QUALITY ASSESSMENT IN HIGHER EDUCATION BASED ON SERVQUAL MODEL

Valentin ȘERBAN, Elena STOIAN

University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd, District 1, 011464, Bucharest, Romania, Phone: +40213182564, Fax: +40213182888, Emails: srbn.valentin@yahoo.com, stoian_ie@yahoo.com.

Corresponding author: srbn.valentin@yahoo.com

Abstract

This study investigates the perceptions regarding the quality of services within the Faculty of Management, Economic Engineering in Agriculture and Rural Development, questioning the students of the 4-th year of both specializations: Economic Engineering in Agriculture and Engineering and Management in Public Food and Agritourist. Students of the 4-th year were questioned, as we considered that they are final consumers of the educational service provided by the faculty. Following the study we were able to identify the improvement measures for each specialization. The students enrolled in IMAPA specialization have a lower level of satisfaction (are less satisfied) in each of the 5 quality dimensions and have a medium satisfaction level of 74%, compared to those from IEA specialization who have the medium degree of satisfaction of 79%. Both specializations require improvement measures, but priority is IMAPA;

Key words: *servqual, quality, perceptions, expectations, service quality*

INTRODUCTION

The services sector has grown considerably since the 1970s, and in present the services play an increasing role in the economy of many countries. In close relation with this trend, the services quality has become an extremely current problem. Providing a good services quality can be easily associated with increasing profitability, satisfaction, loyalty, customer keeping and attractiveness. Considering the existence of these obvious relationships, the increasing need to measure the quality of services raised. Despite the awareness of its importance, many researchers considered it difficult to define and adequate measure the quality of services [10] due to the unique features of services, particularly intangibility, inseparability, perishability and lack of ownership [9].

The faculty is by definition a didactic and administrative unit that provides educational services for the preparation in a certain field of students, master students and PhD students. According to the data published by the National Institute of Statistics in 2016, 560 faculties were in the university environment in Romania, of which 405 state, and the rest were private.

According to the trend of increasing tuition fees, the relatively large number of faculties and the fears of lowering the number of students, achieving a sustainable competitive advantage in the higher education sector should be at the top of all university agendas. In this way, Universities, through Faculties, can differentiate their educational offers by providing and improving the quality of the services provided.

MATERIALS AND METHODS

In the last three decades, a series of conceptual frameworks and models that try to measure the quality of services have been proposed [1,2,3]. Palmer argues that [7] the most efficient methods used to determine the quality of services are approaches regarding infirmation and performance. Moreover, the most commonly used methods used to measure service quality can be classified as multi-attribute quantitative measurements [1], for example SERVQUAL approach [10], SERVPERF approach and in the context of higher education, HEdPERF approach[1].

Among the approaches highlighted above, the most frequently quoted is SERVQUAL model. In addition, the development of SERVPERF model has encouraged the introduction of context-specific models for measuring service quality. Abdullah has developed the model only for performance in higher education (HEdPERF) [1]. The model is a comprehensive performance measurement scale that try to capture the determinant factors in the higher education sector.

The development of the SERVQUAL model has become a necessity to determine the perceived quality of customers [8,9,10,11]. Evaluation of service quality is essential. Like in the case of the quality of service perceived model, the infirmation model is used. In this case, the quality assessments perceived by clients result from a comparison of what clients think the organization should offer and how they perceive the performance of the organization that provides the service consider

that the level of quality of service perceived depends on the magnitude of the differences between expectations and perceptions - the smaller the difference, the higher the quality of the services perceived.

As identified by Parasuraman, SERVQUAL model uses 22 statements [8]. A seven-point Likert scale is used to record expectations and perceptions [10] established that the model incorporates five dimensions (Fig. 1 and 2) in the quality of services:

1."Tangible Elements - Appearance of physical facilities, equipment, personnel and communication materials".

2."Seriousness - Ability to perform the promised service faithfully and correctly".

3."Responsiveness - Desire to help clients and provide prompt services".

4."Assurance – The knowledge and ability of employees to inspire trust".

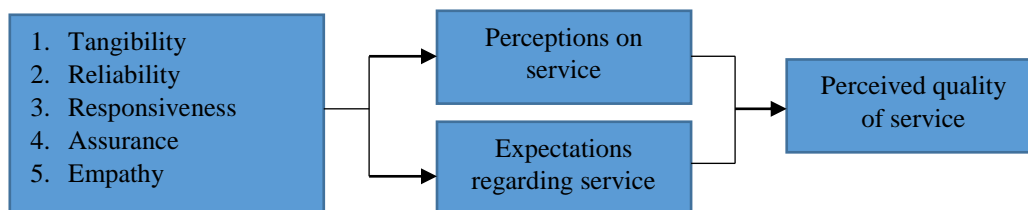5."Empathy –Individualized attention, given to company clients".

