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HEdPERF: a new service quality measurement tool for the Higher Education sector in Algeria

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Abstract

This study aims to test the possibility of using the HEdPERF scale to measure the quality of higher education services in Algeria, and to achieve the goal of the study, data was collected through the distribution of 370 questionnaires to students of Tahri Mohamed-Bechar University-Algeria, and the study was conducted, between 2020 and 2022, and out of 370 questionnaires 202 questionnaires were obtained that are amenable to statistical analysis, where my program was used: Spss.V.25 and Smart PLS 3 are in the process of analysis.

The study found that the structure of the five factors of the HEdPERF scale can be used to measure the quality of higher education services in Algeria, but after adjusting and adapting to the Algerian environment, based on the indicators of the quality of higher education services in Algeria, and therefore this study is the first of its kind in Algeria that uses the HEdPERF scale to measure the quality of higher education services.

Keyword : Quality of Service, higher education, quality indicators, HEdPERF scale.

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1. INTRODUCTION

Service industries are playing an increasingly important role in the economy of many nations. In today's world of global competition, rendering quality service is a key for success, and many experts concur that the most powerful competitive trend currently shaping marketing and business strategy is service quality (Firdaus , 2006, p. 31). Global competitiveness also exists among higher education institutions (HEI), which compete in order to attract the highest number of students and the best qualified among them (Danilo et al, 2017, p. 3).

The need for quality has become more significant for HE institutions across the globe, over the passage of time. Both global and national forces are driving change within and across individual countries and their higher education institutions, and hence adopting a quality excellence framework becomes essential for the HE institutions (Vijaya, 2016, p. 1093).

The subject of measuring service quality in higher education has received increasing attention. The universities have to constantly monitor the higher education services in order to continuous improvements (Ljiljana , 2014, p. 646).

In 2005, considering the global development of the educational market, one author, Abdullah trialed a new measurement scale in Malaysia that was created based on the SERVPERF model called HEdPERF (Higher Education PERFormance). The purpose of this scale is measuring service quality specifically in the higher education sector, as according to the author, the generic scales presented previously may not be adequate for this purpose. Considering this, HEdPERF scale could be used by Higher Educations in order to understand the students' point of view and conduct initiatives to improve the service delivered (Danilo et al, 2017, p. 6).

HEdPERF scale was applied in articles about studies in Malaysia, Brazil, Portugal, and China. However, the scale cannot be said to have been widely disseminated, as

only eleven articles published between 2005 and 2016 were selected (Danilo et al, 2017, p. 10). Future studies should apply the measurement instrument in other countries, in other industries, and with different types of tertiary institutions in order to test whether the results obtained are general and consistent across different samples (Firdaus , 2006, p. 45).

The significance of this study is that it tries to test a new measure to measure the quality of higher education services in an Algerian environment, known as the HEdPERF scale, introduced by researcher Ferdous Abdallah.

Problematic study: Based on the above, this study seeks to answer the following problem: what is the possibility of using a HEdPERF scale to measure the quality of higher education services at Tahri Mohamed University-Bechar-Algeria?

Study hypotheses:

H_0: The HEdPERF scale cannot be used to measure the quality of higher education services at Tahri Mohamed Bechar University-Algeria-

H_1: The HEdPERF scale can be used to measure the quality of higher education services at Tahri Mohamed Bechar University-Algeria-

2. REVIEW OF LITERATURE

2.1. HEdPERF Scale:

Firdaus (2006b) proposed a performance-based measuring scale the HEdPERF model (Higher Education PERFormance-only) that attempts to capture the authentic determinants of service quality within higher education sector. During the development of HEdPERF, Firdaus (2006b) conducted a survey at six tertiary institutions throughout Malaysia and collected 409 completed questionnaires. The proposed 41-item instrument was empirically tested for unidimensionality reliability and validity using

both exploratory and confirmatory factor analysis (George Karavasilis et al, 2016, p. 4).

The six factors can be described as follows (Firdaus, 2006, p. 575):

- **Factor 1: non-academic aspects.** This factor consists of items that are essential to enable students fulfill their study obligations, and it relates to duties carried out by non-academic staff;
- **Factor2: academic aspects.** The items that describe this factor are solely the responsibilities of academics;
- **Factor3: reputation.** This factor is loaded with items that suggest the importance of higher learning institutions in projecting a professional image;
- **Factor4: access.** This factor consists of items that relate to such issues as approachability, ease of contact, availability and convenience;
- **Factor5: programmes issues.** This factor emphasizes the importance of offering wide ranging and reputable academic programmes/specializations with flexible structure and syllabus;
- **Factor 6: understanding.** It involves items related to understanding students' specific need in terms of counseling and health services.

