

## Quality Assurance in Higher Education: Combining Internal Evaluation and Importance-Performance Analysis Models

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**Abstract:** The main objective of this study was quality assurance in higher education through a combination of internal evaluation and Importance-Performance Analysis (IPA) models. The research method was descriptive-survey one. The study population consisted of faculty, students and graduates of Physics Department of Shahid Beheshti University. The tools that have been used in this research to gather data include questionnaire, interview and check list of facilities and equipments, which their validity and reliability were calculated as well; also the descriptive statistics methods were used for data analysis. In the present study, at first the status qua of the department was explained in seven factors including faculty, students, graduates, research and educational facilities, processes of teaching-learning, educational courses and programs and the lesson programs of the department with internal evaluation approach. The research findings in the internal evaluation showed that the second factor (faculty) is at favorable level and the other six factors are at relatively favorable level. After that according to the restrictions of abovementioned approach in clearing the importance of assessed criteria, the analysis approach of importance-performance was used and according to the points was obtained in this field, the importance-performance of assessed criteria and Matrix IP were counted. The research results indicated that from the total of 39 assessed criteria, 11 criteria are in the first quarter of the matrix and require special attention; so some solutions have been presented to improve the quality of the department in the mentioned criteria.

**Key words:** Quality assurance • Higher education • Internal evaluation • Importance-performance analysis • Matrix IP

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### INTRODUCTION

Globalization, will present universities with a number of challenges and opportunities, which one of the most important of them is educational quality that affect the quality of professional for development in every countries [1]. Higher education in developing countries has serious quality problems. So in order to change this scenario, it is necessary that some investments to be done in quality systems and improvement tools [2]. Today, the quality assurance is become transnational. There is no doubt the increasingly familiarity with the quality review has focused the attentions of organizations towards documentary issue of internal process of quality, wise design and evaluation of educational objectives [3]. In fact, quality can be considered as a network of discourses which is associated with different concepts including

quality assurance, quality improvement and quality control, transparency, accountability and self-evaluation, fitness with objectives and like this. These discourses have penetrated in all the fields of higher education [4]. Although, Quality is a relatively value based concept that is wholly constructed and subjective [5]. Revision of process quality in the last twenty years show that the quality assurance lead to more documentation and transparency and that how much the internal processes are important and how what occurs daily in the institutions influence the quality [6]. In fact one of the complicated challenges of universities is design of studies to identify and fulfill needs and expectations of present and future time of society [7]. The review of existing literature also confirms this issue that the improvement and quality assurance in higher education in the literature of this field and different researches has been stated in

various forms [8]. Indeed, although several studies have been carried out on the student satisfaction with higher education, only a few have dealt with the influence of different factors on increasing or decreasing student satisfaction [9]. Some of the models that have been used for quality evaluation in higher education (which have been under attention during the past one or two decades so much in Iran's educational department) are the internal evaluation model which in this model they have been used and in the next section we will discuss them as well.

### **Overview of Theoretical Framework**

**Internal Evaluation:** Through internal evaluation, the statuses of system (program) factors are considered by the members themselves [10]. As Baud [11] has stated, in the internal evaluation, it itself at the same time is the factor of evaluation and audience too. Internal evaluation philosophy is "asking yourself", "to gauge", "to answer yourself" and "demand yourself". Bazargan [10] believes "... Internal evaluation as a basis of accreditation and quality assurance of higher education" is interpreted (p. 18). According to the research done by Ferasat Khah [12] regarding the accreditation model by the authentication of quality assurance in higher education institutions with twenty comparative study done in sixteen different countries, in international level, the internal evaluation is considered the first reference data for quality assurance in higher education and totally more than 90% of the evaluated systems in the abovementioned research are internal evaluations for accreditation of higher education and quality insurance system. Also McNamara and O'Hara [13] stated that self-evaluation is now a general concept and further education systems across Europe, more or less use that in order to accelerate to integrate in schools. Despite of the abovementioned issues, a number of experts do not consider the conventional approach for evaluating the internal evaluation to progress quality. Naderi [14] through an article does not consider the internal evaluation as a reasonable approach to improve quality and he points out that internal evaluation is concentrated on the performance analysis of educational department in comparing the objectives that have been previously determined or the procedure of its activities and this issue causes that a great deal of the expectations of interested parties not to be realized and the essential findings for policy making for the purpose of improving quality not to be done at a worthy level. The kind of outlook in designing and implementing internal evaluation is to compare individual with him/herself (past objectives and performance) and that what findings have been

achieved in comparison with the past objectives and status; in other words the internal evaluation is the same as a mirror that reflects the performance of department as compared with its objectives! Vanhoof and Petegm [15], for participation in the processes of quality assurance in higher education often offered a complementary and integrated relationship between internal and external evaluation. In fact, they concluded that the combination of these two approaches (internal and external) can be very positive and constructive. Kemenade and Hardjono [16] also in an article criticized against self-evaluation as an obligatory part in the accreditation system stated that self-evaluation is not a reliable tool for control alone because it is a very complex and time-consuming activity; in addition to that, there is serious threat "to adapt the author's comment". Henk Blok, Slleegers and Karsten [17] in an article criticized the conventional self-evaluation methods and described the balance between internal and external evaluation using the Self-evaluation, Visitation and Inspection (SVI) model. An overview of the results of internal evaluation in Iran [18-30] indicates that the quality of evaluated educational departments is generally reported at favorable level or relatively favorable level.