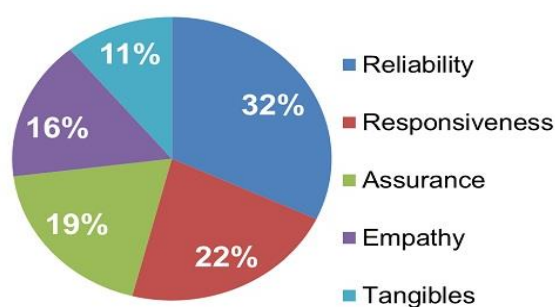Fig. 1. Dimensions of service quality in SERVQUAL model
Source: [10]

Fig. 2. Importance of the five dimensions according to SERQUAL model
Source [10]

Not all dimensions are equal. For clients each dimension is important, but not to the same extend. All service providers have to know why the service is not considered of "quality". At the same time they have to focus on all the dimensions. SERVQUAL research has shown the importance of dimensions, requiring

clients to assign 100 points in all five dimensions.

RESULTS AND DISCUSSIONS

Adapting the SERVQUAL model for evaluating educational services

DeShields et al. (2005) said that it is crucial for higher education management to use market strategies as any economic agent. These principles and strategies are applied in higher education institutions in order to gain a competitive advantage [5]. As a result, institutions increasingly understand the importance of higher education as a service industry and emphasize the relationship between student expectations and their needs [4]. Nadiri et al. (2009) emphasizes that it is essential for higher education providers to

understand the students' needs, expectations and perceptions of what constitutes a quality service to attract and meet their needs. This promotes the need for higher education institutions to continue to offer quality service and satisfy their clients to achieve sustainability in a competitive service environment [4].

Taking into account the particularities of the educational service, it can be said that this is a pure service [6]. More recently, Gruber *et al.* (2010) asserts that higher education is a service that is predominantly intangible, perishable and heterogeneous. This is due to the fact that the experience of delivery service varies from one situation to another, which makes difficult to standardize the services provided by higher education institutions. Higher education as a service also meets the criterion of perishability, because it is difficult to maintain. However, the ways to overcome this issue are evident, for example, the emergence of e-learning technology and videoconferencing (Cuthbert, 1996a) in recent years. As a result, the service sectors, such as higher education, try to contradict the perishability character of a service through innovation and technological progresses.

Despite the characteristics of the educational service, it is important to understand that higher education institutions, like any other enterprises, have different stakeholders, with different interests and agendas.

SERVQUAL model has a wide area of applicability, with which it can measure the quality of any service. By adapting the twenty-two statements it can be personalized for the particularities of any service, but this characteristic can be considered a weak point (Table 1).

Taking into account those mentioned above, the present study was realized based on the SERVQUAL model by applying a questionnaire designed to measure the quality of educational services provided by the Faculty of Management, Economic Engineering in Agriculture and Rural Development of the University of Agronomic Sciences and Veterinary Medicine from Bucharest.

Before structuring the questionnaire, we set out the points to be evaluated within each dimension set by the model.

Table 1. Setting the statements within the dimensions according to SERVQUAL model

Tangibility	1	Endowment with modern equipments
	2	Maintenance of faculty infrastructure
	3	Deportment of professors and administrative staff
	4	Materials associated with the teaching process
Reliability	5	Professionalism of professors and administrative staff
	6	Training skills required in the labor market
	7	Showing willingness
	8	Objectivity and transparency in evaluation
	9	Publication of data and information without errors
	10	Rigorous keeping of records
Responsiveness	11	Prompt delivery of deadlines
	12	Compliance with schedule / program
	13	Promptness in solving problems
	14	Prompt answer to uncertainties and questions
Assurance	15	Teacher competence
	16	Modern teaching / learning methods
	17	Possibility of finding a job
	18	Focus on providing the best preparation
Empathy	19	Convenient work schedule
	20	Treating the student individually
	21	Politeness in the relationship with students
	22	Accepting improvement proposals

Source: SERVQUAL model adapting.

Structure of questionnaire

The questionnaire based on SERVQUAL model was structured in three parts.

First part – Importance of the quality dimensions;

Second part – Expected quality;

Third part – Perceived quality

In the first part of the questionnaire respondents had 100 points and were asked to distribute them to the quality dimensions set by SERVQUAL model. Each dimension has been described in order to understand exactly what each of them refers to. We consider that every individual perceives the quality of a service in a completely different way than the one next to him. For example: a student from a faculty with technical profile should give a higher score to the Tangibility dimension, while a student from a faculty with philological profile would give a lower score. In this way the structure of the importance of dimensions can vary greatly from a service to another, but also within the same service, taking into account of particularities and consumers.