However, it is important to point out that, in subsequent studies, HEdPERF scale was modified for five dimensions: non-academic aspects, academic aspects, reputation, access, and program issues (Danilo et al, 2017) .

Study's (Firdaus , 2006, p. 43) indicated that a modified five-factor structure with 38 items resulted in more reliable estimations, greater criterion and construct validity, greater explained variance, and consequently a better fit. Besides the better quantitative results, the modified HEdPERF scale also had the advantage of being more specific in areas that are important in evaluating service quality within higher education sector. Hence, service quality in higher education can be considered as a five-factor structure

with conceptually clear and distinct dimensions namely **non-academic aspects, academic aspects, reputation, access and programmes issus.**

2.2. Quality indicators of higher education in Algeria:

It is possible to identify the most important dimensions on which most studies and research bodies that care about the quality of Higher Education have focused as follows:

First: quality of teaching staff, educational programs and teaching methods:

a) Teaching staff quality:

The quality of the teaching staff depends on the availability of a set of specifications:

- **psychological balance:** the continuation of the faculty members in the practice of the profession of teaching under the influence of psychological pressure will not only have negative effects on students, but also on the educational process, so the faculty member must undergo psychological tests that confirm his ability to absorb the psychological pressure of teaching, as well as his ability to self-control under the influence of students ' urgency to understand and repeat their requests for clarification.
- **Specifications and skills:** they can be divided into abilities to deliver, display, digest information, convey sensations, measure and evaluate.

b) Quality indicators of curricula and educational programs:

It is intended to be comprehensive, flexible and accommodating the various global challenges and the knowledge revolution and employ them in proportion to the global changes and the educational curricula must be in line with the general philosophy and achieve the mission, goals and needs of students and society as a whole; educational programs must have the following characteristics:

- To suit the needs of the student, the labor market and society, and to have the ability to connect the student to his reality and to relate to the mission of the University;
- To be flexible and Renewable to keep pace with the developments associated with the cognitive change and the developments of the Times, and to be able to prepare a graduate with the ability to analyze and think;
- To be diverse in terms of sources of education and learning and to be integrated in terms of theoretical and applied aspects;

And the following:

- Curricula and educational programs take into account the social, cultural and individual needs of students;
- Their ability to develop self-education skills.

c) University teaching methods:

The basic principle of university teaching lies in how well students understand information how well they are able to employ it in their lives, and not rely on memorization and retrieval, and then forget the information afterwards. To achieve the quality of university teaching must review the teaching requirements to be followed by faculty members:

- Determine the objectives of each course, review its vocabulary and methods of evaluation at the first meeting between the professor and the students at the beginning of the academic season;
- Good preparation for the lecture by looking at the references, so that it can be presented in an attractive and interesting way for students;
- Attend the lecture on time, so that students do not conclude that they have the right to be late for the lecture as well;

- Review the general ideas of the lecture of the previous day at the beginning of the lecture to fix its information in the minds of students and link the new lecture to the previous one;
- Encourage students to participate actively in the classroom, students learn more than the lessons they participate in;
- Diversifying the sound level, proving the sound at a single pace and for a long time is boring for students;
- Maintain eye contact for each student and tighten their attention to the topic of the lecture and notify them that the professor is interested in them;
- Clarify how to develop tests and ways to correct them, which increases the confidence of the student.

Second: the quality of educational buildings and Means (material capabilities):

The quality of Higher Education Services is related to the quality of the available and well-utilized material resources, which are mainly represented by the following:

a. **Buildings and facilities:** it is considered as one of the educational system's inputs in which the necessary processes are carried out to achieve the educational goals, including administrative buildings, halls and study stands, laboratories and workshops, offices of faculty members, University neighborhoods, stadiums, squares and toilets...Etc.

