*., 1988) and SERVPERF (Cronin & Taylor, 1992). One of the most popular methods, called SERVQUAL, has its theoretical foundations in the gaps model and defines service quality in terms of the difference between customer expectations and performance perceptions on a number of 22 items. Customer expectations are "beliefs about service delivery that serve as standards or reference points against which performance is judged", whereas customer perceptions are "subjective assessments of actual services experiments" through interaction with the providers (Zeithaml *et al*., 2006). These authors identify some factors that can influence expectations, as word of mouth communications, personal needs, past experience of the service and external communications from the service provider. The SERVQUAL scale conceptualizes service quality as containing five dimensions measured thought the 22 items, namely tangibles, reliability, responsiveness, assurance, and empathy. In the context of HE these dimensions include the appearance of the university's physical facilities, equipment, personnel, and communication materials (tangibles), the ability of the university to perform the promised service dependably and accurately (reliability), the willingness of the university to help students and provide prompt service (responsiveness) the knowledge and courtesy of teachers and their ability to convey trust and confidence (assurance) and the caring, individualized attention the university provides its students with (empathy). The SERVQUAL instrument, "despite criticisms by a variety of authors, still seems to be the most practical model for the measurement of service quality available in the literature" and thus expectations should be considered when assessing

service quality in HE (Cuthbert, 1996b). Regarding the stability of expectations and perceptions of service quality over time, in the scope of HE, it was empirically concluded that student's perceptions of service experienced proved less stable over time than expectations (Hill, 1995).

Due to the perceived shortcomings in the SERVQUAL approach both at the conceptual and operational levels (see Butle, 1996, for a review) a performance-based approach to measure service quality called SERVPERF was introduced. SERVPERF is a variant of the SERVQUAL scale, being based on the perception component alone. Other study also concluded that SERVPERF explained more of the variance in an overall measure of service quality than SERVQUAL (Cronin & Taylor, 1994).

There are a lot of empirical applications of the SERVQUAL paradigm to measure service quality in HE [e. g. see (Hill, 1995), (Anderson, 1995), (Cuthbert, 1996a & b), (Oldfield & Baron, 1998), (Kwan & Ng, 1999), (Sohail & Shaikh, 2004), (O'Neil & Wright, 2002), (Sahney *et al*., 2004) and (Ho & Wearn, 1995)]. The SERVPERF paradigm is less popular than the SERVQUAL in the context of HE (one exception is those by Oldfield & Baron, 2000).

More recently, a new industry-scale, called HedPERF (Higher Education PERFormance) it was developed comprising a set of 41 items (Firdaus, 2006a). This instrument aims at considering not only the academic components, but also aspects of the total service environment as experienced by the student. The author identified five dimensions of the service quality concept: *(i)* Non-academic aspects: items that are essential to enable students to fulfil their study obligations, and relate to duties carried out by non-academic staff; *(ii)* Academic aspects: responsibilities of academics, *(iii)* Reputation: importance of higher learning institutions in projecting a professional image; *(iv)* Access: includes issues as approachability, ease of contact, availability and convenience; *(v)* Programme issues: importance of offering a wide ranging and reputable academic programmes/specializations with flexible structure and health services. The SERVPERF and HedPERF scales were compared in terms of reliability and validity and concluded for the superiority of the new purposed measurement instrument (Firdaus, 2006b).

An alternative model based on the importance-performance paradigm (Martilla & James, 1977, Hermmasi *et al*., 1994 and Hawes & Rao, 1985) assumes that students will use different criteria on making their evaluation, which are likely to vary in importance. The importance is defined as "a reflection by consumers of the relative value of the various qualities attributes" (O'Neil & Palmer, 2004). It requires gathering data on the level of importance students assign to each factor and then obtaining customer perceptions of the actual performance for each item (Joseph & Joseph, 1997; Ford *et al*., 1999, O'Neil & Palmer, 2004 and Joseph, Yakhou & Stone, 2005).

As SERVQUAL and SERVPERF scales do not take into account the relative importance that students attach to the five dimensions, importance-weighted scores could be computed for theses scales. For that reason, some studies discuss the convenience of including information about the relative importance of the five dimensions to the customer, yielding a composite, weighted score of the perceived service quality measure for each dimension and of the overall service quality according to the gap model (Parasuraman, *et al.*, 1991).