In the second part of the questionnaire were found the 22 statements mentioned above, and

on a scale of 1 to 7 respondents were asked to express the level of expectations, namely what characteristics should have, according to their requirements, a quality service of education.

In the third part of the questionnaire the same 22 statements were found and, using the same scale, the respondents appreciated the quality of educational services provided by the faculty, as they perceived during the 4 years.

Applying the questionnaire

The questionnaire was applied to the students of the IV-th year of the two specializations, being considered as consumers to whom the service was provided in full. The sample was calculated to meet a probability of 95% and taking into account a maximum error of 5%.

Due to the non-homogeneous population (aspects related to each individual: different expectations, different perceptions, different preferences, seriousness, sympathy) a selective research could not be carried out in order to generalize the results for the whole collectivity. In this context, we chose the quick method of determination that starts from the volume of total collectivity (N) without taking into account the characteristics of the population (Taro Jamane expression):

$$n = \frac{N}{1 + N * e^2}$$

n – sample size
N – volume of total collectivity
e – generally accepted error threshold (5%)

Table 2. Setting up the sample size for each specialization

Specialization	N	e	n	Respondents
IEA	128	5%	96	91
IMAPA	197	5%	131	141

Source: Own calculations.

The size of the samples calculated using the Taro Jamane formula is in Table 2.

Determining the importance of categories in the quality of services

By averaging the values given to each dimension by the respondents, we found that there are no significant differences between the two specializations, but comparing them with the model, they deviate quite enough. Respondents have established that the education service should be set up so:
- 22.5 % tangible elements – 5th place in the model structure (11%);
- 20.5 % assurance – 3rd place in the model structure (19 %);
- 20 % seriousness – 1st place in the model structure (32 %);
- 18.5 % responsiveness – 2nd place in the model structure (22 %);
- 18 % empathy – 4th place in the model structure (16 %).

Differences (GAP) were calculated by formula:

$$SQj = \frac{\sum(Pij - Eij)}{nj}$$

where:
SQ - service quality for the dimension j; j=1…5
Pij - perceives for statement i of dimension j; i=1…22, j=1…5
Eij - expectations for statement i of dimension j; i=1…22,j=1…5
nj - number of statements from dimension j
The differences can vary between -6 and +6. Extreme positive values mark an optimal quality of services, while a negative value marks a low quality with various deficiencies.

Comparative analysis of the results obtained in the two specializations

Making a comparative analysis of the results obtained, we can see that the expectations are high and relatively equal in both specializations, but the perceptions are noticeably smaller in the IMAPA specialization, maintaining relatively the same structure as for IEA.

The coefficient of variation in the perception of quality shows the great differences in the appreciation of the same service, which can be explained by the possible connection with the frequency of the students at courses, the subjectivity in the evaluation, the uniqueness of the individual.
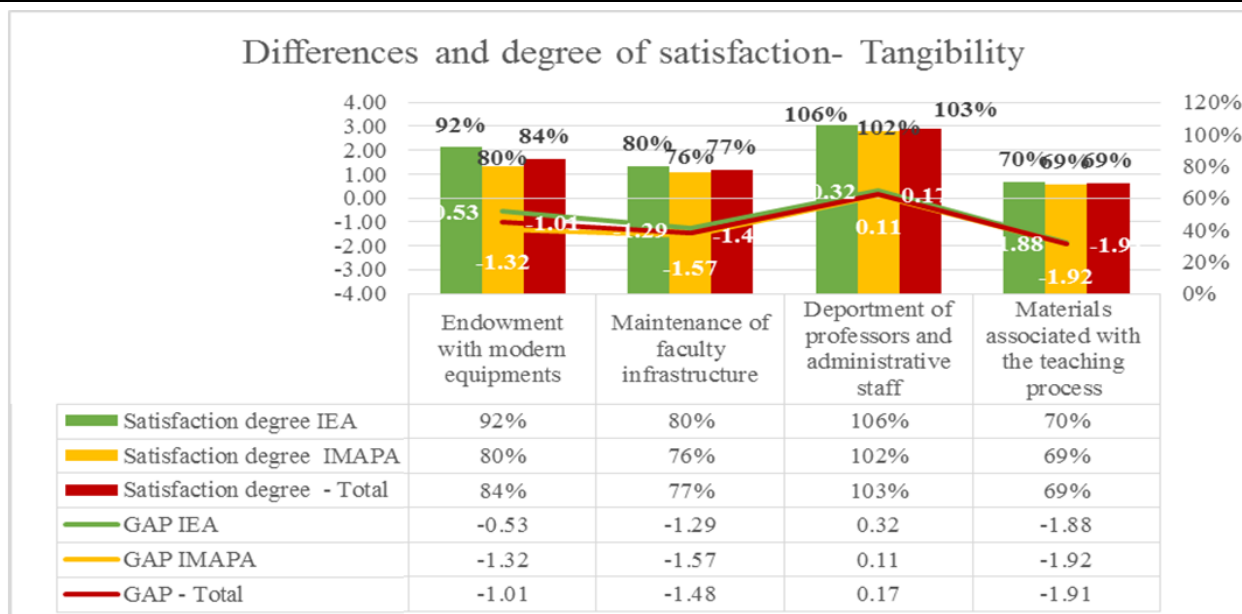
Fig. 3. Degree of satisfaction, GAP – Tangibility (IEA, IMAPA, Total)
Source: Own determination.