There are many indicators that indicate the quality of buildings and university facilities perhaps the most important are:

- Availability of suitable spaces for student activities and implementation of educational programs;
- Good design that allows the practice of various activities without overlap and regular maintenance of buildings;

- Safety, Safety, Public Health and flexibility to expand to meet future educational needs;
- Physical and natural conditions in buildings and installations such as ventilation, lighting and sound factors.

b. Equipment and teaching and research means: they are related to the quality of laboratories and workshops, the quality and diversity of devices and technological means dedicated to teaching courses and practicing research activities, the extent of their adequacy and suitability for the number of students and faculty members, the availability of safety factors, the availability of periodic maintenance programs, and what these devices and Means reflect the requirements of the educational and research curriculum provided by the University Institution.

c. Classrooms: the quality of the classrooms has a significant material and moral impact on the quality of the educational service provided therein and the axes of the quality of the place of study are:

- Suitable for ventilation and lighting in the hall and the adequacy of the equipment of the hall with the means of illustration, display and sound;
- Sufficient validity of seats and tables.

d. Library and information resources: the quality of the university library consists in containing the appropriate number of books, references and basic scientific journals in all disciplines to meet the needs of students and faculty members, and to keep abreast of modern developments.

It should be noted that there are many criteria for the quality of higher education, but we limited in this study to what is compatible and guaranteed dimensions of the scale, which will enable us to configure and adapt this scale according to the indicators that have been addressed.

2.3. Headperf in the Algerian higher education sector:

The HEdPERF scale has been translated, adapted and reformulated to suit the Algerian environment based on the quality indicators of higher education in Algeria, and the figure (1) shows this.

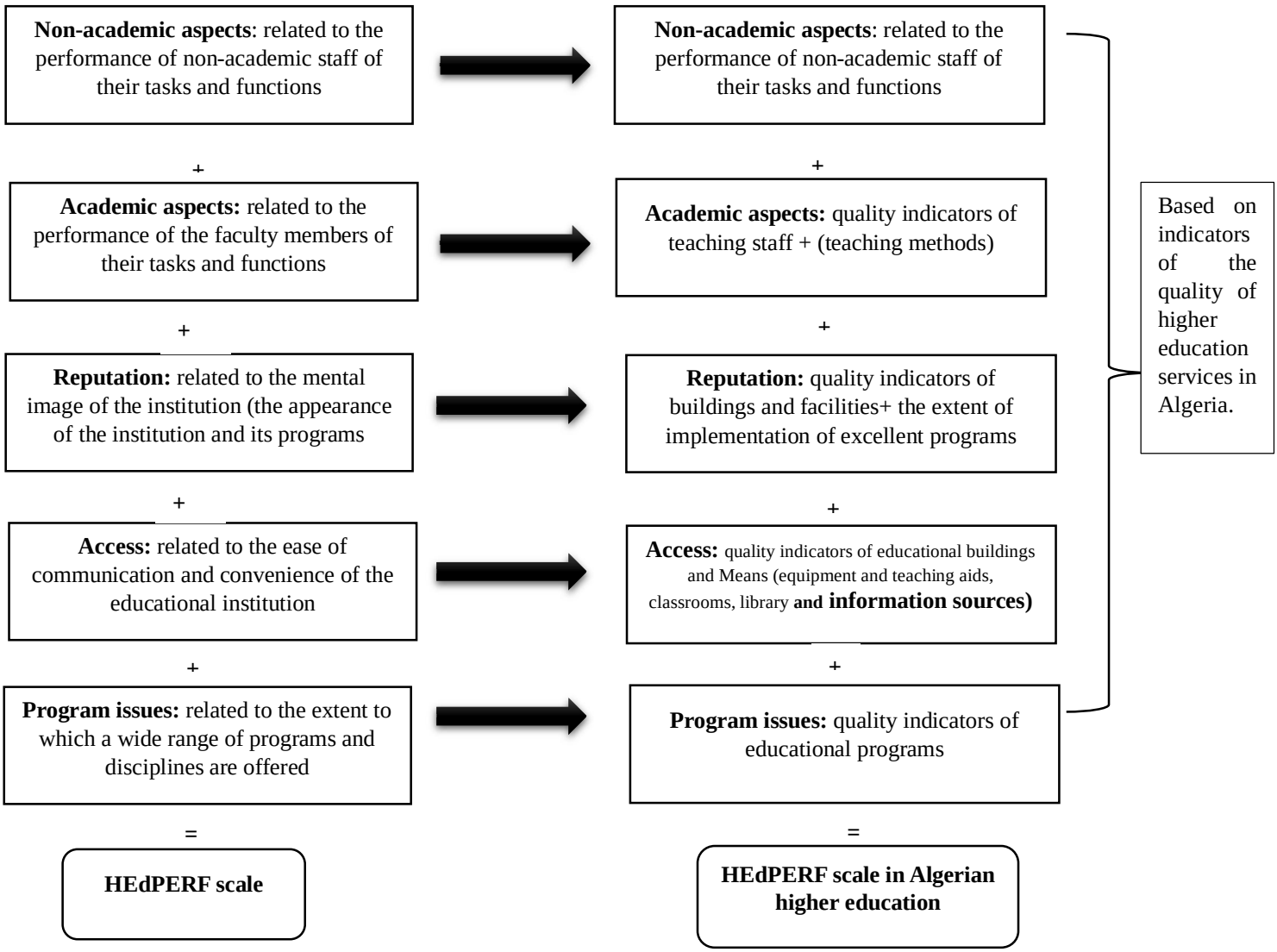
Accordingly, the dimensions of the quality of educational services in higher education in Algeria can be determined based on the dimensions of the HEdPERF higher education performance quality scale and the indicators of the quality of higher education services as follows:

- **Non-academic aspects:** it refers to the set of activities and practices carried out by the university administration towards students, and include the treatment between them and the extent to which they accept the opinions of students and their suggestions;
- **Academic aspects:** it refers to the role played by the faculty member in the educational process in the direction of students and how to implement the teaching process according to specific principles characterized by a degree of flexibility to be more appropriate to changing circumstances in educational situations;
- **Reputation:** refers to the mental image that the student forms about the educational institution he attends in terms of the quality of the educational building and the available facilities, in addition to the quality of the flexible and comprehensive educational programs that accommodate various global challenges and the knowledge revolution and employ them in proportion to global variables;
- **Accessibility:** it concerns the availability of amenities in the educational institution in terms of educational and research facilities and the ease of

communication with them, in addition to the quality of classrooms and the quality of the university library;

- **Program issues:** it means the extent to which the university provides educational programs and specialties suitable for the student, the labor market and society.

Figure 1: the adjustment of the HEdPERF scale according to the Algerian environment based on the quality of service indicators in the Algerian higher education sector



Source: prepared by the researchers based on previous studies.

3 EXPERIMENTAL

In order to answer the problem of the study, the analytical method was adopted in the field study, which constitutes the added value of the research. where we collected data based on the questionnaire tool; the latter was prepared based on previous studies that dealt with similar topics with the subject under study; then the questionnaire was presented to a group of arbitrators in order to express their opinions and suggestions that were taken into account; and the data was analyzed using the SPSS program. V 25 and smart PLS, using the appropriate statistical tools, in order to test the hypotheses developed and come up with the desired results and appropriate suggestions.

4 RESULTS AND DISCUSSION

4.1. The results of the SPSS.V.25 program:

4.1.1. Sampling Procedure and Questionnaire Design

The study was conducted in one of the Algerian higher education institutions ; which is Tahri Mohamed University, the university consists of eight faculties, with 10329 students. The study community consists of a sample of students of the university under study in various faculties, and the study sample was calculated according to the law of random stratification as follows:

$$\mathbf{n} = \frac{\mathbf{p}.\mathbf{q}}{\frac{\mathbf{p}.\mathbf{q}}{\mathbf{N}} + \frac{\mathbf{E}^2}{\mathbf{Z}^2}}$$

Where:

n = Sample size N = Community size

P: A percentage whose value is between zero and one, the value of which is adopted as follows:

p + q = 1 And from it we can find a p value = 0.5 And q value = 0.5

E = The allowable error ratio is equal to E = 0.05

Z = Standard degree and equal Z = 1.96 at a confidence factor of 95 %

When we compensation, we find that:

$$n = \frac{0.5.0.5}{\frac{0.5.0.5}{10329} + \frac{0.05^2}{1.96^2}} = 370$$

And that the number of units to be withdrawn from each layers according to the proportional distribution it is subject to the following law:

Class share = sample size required * (class size / original community size)

(370) questionnaires were distributed to the study sample and after calculating the recovered questionnaires and examining them to indicate their suitability for statistical analysis, (202) questionnaires were obtained valid for the statistical analysis process.

It should be noted that all the data of the questionnaire were submitted using the Likert scale which consists of five graded options, the researcher must choose only one of them.