The CEQ (Course Experience Questionnaire) is also very popular tool in the scope of HE that evaluates the students' perception regarding teaching and learning performance (Ramsden, 1991; Wilson *et al*., 1997 and Ginns *et a*l., 2007).

3 METHODOLOGY

3.1 The Compared Scales

In this study we aim at comparing the performance of five operationalizations of the service quality concept such as SERVQUAL, SERVPERF, Importance-Weighted SERVQUAL, Importance-Weighted SERVQUAL, Importance-Weighted SERVPERF and HedPERF.

3.2 The Questionnaire

Data were gathered by means of a structured questionnaire comprising the following components. The first section contained questions regarding student profile. The second section consisted of 51 perception items extracted from the SERVPERF/SERVQUAL and HEdPERF scales. The third section required students to allocate a total of 100 points across the five dimensions according to how important they considered each to be. For each dimension we provided a descriptive definition without naming them. Then students were

asked to provide an evaluation of service quality expectations extracted from the SERVQUAL scale. Students were also asked to provide their overall rating of the service quality, satisfaction, future visit intention and probability to recommend the department to a friend in the future. Finally, the questionnaire contains two open-ended questions, allowing students to give their personal views of how the service provided by the university could be improved and about the best service components they associate with the institution.

Students' responses were obtained on a 7-point Likert scale (where 1 means Strongly Disagree and 7 Strongly Agree) and were compared to arrive at (P-E) gap scores, i.e., disconfirmation model. This method of defining the construct provides a continuum, upon which to access the SQ rating that possesses possible diagnostic value. This continuum ranges from -6 to +6 (using a 7 point scale). A negative rating represents unfulfilled expectations and a positive rating represents a state in which expectations have been exceeded. SERVQUAL has 22 pairs of Likert-Type scales with the first 22 items designed to reflect customer expectations and the second 22 to indicate customer's perceptions of the service. A higher perceived performance implies higher service quality for the SERVPERF and HedPERF scales.

The items of the questionnaire were extracted from the original scales, with minimum word adaptations to fit the HE context and the first draft of the questionnaire was subject to a pilot testing through a focus group and an expert evaluation.

3.3 Sample Size and Profile

The student' survey was performed on June 2007. Data were gathered from a 360 students' sample of a Portuguese university in Lisbon. The students belong to the same faculty, which is a technology school and is located on the Lisbon historical city centre. The average age of the students surveyed was 21 and most were male (68%). Most of the students (65%) intend to get a Master Degree (M.Sc.) and 14% and 15% plan to get a doctorate degree (Ph.D.).

3.4 Scale Evaluation Methodology

As the five considered scales are multi-item scales, they should be evaluated for accuracy and applicability, which involves an assessment of *(i)* unidimensionality, *(ii)* reliability, *(iii)* validity and *(iv)* explained variance. Next section will present the results obtained.

4 EMPIRICAL RESULTS

4.1 Comparative Test of Unidimensionality

In order to conduct a comparative test of unimensionality, confirmatory factor analysis was performed by means of the structural equation modelling within the LISREL framework. We intend to determine if the number of dimensions conform to what is expected on the basis of pre-established theory. Table 1 presents the model fit for the five scales. Two indicators are considered to evaluate the goodness-of-fit of the models such as the chi-square tests and the Mean Root Squared Error of Approximation (RMSEA). An exact fit of the model is indicated when the p-value for chi-square is above 0,05. The RMSEA is a measure of the discrepancy per degree of freedom. Values of the RMSEA lower than 0,05 indicate a close fit, from 0,05 to 0,08 a fair fit and from 0,08 to 1 a poor fit. The chi-square tests reveal that all scales provide a good model fit. According to the RMSEA indicator, Importance-Weighted SERVQUAL, Importance-Weighted SERVPERF, SERVPERF, SERVQUAL, HEdPERF show a fair fit. The results achieved differ from those obtained in other studies (Firdaus, 2006b), who concluded that HedPERF showed a fair fit (RMSEA=0,07), while SERVPERV showed a poor fit (RMSEA=0,08).