The students of IMAPA specialization have approximately equal expectations with those of IEA specialization, but less satisfaction for faculty endowments (GAP -1.32 / -0.53). The deportment of professors and administrative staff, the neat physical aspect is the only element that exceeds the expectations of both the IEA specialization and IMAPA. The materials related to the didactic process – courses / practical workbooks / books / library represent the aspect obviously less appreciated by both specialties (69%) - Fig. 3.
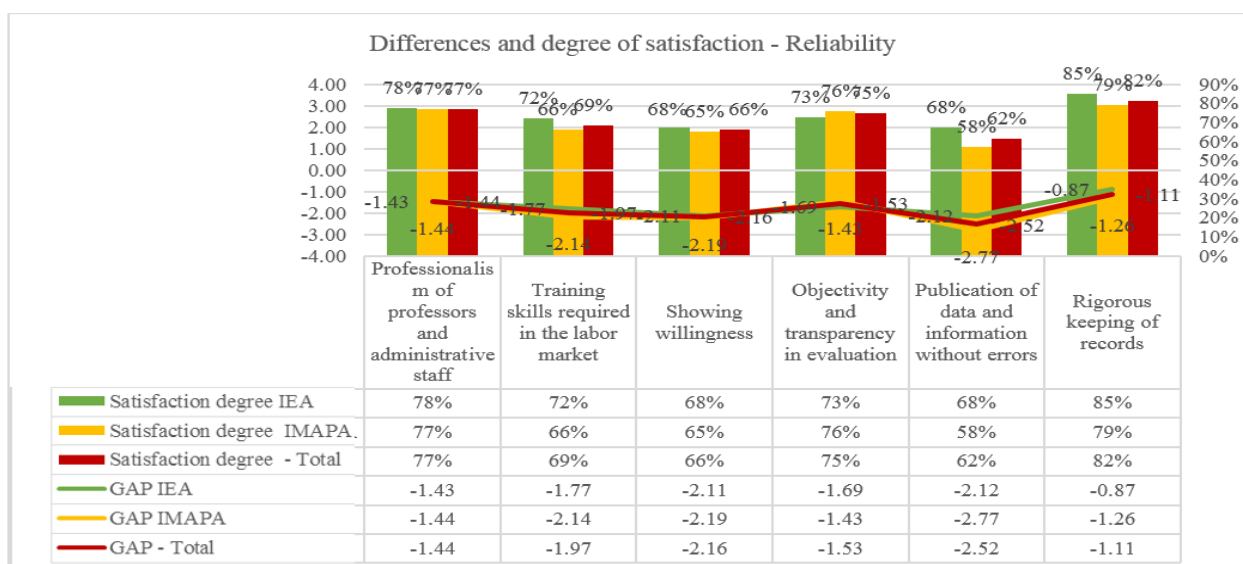

Fig. 4. Degree of satisfaction, GAP – Reliability (IEA, IMAPA, Total)
Source: Own determination.

From the analysis of the coefficients of variation results that the perceptions of the service quality are very different. These coefficients of variation are specific to relatively heterogeneous populations (coefficient between 0.2 and 0.3).

The greatest dissatisfactions come from the administrative and relational side. The respondents enrolled in IMAPA specialty report 42% unsatisfied, and those from IEA 32% when referring to the publication of error-free data and information. This situation

can be determined by the high volume of work in secretariat. It can be noticed that students enrolled in IMAPA are numerically more and more dissatisfied (Fig.4.).

The professionalism of the teaching staff and the administrative staff, the rigorous keeping of the records (applications for entries,

presence) and the objective evaluation have had good perceptions.