Table 01: Students sample description

Gender	Frequency	Percentage
Male	59	**%** 29,2
Female	143	**%** 70,8
Total	202	**%** 100

Source: prepared by the researchers, based on the outputs of the SPSS.V.25 program.

First: truthfulness and stability of the study: the questionnaire was subjected to the test of the sincerity of internal consistency and stability.

4.1.2. Truthfulness of the questionnaire

The validity of the tool was verified by examining the internal consistency of the questionnaire paragraphs using the Spearman correlation coefficient on the study

sample, and table 01 indicates the value of the correlation coefficient for HEdPERF scale phrases

Table 02: Coefficient of correlation between the degrees of questionnaire phrases and the total degree of the dimension to which it belongs

Phrase number	Correlation coefficient	Phrase number	Correlation coefficient	Phrase number	Correlation coefficient	Phrase number	Correlation coefficient	Phrase number	Correlation coefficient
01	0.753**	**10**	0.619**	**19**	0.680**	**28**	0.710**	**37**	0.762**
02	0.840**	**11**	0.752**	**20**	0.593**	**29**	0.713**	**38**	0.694**
03	0.711**	**12**	0.752**	**21**	0.647**	**30**	0.594**	**39**	0.696**
04	0.832**	**13**	0.639**	**22**	0.580**	**31**	0.595**	**40**	0.645**
05	0.787**	**14**	0.600**	**23**	0.707**	**32**	0.678**	**41**	0.677**
06	0.697**	**15**	0.660**	**24**	0.631**	**33**	0.591**	**42**	0.646**
07	0.701**	**16**	0.668**	**25**	0.763**	**34**	0.489**	**43**	0.671**
08	0.813**	**17**	0.546**	**26**	0.623**	**35**	0.624**	**44**	0.663**
09	0.782**	**18**	0.739**	**27**	0.654**	**36**	0.640**	**45**	0.670**

Dimension of academic aspects (from phrase No. 01 to phrase No. 09);
Dimension of non- academic aspects (from phrase No. 10 to phrase No. 18);
Dimension of programme issues (from phrase No. 19 to phrase No. 27);
Dimension of reputation (from phrase No. 28 to phrase No. 36);
Dimension of Access (from ferry No. 37 to ferry No. 45).

Source : prepared by the researchers based on SPSS.V25 Program outputs.

** The correlation is significant at the 0.01 level (two-sided).

It is clear from the table above that the correlation coefficient between the degree of each phrase (from phrase 1 to phrase 45) and the total degree of the dimension to which it belongs is positive, and it ranged between 0.489 at the lower limit of phrase 34 and 0.840 at the upper limit of phrase 02.

The table also shows that the correlation coefficient for all five dimension phrases of the scale is statistically significant at the level of 1%; this shows the internal consistency between the five dimension statements of the scale of quality of higher education services, while the following table shows the Spearman correlation coefficient between HEdPERF scale dimensions and the scale as a whole:

Table 03: Coefficient of correlation between the degrees of dimensions of the scale and the total degree of the scale

Dimensions	Number of phrases	correlation coefficient
Non-academic aspects	09	0.884**
Academic aspects	09	0.708**
Reputation	09	0.832**
Access	09	0.836**
Programme issues	09	0.840**

Source: prepared by the researchers based on the outputs of The SPSS program.V25.

** The correlation is significant at the 0.01 level (two-sided).

It is clear from the table above that the correlation coefficient between the score of each dimension (non-academic aspects, academic aspects, and reputation, access and program issues) and the scale as a whole is positive, and ranged from a minimum of 0.708 in front of the academic aspects dimension to a maximum of 0.884 in front of the non-academic aspects dimension.

In addition, the same table shows that all the correlation coefficient of the five dimensions of the scale is statistically at a significant level of 1%, which indicates the internal consistency between the five dimensions of the scale and the overall score of the scale as a whole. This indicates that a HEdPERF scale can be used to measure the level of quality of Higher Education Services at the University of Tahri Mohamed - Bechar-Algeria and thus the possibility of generalizing the results of the study to Algerian higher education institutions.