Table 1. Confirmatory factor analysis results

	SERVPERF	**Weighted SERVPERF**	**SERVQUAL**	**Weighted SERVQUAL**	**HEdPERF**
Chi-square (p<0,01)	1109	770	962	712	1006
RMSEA	0,069	0,062	0,080	0,056	0,078

4.2 Comparative Test of Reliability

Reliability refers to the property of a measurement instrument to produce consistent results if repeated measurements are made (Mathotra, 2004). The measurement of the reliability of a summated scale, where several items are summated to form a total score, is frequently accomplished through the internal consistent reliability concept. In this study, we measure the reliability of the five dimensions of the five service quality scales with the Coefficient Alpha (Cronbach, 1951). This coefficient, which is a lower bound for the true reliability of the

survey, varies from 0 to 1 and a value of 0,7 or less generally indicates unsatisfactory internal consistency reliability. The computation of Cronbach's alpha is based on the number of items on the survey and the ratio of the average inter-item covariance to the average item variance.

As shown by table 2, Cronbach's Alpha coefficient ranged from 0,719 (Responsiveness) to 0,819 (Reliability) for SERVPERF dimensions, from 0,924 (Responsiveness) to 0,958 (Reliability) for the Importance-Weighted SERVPERF scale, from 0,758 (Tangibles) to 0,827 (Empathy) for the SERVQUAL dimensions, from 0,811 (Assurance) to 0,902 (Empathy) for the Importance-Weighted SERVQUAL scale, from 0,792 (Responsiveness) to 0,902 (Empathy) and from 0,800 (Programme Issues) to 0,918 (Non-academic aspects) for HedPerf dimensions. The results indicated high internal consistency among items within each dimension for the five scales, indicating that all scales provide good results in terms of reliability.

Table 2. Cronbach's Alpha coefficient

Dimension	**SERVPERF**	**Weighted SERVPERF**	**SERVQUAL**	**Weighted SERVQUAL**	**Dimension**	**HEdPERF**
Tangibles	0,782	0,934	0,758	0,886	**Non-academic aspects**	0,918
Reliability	0,819	0,958	0,807	0,843	**Academic aspects**	0,858
Responsiveness	0,719	0,924	0,718	0,792	**Reputation**	0,829
Assurance	0,764	0,954	0,771	0,811	**Access**	0,882
Empathy	0,804	0,947	0,827	0,902	**Programme issues**	0,800

Nevertheless, Importance-Weighted SERVPERF provides the best results, followed by the HedPERF scale. The weighted versions of SERVQUAL and SERVPERF scales provide superior results in terms of reliability than the original scales. The results also reveal that SERVPERF is comparatively superior relatively to SERVQUAL has highlighted in Table 2. The Cronbach's Alpha coefficients obtained for the HedPERF scale were consistent with those provided by other studies (Firdaus, 2006a). However, our results for the SERVERF scale reveal higher internal consistency than in his study.

4.3 Comparative Test of Validity

Validity is the extent to which a measure or set of measures correctly represents the concept of study. In order to evaluate the validity of the five scales, three validity tests were considered, respectively the content validity, the criterion validity and the construct validity.

Content validity, which is also called face validity, refers to the subjective but systematic evaluation of the representativeness of the content of a scale for the measuring task at hand. As the five considered scales were designed based on an extensive literature review and as the questionnaire was subject to expert feedback and student's evaluation through focus groups, we conclude that scale items adequately cover the entire domain of the service quality construct.

Criterion validity reflects "whether a scale performs as expected in relation to other variables selected as meaningful criteria (criterion variables)" (Malhotra, 2004) and when the data of the scale being evaluated and the criterion variables are collected at the same time concurrent validity is assessed.

The validity of the five scales was further assessed by examining whether the average scores of each scale were associated empirically with measures of conceptually related variables. The criterion variables used to compare the five scales are: *(i)* the overall satisfaction, *(ii)* the intention of future visits and (iii) the intention to recommend the university to a friend. Notice that some authors attempt to clarify the concepts of service quality and customer satisfaction and developed a model to study the relationship between customer satisfaction and perceived quality in the context of HE (Athiyaman, 1997). According to the study referred, "perceived service quality is defined as an overall evaluation of the goodness and badness of a product or service. In other words, it is an attitude. Consumer satisfaction is similar to attitude, but is short term and results from the evaluation of a specific consumer experience".