Within the responsiveness dimension, it can be seen that IMAPA specialization is characterized by heterogeneity in the appreciation of perceptions - the coefficient of variation exceeds the value of 0.3 or 30%.
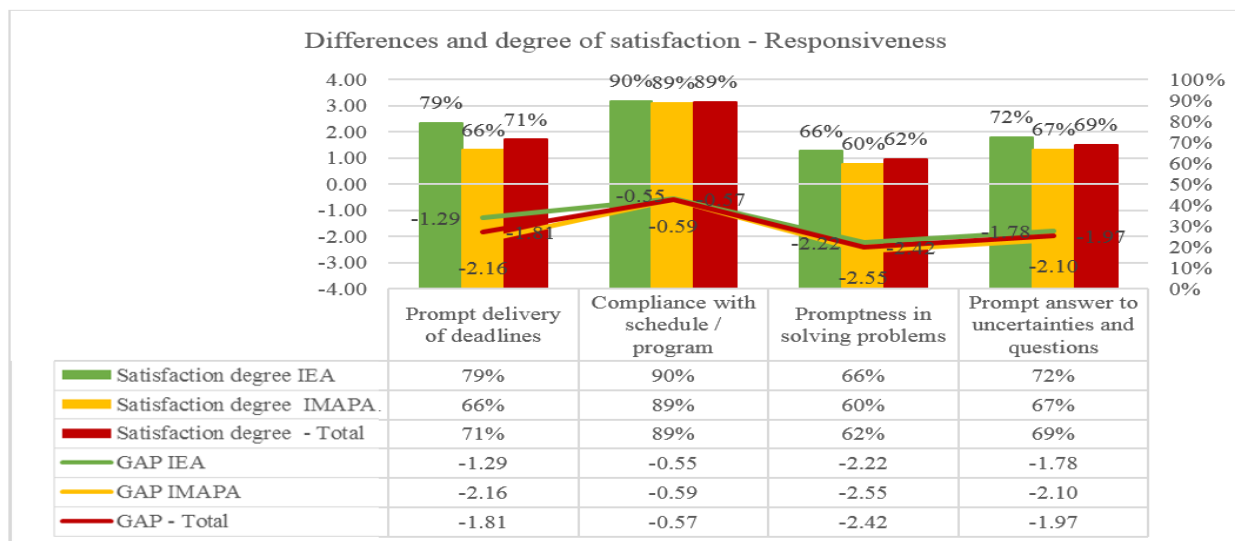

	Prompt delivery of deadlines	Compliance with schedule / program	Promptness in solving problems	Prompt answer to uncertainties and questions
Satisfaction degree IEA	79%	90%	66%	72%
Satisfaction degree IMAPA.	66%	89%	60%	67%
Satisfaction degree - Total	71%	89%	62%	69%
GAP IEA	-1.29	-0.55	-2.22	-1.78
GAP IMAPA	-2.16	-0.59	-2.55	-2.10
GAP - Total	-1.81	-0.57	-2.42	-1.97

Fig. 5. Degree of satisfaction, GAP – Responsiveness (IEA, IMAPA, Total)
Source: Own determination.

Responsiveness seems to be a sensitive aspect of quality in our faculty. Expectations are high (6.12) and much less satisfaction (4.43 average value) on all components of this dimension. In IEA specialization, the expectations have an average value of 6.16 while the perceptions have a value of 4.70. In IMAPA specialization, the expectations are roughly equal - 6.10, but the value of perceptions is considerably lower - 4.25 (Fig.5.).

The students of IMAPA specialization are much less satisfied (Gap-2.16 / -1.29) than those of the IEA specialization regarding the communication of terms in didactic activity (handing over papers, exam dates, etc.) and the secretariat (submission of documents, enrollment in optional courses).

The students of both specialties would like a quicker solving of the problems occurred (Satisfaction degree - 62%). All students

would like to be answered more promptly to queries and questions (Satisfaction degree - 69%).

IMAPA students are clearly less satisfied than those from IEA.

The students consider well-trained teachers (Degree of satisfaction - 90%) and are pleased with the teaching / learning methods (Degree of satisfaction - 80%), which they consider to be modern and adequate to learn easily.

The least satisfied declare with the possibility of finding a job after graduation. IEA students are more confident (Degree of satisfaction - 67%), while IMAPA students consider that they have fewer chances (Degree of satisfaction - 54%) - Fig. 6.