But the question is whether really the quality of educational departments as special and the quality of Iran's higher education as a general are at a favorable level? This issue can be observed from another angle and since the internal evaluation results are not consistent with the quality reviews in higher education and in most of the current researches, some existed results indicated the low level of departments' quality and educational courses. The other problem is that the definition of quality as the level of conformity with the standards is really restrictive. In the standard discussion, it is assumed that there is an optimum method and every person at any conditions can use them and to get the same results; while in the real world, this issue is not like this [31]. In fact, due to the strong presence of manpower to do service activities, standardization of quality of service, makes it impossible. Another point in this regard which should be noted is that even if the factors evaluated have a favorable situation, still it does not mean the fulfillment of the expectations of stakeholders and the department's quality. Because in the new definition, quality is a function of customer satisfaction and the level of importance which it has for the customer; Based on customer-oriented principle, designing the education system according to the real needs of users is done by these services, not based on designers and close environment! [32].

**Importance-Performance Analysis:** One of the most important challenges and problems of the current models of services quality is their inability and defects in presenting a strategy as priority for allocating resources to improve the quality of program planning [33]. One of the methods that have been suggested in order to solve the above problem is the IPA. This method from the marketing field was presented by Martilla and James in 1977 [34], due to the inability of its extraordinary analysis, it was used in different scientific fields and it is being developed as well [35]. There are some areas such as finance and banking [36], Hotel [37], public and higher education [38, 36, 39, 33]. The essential assumption of IPA technique is that the customers satisfaction levels from the criteria is generally effected by expectations and also their judges regarding the performance of organizations in providing services and goods [40]. The IPA technique has two dimensions: importance and performance. In other words, in this method doing the analysis requires that the performance status and importance degree of each criterion, to be specified based on data obtained [41]. IPA helps the organizations to identify gaps between importance and performance [34]. In this model, in order to show that where there is disconfirmation based on the P-I (subtracting the mean score for "performance" of each criterion, scores of "importance" of it), is calculated [33].

The matrix Importance-Performance or the matrix IP, is the main advantage of the IPA model [33]. In fact, the main role of the IPA model, which is consisted of four sections or quarters, is to help decision making process [33]. This Matrix is used to identify the priority of criteria for the purpose of improvement [39]. In fact, the four quadric matrix of importance-performance is used to identify areas that need improvement and corrective action for the purpose of reducing the gap between importance level and performance criteria [41].

In Matrix IP, the first quarter ( $Q_1$ ) is called "Concentrate here", second quarter ( $Q_2$ ) is called "Keep up the good work", the third quarter ( $Q_3$ ) is called "Low priority" and the fourth quarter ( $Q_4$ ) is called "Possible over kill" [39, 43]. Strategy for the first quarter (High importance-low performance), is that the efforts and attentions are more and performance should be increased. Strategy for the fourth quarter (Low importance- high performance) is that the efforts are high; if the sources are wasted, so the performance should be reduced. The second quarter indicates the high performance and importance and in the third quarter, the performance and importance are both at low levels; the abovementioned quarters indicate the favorable conditions and the main strategy is that this situation to be preserved [44].

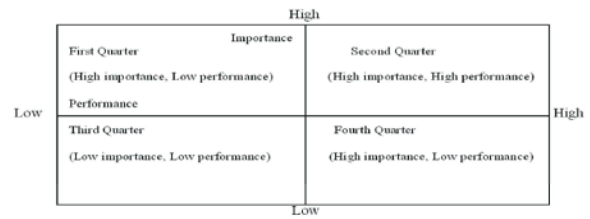


Fig. 1: Matrix IP and its quarters [43]

In this study, firstly using internal evaluation approach, the status qua of the educational department was described in seven factors namely, objectives, faculty, students, graduates, educational and research facilities, processes of teaching-learning and training courses and programs (with 43 criteria). Then, the above criteria values were evaluated and the results were put in the IP matrix. In other words, in the current research by using a combination of evaluated internal results and the IPA importance dimension, it was attempted to solve the main problems of internal evaluation (which is paying attention to the current situation) and eventually some solutions were presented in order to improve the situation which was raised from the needs and applications of customers. In fact, the basic research questions include:

- How is the situation of criteria representing the quality of the Physics Department, based on the internal evaluation and IPA models?
- Based on the results of the research, what strategies we can present to improve the quality of the department?