4.1.3. Stability of the questionnaire

The stability of the study instrument was verified by the stability test, and the table below shows the value of the stability coefficient of the five dimensions of HEdPERF scale:

Table 04: stability coefficients of questionnaire axes using the cronbach Alpha coefficient:

Dimensions	Number of phrases	Stability coefficient (Alpha cronbach)
Non-academic aspects	09	0.915
Academic aspects	09	0.853
Reputation	09	0.847
Access	09	0.822
Programme issues	09	0.870
HEdPERF scale	**45**	**0.957**

Source: prepared by the researchers based on the outputs of The SPSS program.V25.

It is clear from the table above that the coefficient of stability of the phrases of the fifth dimensions, the third dimension, the second dimension and the fifth dimension is equal to 0.822 0.847, 0.853, 0.870 respectively and is a high coefficient, and the coefficient of stability of the statements of the first dimension is equal to 0.915 and is a very high coefficient, as for the coefficient of stability of the questionnaire for all the statements of the dimension (the general direction of the questionnaire) was estimated at 0.957 and is also a very high coefficient, which indicates the stability of the results that can come with this questionnaire.

Based on the above, we conclude that the measuring instrument represented in the questionnaire is characterized by credibility and stability, and this makes the results obtained by the study sample of 202 students are dependable results in assessing the quality of higher education services according to the HEdPERF scale, at Tahri Mohamed-Bechar-Algeria University, and therefore it can be said that realistic results will be reached that reflect the level of quality of higher education services at the University in question.

4.1.4. Statistical processing

The study aims through this statistical treatment to measure the level of quality of Educational Service according to HEdPERF scale, and thus know the direction of the

study sample (university students) about the quality of Higher Education Services provided by the University in question.

Table 05: Dimensions of educational service quality descending according to the arithmetic mean

Dementio n's number	Dimensions	Arithme tic mean	standar d deviatio n	Level of importa nce
01	**Non-academic aspects**	3.183	1.111	Medium
02	**Academic aspects**	3.097	0.807	Medium
03	**Reputation**	2.887	0.810	Medium
04	**Access**	2.770	0.893	Medium
05	**Programme issues**	2.747	0.788	Medium
Arithmetic mean and general standard deviation of educational service quality according to HEdPERF scale		**2.776**	**0.742**	**Medium**

Source: prepared by the researchers based on the outputs of The SPSS program.V.25.

By Extrapolating the above table, which shows the order of the dimensions of the quality of Educational Service in descending order according to the arithmetic mean, it is clear to us that the most important dimensions of quality from the point of view of the students of Tahri Mohamed University-Bechar- Algeria is the academic and non-academic aspects with an average of 3.183 and 3.097 respectively, which results in a positive impression by students towards the two dimensions, which indicates that the University in question is interested and keen on the efficiency of faculty members and university administration, followed by the dimensions of the issues of programs, reputation and access with an average of 2.887, 2.770, 2.747 respectively.

4.2. Results of the Smart PLS 3 program:

The evaluation criteria are represented by the composite reliability criterion (CR) to assess internal consistency (constancy), the reliability criterion of individual indicators and the extracted average variance criterion (AVE) to assess convergent credibility

(convergent honesty). It also includes the use of the Fornell-Larker criterion and the cross-loadings criterion to assess differential credibility (differential honesty).

4.2.1. Convergent credibility assessment (convergent honesty): Convergent credibility means the extent to which the phrases represent the variable to which they belong and the extent to which they are related to it, and the convergent credibility of measurement models is assessed by examining the values of the external loads criterion (external loads) and the extracted average variance criterion (AVE), the latter must have a value greater than 0.5 for each variable, so that we can determine that the variable if the external value is less than 0.70, the phrase is deleted if its deletion leads to an increase in the Ave value, The table below shows the Ave value after modifying the measurement model resulting from deleting the indicator.

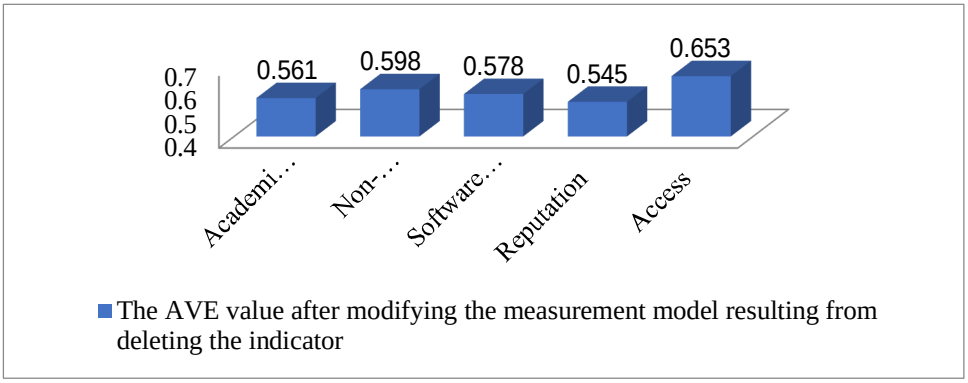
Table 06: The AVE value after modifying the measurement model resulting from deleting the indicator