Figure 1 provides the box-plots for each of the three single-item variables and Table 3 provides the Spearman correlations between each criterion variable and each of the five alternative measures of the service quality.

Figure 1. Box-Plot with single-item variables

Table 3. Correlation among service quality global scores and the criteria

	Overall satisfaction	**Behavioral intentions**	**Word of mouth**
SERVPERF	**0,69**	0,31	0,54
Weighted SERVPERF	0,68	0,30	0,53
SERVQUAL	0,56	0,23	0,36
Weighted SERVQUAL	0,56	0,22	0,36
HEdPERF	**0,69**	**0,35**	**0,55**
All correlations are significant at the 0.01 level			

The results indicate that all the scales have significant positive correlations with the overall satisfaction, future visits and intentions to recommend to a friend. SERVPERF overall score is strongly correlated with the overall satisfaction variable, intentions of future visits and intentions to recommend to a friend. HedPERF overall score presents a high correlation degree with overall satisfaction, future visits and intention to recommend to a friend. SERVPERF and HedPERF perform better in terms of criterion validity relatively to the other three alternative scales.

Construct validity assesses "the question of what construct or characteristic the scale is, in fact, measuring" (Malhotra, 2004). We access the validity of the five scales considering the convergent validity approach, which could be defined as the extent to which the scale correlates positively with other measures of the scale same construct, and was assessed by computing the pairwise correlation coefficients for the five scales. As we observe the presence of a high pairwise correlation indicating evidence of convergence between the five alternative measures of service quality, these scales verify the convergent validity. This situation is highlighted in table 4. Nevertheless, SERVPERF scale presented the high correlation relatively to the other scales, thus enhancing the greater construct validity.

Table 4. Correlation among alternative service quality scales

	SERVPERF	**Weighted SERVPERF**	**SERVQUAL**	**Weighted SERVQUAL**
SERVPERF				
Weighted SERVPERF	**0,98**			
SERVQUAL	0,83	0,82		
Weighted SERVQUAL	0,85	0,84	**0,97**	
HEdPERF	**0,95**	**0,94**	0,79	0,79

All correlations are significant at the 0.01 level

4.4 Explanatory Power of Alternative Measurement Scales

The ability of a scale to explain the variation in the overall service quality (measured directly through a single-item scale) was assessed by regressing respondent's perceptions of overall service quality on service quality dimensions for each scale. R^2 values reported in Table 5 point to the superiority of the SERVPERF scales, followed by the HedPERF and Importance-Weighted SERVPERF (46%) scales for being able to explain greater proportion of variance in the overall service quality than in the case of SERVQUAL (34%) and Importance-Weighted SERVQUAL (33%) scales. We also observe that the addition of importance weights does not result in a higher explanatory power of the unweighted SERVPERF and SERVQUAL scales.

Our results reveal higher predictive capabilities of both SERVPERF and HEdPERF scales compared with other studies, but similar for the HedPERF scale (Firdaus, 2006b).

Table 5. Relative importance of the individual dimensions

Quality Dimension	SERVPERF	Weighted SERVPERF	SERVQUAL	Weighted SERVQUAL	Quality Dimension	HedPERF
Intercept	1,23 0.30*	1,37 0.27*	5,99 0.14*	5,97 0.14*	Intercept	0,93 0.37**
Tangibles	0,19 0.07*	0,79 0.13*	-0,03 0,07	0,54 0.2*	Non-academic aspects	0,25 0.11**
Reliability	0,14 0,07*	0,76 0.11*	**0,27** 0.09*	0,39 0.24***	Academic aspects	0,21 0.13***
Responsiveness	**0,29** 0.10*	**0,82** 0.13*	0,20 0.10**	**0,82** 0.25*	Reputation	**0,39** 0.11*
Assurance	0,12 0,07**	0,76 0.13*	0,14 0,07*	0,36 0,19**	Access	-0,03 0,09
Empathy	0,07 0,07	0,73 0.13*	0,02 0,08	0,69 0.19*	Programme issues	0,03 0,10
R^2	48%	46%	34%	33%	R^2	46%
F	35,28	35,02	19,95	18,60	F	26,70
P	0,00	0,00	0,00	0,00	P	0,00

The obtained output also allows for the identification of the relative influence of each service quality dimensions. Tangibles, Reliability, Responsiveness and Assurance are statistically significant dimensions of the SERVPERF overall service quality measure. For the Importance-Weighted SERVPERF scale all dimensions are statistically significant. Tangibles and Empathy are not statistical significant dimensions for SERVQUAL scale, and all dimensions are statistically significant for the Importance-Weighted SERVQUAL scale. Relatively to HEdPERF, the only dimension that is not statistically significant is the programme issues. Table 5 shows the relative importance of the individual dimensions.