**Methodology:** The current study, in accordance with the objective, is an applied research and in terms of gathering and analyzing the data is a descriptive-survey research. The statistical population is as follows:

- Faculty members of Physics department in the academic year 2010-2011.
- Students of Physics department (undergraduate four consecutive years, Masters three consecutive years and Ph.D. five consecutive years).
- Graduates of Physics department (undergraduate four consecutive years, Masters three consecutive years and Ph.D. five consecutive years).

The number of each group has been mentioned separately in Table 1.

The complete enumeration sampling technique was used to collect data from the faculty and students and the access sampling technique was used for the graduates.

Table 1: Statistical Society to gather required data

Educational Year	Full-time faculty members	Undergraduate students	Graduates of the undergraduate	Master students	Graduates of the Master	Ph.D. students	Ph.D. graduates
2006-2007	26	41	38	37	22	5	3
2007-2008	18	32	39	42	16	9	2
2008-2009	18	38	41	36	16	6	3
2009-2010	19	35	39	55	33	5	4
2010-2011	22	49	31	43	35	2	3

Tools which have been used in this research for data collection include: questionnaires, interviews checklist of facilities that were set based on the Likert spectrum. To check the validity of the tools, content validity method was used. For reliability of the tools, Cronbach's alpha was used. The reliability values for questionnaire of the undergraduate was (0.88), for questionnaire of graduate students was (0.91), for questionnaire of faculty was (0.81) and for questionnaire of graduates was (0.84). Also for the purpose of judgment regarding the level of evaluated factors (internal evaluation) a range of three degrees (favorable, relatively favorable and unfavorable) was used (the scores of 1 to 2.33 unfavorable, 2.33 to 3.66 relatively favorable and 3.66 to 5 favorable were determined).

In this study, firstly through interviews with the faculty of physics department and the experts of educational evaluation inside the country, the most important factors and criteria for implementation of internal evaluation were determined and approved by the internal evaluation committee of physics department.

At the continuation some questionnaires were given to the faculty members, students and graduates of Physics Department. Also the required data for research were compiled; the questions of questionnaire were based on Likert Spectrum from so little to so much (so respectively the scores of 1 to 5 were devoted for them). Also in order to review the importance level of evaluated criteria, the research statistical sample was asked to specify the criteria as very little to very important (also respectively the scores of 1 to 5 was considered for them). At the continuation, the difference between the performance and importance was calculated; after that by using the descriptive statistics, the results were analyzed.

## RESULTS

**Q<sub>1</sub>:** How is the situation of criteria representing the quality of the Physics Department, based on the internal evaluation and IPA models?

Table 2 shows the status qua of 7 factors including the objectives, faculty, students, graduates, educational and research facilities, processes of teaching-learning and

training courses and programs by using 39 criteria. In the third column, the internal evaluation results have been shown; the fourth column shows the optimal level of internal values. This optimal level has been determined by the internal evaluation committee. As it is seen, the mentioned levels are so general and do not show the status qua of the department well. Therefore, with adding the importance dimension of the IPA model, we attempted to solve the problem. Then, importance of evaluation criteria was determined; after that the gap between importance and performance was calculated and the position of each criterion was determined in the four dimension of Matrix IP (Figure 4).

As it is shown in the Figure 2, the criteria evaluation results indicate that 11 criteria are in the first quarter of the matrix. This quarter, showing that the criterion located in this area requires immediate corrective action. Therefore, the need to consider a high priority for the criteria that is in this quarter. 10 criteria are in the second quarter of the matrix; the second quarter indicates the high performance and operation and the criteria of this area are in relatively favorable conditions and this situation should be continued and preserved. 8 criteria are in the third quarter; in this quarter, both the importance and performance are low, however, these criteria for the system performance are not threatening and they don't require immediate correction.

Eventually 10 criteria in the fourth quarter indicate the low importance and high performance and they show the strengths which are not so important and probably the efforts and the used sources in this place should be focused in another place.

**Q<sub>2</sub>:** Based on the results of the research, what strategies we can present to improve the quality of the department?