The latent variable	The AVE value after modifying the measurement model resulting from deleting the indicator
Academic aspects	**0.561**
Non-academic aspects	**0.598**
Software issues	**0.578**
Reputation	**0.545**
Access	**0.653**

Source: prepared by the researchers based on the outputs of The SPSS program.V.25.

From the table above, we note that all AVE values after modifying the measurement model resulting from the deletion of the indicator became above 0.50 and therefore acceptable, which indicates that each latent variable explains more than half of the variations of its indicators, and therefore the truth of convergence was achieved in this model, which means the compatibility of the questions with each other, and the figure below shows this further:

Figure 2: The AVE value after modifying the measurement model resulting from deleting the indicator



Source: prepared by the researchers based on the outputs of The excel program.

4.2.2. Assessment of the reliability of internal consistency (constancy): Reliability (constancy) refers to the level of confidence that can be placed in the proposed tool (questionnaire) in providing the same numerical values of the results through repeated measurements, and reliability is assessed by the traditional criterion, which is cronbach's Alpha coefficient (Cronbach's Alpha), and the Rho de Joresjog criterion, which is more accurate than the cronbach's Alpha coefficient, because it incorporates errors in its calculation process, and there is another criterion for assessing reliability referred to as Composite reliability (Composite reliability), or composite stability and is denoted by (Cr), where the statistical values of these two criteria range between 0 and 1, and the values of both criteria must be greater than 0.7, and the following table shows Reliability of internal consistency (constancy) of study variables using CA, Rho and CR:

Table 07: Reliability of internal consistency (constancy) of the study variables

	Cronbach's Alpha	Rho_A	Composite Reliability
Academic aspects	0.804	0.808	0.864
Non-academic aspects	0.915	0.917	0.930
Software issues	0.816	0.820	0.872

Reputation	0.792	0.795	0.857
Access	0.732	0.750	0.849
Quality of higher education services	**0.945**	**0.947**	**0.950**

Source: prepared by researchers based on the outputs of the Smart PLS3 program.

The above table shows that most of the cronbach's alpha coefficients are significant and statistically acceptable because their value is greater than 0.70, which corresponds to the Rho_A standard and the CR Composite reliability standard.

The above table shows the composite reliability values (CR), where we note that all coefficients are significant and statistically acceptable because they are greater than 0.70, which indicates the existence of the correlation of the study paragraphs in the measurement of latent variables and therefore the reliability of the measurement model used.

4.2.3. Differential credibility (differential honesty): it means the extent to which the variable is actually distinct from the other variable, and to assess the differential credibility, three criteria are used to calculate the extent to which the variables enjoy differential credibility, the first criteria are: cross-loading; the second criterion is Fornell-Larcker; and the third criterion is HTMT.

In this study, the first and second criteria will be adopted.

4.2.4. The difference between the questions (Cross Loading):

This criterion enables us to verify that the questions that measure a latent variable do not measure another latent variable and that the value of the relationship between the question and its latent variable is greater than the value of its relationship with another latent variable until we say that the questions are independent. This is consistent with our study model, and the table below shows that:

Table 08: The difference between the questions (Cross Loading)