Both the respondents from the IEA (GAP - 1.46), but especially those from IMAPA (GAP -1.78) believe that the faculty should do more to provide the best training in the field (educational plan, disciplines, etc.)
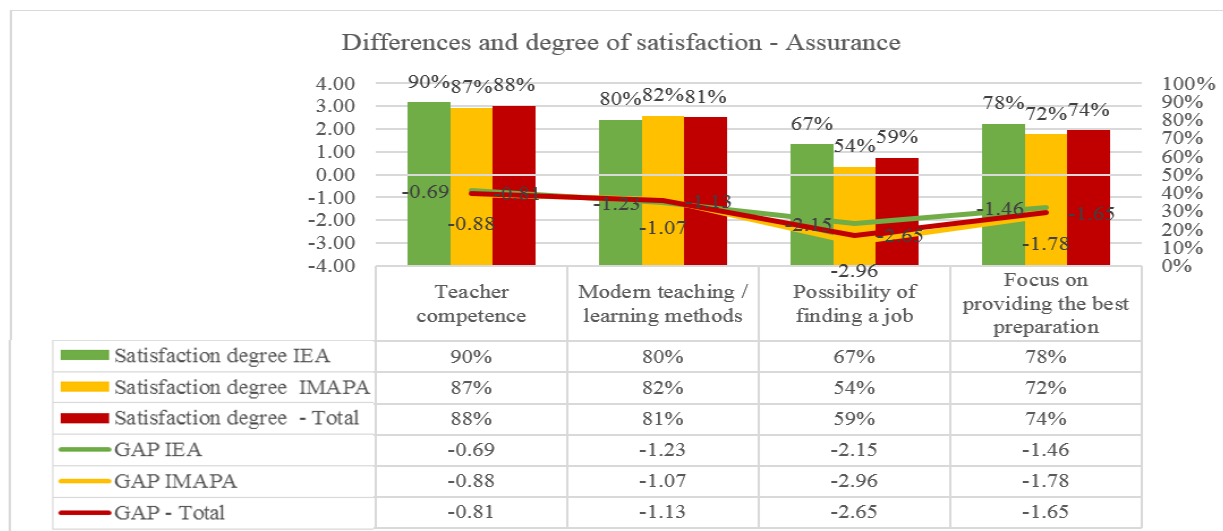
Fig. 6. Degree of satisfaction, GAP – Assurance (IEA, IMAPA, Total)
Source: Own determination.

For the aspects referring to **empathy**, students have very high expectations (6.14 / 7) and they consider to be medium satisfied with the way they relate to the teaching staff and the administrative staff (4.48 / 7). They consider that they are treated with politeness (Degree of satisfaction - 78%) and that most benefit of an individual approach to their problems and needs (Degree of satisfaction - 79%); The timetable for the courses, the rework program and the Secretariat's work program could be improved (Gap -2.04); Students would like a better feedback on the change and improvement proposals they make (Gap -2.07) (Fig.7).

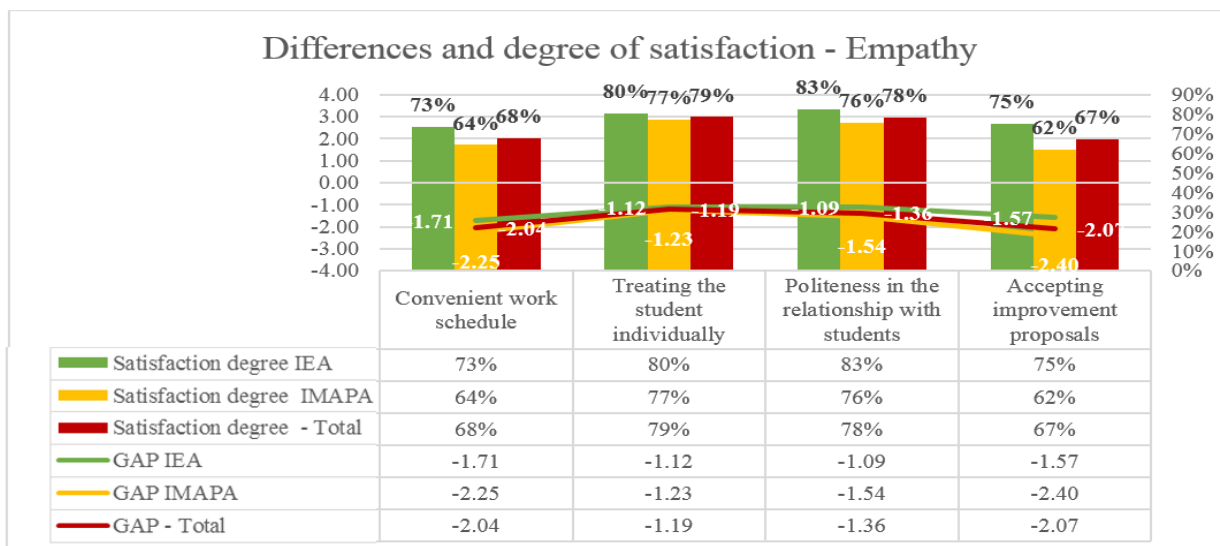Students of IMAPA specialization are less satisfied than those of IEA specialization for all aspects.