5 MANAGERIAL IMPLICATIONS

All five scales, being multiple-items scales, provide information about the attributes where a given HE institution is unsatisfactory in providing service quality and thus needs to involve strategies to remove such quality shortfalls. The results show that the major area requiring managerial intervention according to SERVPERF, Importance-Weighted SERVPERF, SERVQUAL and Importance-Weighted SERVQUAL in this case is the Tangibles dimension. According to HEdPERF the most deficient dimension relates to Non-academic aspects. Table 6 displays the results. The ranking of the dimensions in which the institution performs better is the same for the SERVQUAL and SERVPERF scales. However, due to the inclusion of the importance-weights, the rankings are different from the unweighted and weighted scales. In this study the most important dimensions were Reliability and Responsiveness, followed by Assurance, Empathy and Tangibles. This result is consistent with previous studies (Banwet & Datta, 2003, Hill *et al*., 2003 and Douglas *et al.*, 2006) who stated that the most important aspects for students were the academic ones, and that the physical aspects of the HE institution were considered less important by them.

Table 6. Average dimension scores

Dimension	SERVPERF	Weighted SERVPERF	SERVQUAL	Weighted SERVQUAL	Dimension	HEdPERF
Tangibles	*3,93*	*0,73*	*-2,44*	*-0,45*	**Non-academic aspects**	*4,14*
Reliability	4,47	1,01	-2,06	0,37	**Academic aspects**	4,76
Responsiveness	4,51	0,98	-2,03	-0,43	**Reputation**	4,71
Assurance	**4,98**	**0,99**	**-1,61**	**-0,31**	**Access**	4,45
Empathy	4,14	0,77	-2,20	-0,41	**Programme issues**	**4,83**

Table 7 shows that the individual items identified to be taken for quality improvement as well as the order in which they are identified vary for each scale. Nevertheless “the visually appealing physical facilities” is pointed out by the five scales.

Table 7. Areas suggested for quality improvement by alternative service quality scales

	SERVPERF	*Weighted SERVPERF*	*SERVQUAL*	*Weighted SERVQUAL*	*HEdPERF*
The institution's physical facilities are visually appealing	1.º	1.º	1.º	4.º	4.º
The appearance of the physical facilities is in the line with the type of service provided	3.º	2.º	3.º		1.º
When you have problems, the institution is sympathetic and reassuring	4.º		4.º	2.º	
You receive prompt service from the institution employees	2.º		2.º	1.º	3.º
Employees of the institution give you individual attention		3.º			
The institution have operating hours convenient to all their customers		4.º			
When the institution promises to do something by certain time, it does so				3.º	
Administrative staff provide caring and individual attention					2.º

6 CONCLUDING REMARKS

The educational literature suggests how imperative it is for HE institutions to actively monitor the quality of the services they offer and to commit themselves to continuous improvements. Therefore, it is important to use a reliable instrument to measure service quality. This study compared the performance of five alternative measures of service quality by gathering data from Portuguese students belonging to a technology school in Lisbon. The alternative scales considered, respectively, SERVPERF, SERVQUAL, Importance-Weighted SERVPERF, Importance-Weighted SERVQUAL and HedPERF were compared in terms of unidimensionality, reliability, validity and explained variance of five instruments. In general, all five scale present good results in terms of measurement capabilities. However, Importance-Weighted SERVPERF and Importance-Weighted SERVQUAL presented the best model fitting according to the RMSEA indicator. In terms of reliability, the HedPERF and Importance-Weighted SERVPERF presented the higher levels of internal consistency. In

terms of criterion validity, convergent validity and explained variance the best results are observed both for SERVPERF and HEdPERF scales. We can conclude that SERVPERF and HeDPERF present the best measurement capability, but it is not possible to identify which one is the best.

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