	Academic aspects	Non-academic aspects	Software issues	Reputation	Access
Phrase 02	**0.782**	0.491	0.548	0.505	0.408
Phrase 03	**0.792**	0.486	0.585	0.541	0.405
Phrase 04	**0.702**	0.383	0.414	0.448	0.394
Phrase 06	**0.745**	0.414	0.460	0.505	0.497
Phrase 09	**0.721**	0.363	0.540	0.426	0.424
Phrase 10	0.370	**0.737**	0.535	0.456	0.506
Phrase 11	0.415	**0.829**	0.581	0.510	0.489
Phrase 12	0.455	**0.704**	0.491	0.478	0.443
Phrase 13	0.471	**0.853**	0.491	0.506	0.498
Phrase 14	0.473	**0.806**	0.488	0.544	0.527
Phrase 15	0.505	**0.707**	0.507	0.486	0.449
Phrase 16	0.454	**0.705**	0.376	0.463	0.457
Phrase 17	0.442	**0.811**	0.514	0.545	0.552
Phrase 18	0.416	**0.791**	0.492	0.586	0.567
Phrase 19	0.557	0.565	**0.822**	0.514	0.494
Phrase 20	0.503	0.516	**0.799**	0.417	0.444
Phrase 21	0.514	0.442	**0.768**	0.358	0.360
Phrase 23	0.553	0.411	**0.703**	0.422	0.429
Phrase 26	0.469	0.502	**0.702**	0.540	0.399
Phrase 28	0.542	0.523	0.510	**0.765**	0.481
Phrase 30	0.546	0.520	0.428	**0.746**	0.580
Phrase 32	0.441	0.326	0.363	**0.700**	0.443
Phrase 34	0.422	0.517	0.425	**0.739**	0.503
Phrase 36	0.441	0.522	0.464	**0.739**	0.540
Phrase 37	0.529	0.511	0.470	0.587	**0.833**
Phrase 38	0.473	0.579	0.531	0.626	**0.865**
Phrase 40	0.358	0.474	0.344	0.449	**0.719**

Source: prepared by researchers based on the outputs of the Smart PLS3 program.

The above table shows that all questions have a greater value with the dimension to which they belong, in the sense that the relationship between the question and its latent variable is greater than the value of its relationship with another latent variable, and

therefore questions that measure a latent variable do not measure another latent variable, which indicates that the questions are independent.

4.2.5. Fornell-LLarcker: the interference of variables with each other (variable correlation-root square of AVE): this dimension enables to measure the difference of dimensions, so that the value of the relationship between the dimension and itself must be greater than the value of the relationship with another dimension until we say that the dimensions are independent according to the Fornell-Larcker criteria, and the table below shows that.

Table 09: Overlap of dimensions with each other (Fornell-Larcker)

	Academic aspects	Non-academic aspects	Software issues	Reputation	Access
Academic aspects	**0.749**				
Non-academic aspects	0.574	**0.773**			
Software issues	0.683	0.645	**0.760**		
Reputation	0.651	0.660	0.597	**0.738**	
Access	0.566	0.647	0.562	0.692	**0.808**

Source: prepared by researchers based on the outputs of the Smart PLS3 program.

It is clear from the above table that the relationship between all latent variables and themselves has a greater value than the relationship with another latent variable, and therefore it can be said that these latent variables are independent.

5. CONCLUSION

There are many and varied models of measuring the quality of higher education services including, but not limited to: the SERVQUAL scale, SERVPERF and

HEdPERF, in Algeria the SERVPERF scale is used frequently, and this study was the first of its kind in Algeria, where it aimed to use a new scale on the Algerian environment, which is the HEdPERF scale (higher education performance only).

This study sought to answer the following problem: How can the HEdPERF scale be used to measure the quality of higher education services in Algeria Based on statistical processing and data analysis using the specs software, we reject the zero hypothesis **(H_0)** that the HEdPERF scale cannot be used to measure the quality of higher education services in Algeria, and accept the alternative hypothesis **(H_1)** that the HEdPERF scale can be used to measure the quality of higher education services in Algeria, which was Tahri Mohamed-Bashar University- However the HEdPERF scale can be used in Algeria only after adjusting it to the Algerian environment and based on the quality indicators of higher education in Algeria.

The study came to the following findings:

- The HEdPERF scale (Higher Education Performance) can be used to measure the quality of higher education services at Tahri Mohamed Bechar university, but this is after adapting it to the conditions of the surrounding environment, and therefore the results of the study can be generalized to Algerian higher education institutions;
- The level of quality of higher education services from the point of view of the students of the University where the study is medium;
- The level of quality of all dimensions of the scale (non-academic aspects, academic aspects reputation access and program issues) is average from the point of view of the students of the University in question;
- Despite the validity of the Y-scale to measure the quality of Higher Education Services at Tahiri Mohammed Bechar University, this does not mean that the HEdPERF -scale is not valid to measure the quality of higher education services

because there is no study confirming its non-validity and many studies still use this HEdPERF -scale.

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