Fig. 7. Degree of satisfaction, GAP – Empathy (IEA, IMAPA, Total)
Source: Own determination.

Therefore, for the 5 dimensions of quality, the differences and the degree of satisfaction as weighted averages with the relative importance determined from survey based on questionnaire were recalculated in Table 3.

Table 3. Degree of satisfaction and GAP weighted with the relative importance of dimensions

	Synthesis of degree of satisfaction IEA vs. IMAPA									
	IEA					IMAPA				
No.	Dimension	i %	GAP	GAP p	Gs	Nr. crt.	Dimension	i %	GAP	GAP p.	Gs
1	Reliability	20%	-1.67	-0.34	74%	1	Reliability	20%	-1.87	-0.38	70%
2	Assurance	21%	-1.38	-0.29	79%	2	Responsiveness	19%	-1.85	-0.35	70%
3	Empathy	19%	-1.37	-0.26	78%	3	Assurance	20%	-1.67	-0.34	74%
4	Responsiveness	18%	-1.46	-0.26	77%	4	Empathy	17%	-1.85	-0.32	70%
5	Tangibility	22%	-0.84	-0.19	87%	5	Tangibility	23%	-1.17	-0.28	82%
	Educational service	100%	-1.35	-1.33	79%		Educational service	100%	-1.68	-1.66	74%

i % = importance of each dimension set by respondents in questionnaire
GAP p =GAP weighted with the importance of each dimension.
Gs = Degree of satisfaction
Source: Own determination.

Establishing improvement measures
Following the study we were able to identify the improvement measures for each specialization. We considered that those with a satisfaction level of less than 75% require immediate corrective actions, because the reserve of improvement consists in the aspects with even more than 25% „lack of satisfaction" or „dissatisfaction".
It can be observed for the specialization Economic Engineering in Agriculture in Table 3 that the first 10 aspects meet the satisfaction threshold of less than 75%.

It can be noticed that the main improvements have to be done mainly in the administrative component, but also in the relation student – professor and administrative staff. Students are most dissatisfied with the fact that the problems that have arisen are not solved promptly (dissatisfaction - 34%), they are not sure that they could find a post-graduate job (dissatisfaction - 33%), that the data and information published on the site and on the notice board are published with errors and that the administrative staff and teachers do not show willingness in relation with them (dissatisfaction - 32%).

Table 4. Hierarchy of improvement measures - IEA

No.	Aspect	Medium GAP	Gs
1	Promptness in solving problems	-2.22	66%
2	Possibility of finding a job	-2.15	67%
3	Publication of data and information without errors	-2.12	68%
4	Showing willingness	-2.11	68%
5	Materials associated with the teaching process	-1.88	70%
6	Prompt answer to uncertainties and questions	-1.78	72%
7	Training skills required in the labor market	-1.77	72%
8	Convenient work schedule	-1.71	73%
9	Objectivity and transparency in evaluation	-1.69	73%
10	Accepting improvement proposals	-1.57	75%
11	Focus on providing the best preparation	-1.46	78%
12	Professionalism of professors and administrative staff	-1.43	78%
13	Prompt delivery of deadlines	-1.29	79%
14	Maintenance of faculty infrastructure	-1.29	80%
15	Modern teaching / learning methods	-1.23	80%
16	Treating the student individually	-1.12	80%
17	Politeness in the relationship with students	-1.09	83%
18	Rigorous keeping of records	-0.87	85%
19	Teacher competence	-0.69	90%
20	Compliance with schedule / program	-0.55	90%
21	Endowment with modern equipment	-0.53	92%
22	Deportment of professors and administrative staff	0.32	106%

Source Own determination.

The measures to mitigate dissatisfaction degree for these statements are simple and do not involve the allocation of excessively large additional resources. Improving the relationship with students would solve many of the issues that have arisen, and establishing practice protocols with Agribusiness firms for practice could increase the confidence they have in finding a job.

The hierarchy of improvement measures for IMAPA specialization showed that the lowest (54%) and highest dissatisfaction (46%) are at the point of finding a post-graduate job. Another aspect of high dissatisfaction is the fact that the data and information published on the site and in the notice board have errors. The third aspect in the order of dissatisfaction is the promptness in solving the problems - degree of dissatisfaction 40% (Table 4 and 5).

Table 5. Hierarchy of improvement measures - IMAPA

No.	Aspect	Medium GAP	Gs
1	Possibility of finding a job	-2,96	54%
2	Publication of data and information without errors	-2,77	58%
3	Promptness in solving problems	-2,55	60%
4	Accepting improvement proposals	-2,40	62%
5	Convenient work schedule	-2,25	64%
6	Showing willingness	-2,19	65%
7	Prompt delivery of deadlines	-2,16	66%
8	Training skills required in the labor market	-2,14	66%
9	Prompt answer to uncertainties and questions	-2,10	67%
10	Materials associated with the teaching process	-1,92	69%
11	Focus on providing the best preparation	-1,78	72%
12	Maintenance of faculty infrastructure	-1,57	76%
13	Politeness in the relationship with students	-1,54	76%
14	Professionalism of professors and administrative staff	-1,44	77%
15	Objectivity and transparency in evaluation	-1,43	76%
16	Endowment with modern equipment	-1,32	80%
17	Rigorous keeping of records	-1,26	79%
18	Treating the student individually	-1,23	77%
19	Modern teaching / learning methods	-1,07	82%
20	Teacher competence	-0,88	87%
21	Compliance with schedule / program	-0,59	89%
22	Deportment of professors and administrative staff	0,11	102%

Source Own determination.

CONCLUSIONS

In conclusion, both specializations have the same model of quality, which deviates somewhat from SERVQUAL model.

Expectations are relatively uniform (medium variation) - the population is relatively homogeneous, and the satisfaction perceived differently (great variation) - relatively heterogeneous, to heterogeneous population.

Compared to similar studies, the expectations of the students of the faculty regarding the quality in education are among the highest (6.24 / 7), with no major differences between the two specializations;

The medium quality perceived is over the medium level (4.69/7);

The educational service offered by our faculty provides a medium satisfaction level of 76%;

The students enrolled in IMAPA specialization have a lower level of satisfaction (are less satisfied) in each of the 5 quality dimensions and have a medium satisfaction level of 74%, compared to those from IEA specialization who have the medium degree of satisfaction of 79%. Both specializations require improvement measures, but priority is IMAPA;

Improvement measures should be treated differently for each study program;

The study allowed the identification of reserves to improve the quality for each study program (IMAPA and IEA).

Measures to mitigate dissatisfaction degree for these statements are simple and do not involve the allocation of excessively large additional resources. Improving the relationship with students would solve many of the issues that have arisen, and establishing protocols of practice with tourism, agro-tourism and public catering companies could increase the confidence they have in finding a job.

In conclusion, IMAPA specialization students are more dissatisfied than those of IEA. The hierarchy of improvement measures shows that the vulnerabilities are the same for both specializations, the measures that should be taken are generally the same, but the solutions should be addressed starting with IMAPA specialization.

REFERENCES

[1]Abdullah, F., 2006, Measuring service quality in higher education: HEdPERF versus SERVPERF. Marketing Intelligence & Planning, 24(1), 31-47.
[2]Cronin Jr, J. J., Taylor, S. A., 1992, Measuring service quality: a reexamination and extension. The Journal of Marketing, 56(3), 55-68.
[3]Cronin Jr, J. J., Taylor, S. A., 1994, SERVPERF versus SERVQUAL: reconciling performance-based and perceptions-minus-expectations measurement of service quality. The Journal of Marketing, 58(1), 125-131.
[4]DeShields Jr, O. W., Kara, A., Kaynak, E., 2005, Determinants of business student satisfaction and retention in higher education: applying Herzberg's two-factor theory. International Journal of Educational Management, 19(2), 128-139.
[5]Hemsley-Brown, J., Oplatka, I., 2006, Universities in a competitive global marketplace: A systematic review of the literature on higher education marketing. International Journal of Public Sector Management, 19(4), 316-338.
[6]Oldfield, B.M., Baron, S.,2000, Student Perceptions of Service Quality in a UK University Business and Management Faculty. Quality Assurance in Education: An International Perspective, 8, 85-95.
[7]Palmer, A., 2011, Principles of services marketing. 6th ed. Maidenhead: McGraw-Hill Education.
[8]Parasuraman, A., Berry, L. L., Zeithaml, V. A., 1991, Refinement and Reassessment of the SERVQUAL Scale. Journal of Retailing, 67(4), 420-450.
[9]Parasuraman, A., Zeithaml, V. A., Berry, L. L., 1985, A conceptual model of service quality and its implications for future research. The Journal of Marketing, 49(1), 41-50.
[10]Parasuraman, A., Zeithaml, V. A., Berry, L. L., 1988), SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. Journal of Retailing, 64(1), 12-40.
[11]Parasuraman, A., Zeithaml, V. A., Berry, L. L., 1994. Reassessment of expectations as a comparison standard in measuring service quality: implications for further research. The Journal of Marketing, 58(1), 111-124.