As it is observed in the figure 2, the results indicate that the criteria 4, 15, 16, 17, 19, 26, 27, 30, 33, 35 and 36 are in the first quarter and they need special attentions. After verifying the current situation, the importance of the abovementioned criteria, the weaknesses and the

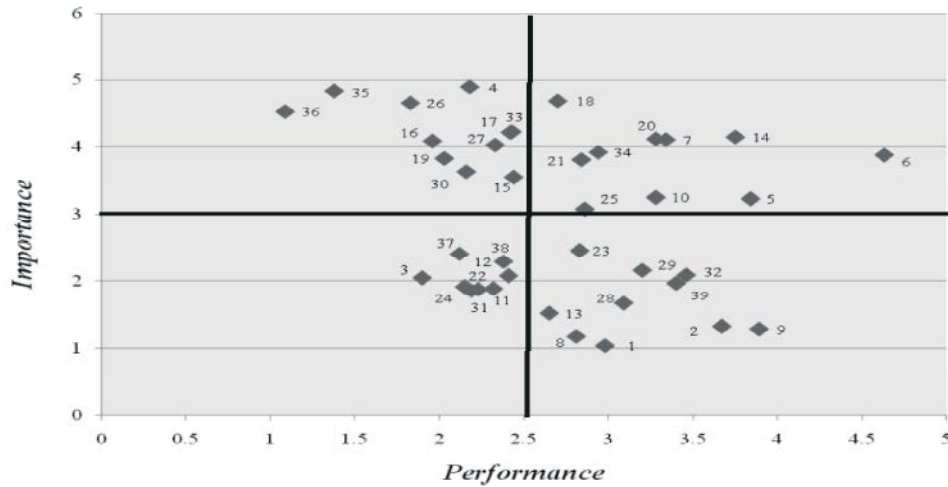


Fig. 2: IP Matrix based on the criteria evaluation results

Table 2: Results of analysis of internal evaluation and IPA

Factor	Evaluation Criteria	Internal evaluation	Optimal levels	Importance	Gap	Matrix IP
Department objectives	1. Understanding the inherent beauty of the natural world and love of learning in students of physics	2.98	Relatively favorable	1.04	1.94	Q4
	2. Ability to teach students in physics courses	3.67	Relatively favorable	1.33	2.34	Q4
	3. Preparation of students in jobs related to their field	1.90	Unfavorable	2.05	-0.15	Q3
	4. development of graduates to generate new knowledge and its dissemination in the field of physical sciences	2.18	Favorable	4.90	-2.72	Q1
Faculty	5. Faculty status of the department (education, employment, foreign language fluency and computer)	3.84	Favorable	3.23	0.61	Q2
	6. Educational activities	4.63	Relatively favorable	3.88	0.75	Q2
	7. Research activities	3.34	Relatively favorable	4.11	-0.77	Q2
	8. Student satisfaction from the faculty members	2.81	Relatively favorable	1.18	1.63	Q4
Students	9. Relationships with department and colleagues	3.89	Favorable	1.29	2.6	Q4
	10. Students interest in the field	3.28	Relatively favorable	3.25	0.03	Q2
	11. Student awareness of the course	2.32	Relatively favorable	1.89	0.43	Q3
	12. Students' awareness of labor market	2.41	Relatively favorable	2.08	0.33	Q3
Educational and research facilities	13. Student participation in educational processes and research faculty	2.65	Relatively favorable	1.52	1.13	Q4
	14. Research activities of graduate students	3.75	Favorable	4.15	-0.4	Q2
	15. Students' academic achievement	2.44	Relatively favorable	3.55	-1.11	Q1
	16. Library and information system	1.96	Relatively favorable	4.09	-2.13	Q1
Processes of teaching-learning	17. Computer facilities and services	2.43	Relatively favorable	4.23	-1.8	Q1
	18. Laboratory	2.70	Relatively favorable	4.69	-1.99	Q2
	19. Educational and research department	2.03	Relatively favorable	3.83	-1.8	Q1
	20. Student satisfaction of the residence (physical condition, health and accommodation facilities)	3.28	Relatively favorable	4.12	-0.84	Q2
Academic courses and programs	21. Faculty use of appropriate teaching methods	2.84	Relatively favorable	3.81	-0.97	Q2
	22. Clear criteria to evaluate student work at the beginning of semester	2.19	Relatively favorable	1.86	0.33	Q3
	23. Provide appropriate feedback to student evaluation results	2.83	Relatively favorable	2.46	0.37	Q4
	24. Teaching materials and educational aids	2.15	Relatively favorable	1.92	0.23	Q3
	25. A clear lesson from the masters course	2.86	Relatively favorable	3.08	-0.22	Q2
	26. Teachers and teaching the concepts of power transfer	1.83	Unfavorable	4.66	-2.83	Q1
	27. Teachers desire to respond to student questions	2.33	Relatively favorable	4.03	-1.7	Q1
Graduates	28. Proportion of subjects with a combination of individual and community needs	3.09	Relatively favorable	1.67	1.42	Q4
	29. Relationship between courses	3.20	Relatively favorable	2.16	1.04	Q4
	30. Appropriateness of educational and research facilities	2.16	Relatively favorable	3.63	-1.47	Q1
	31. Evaluation of training	2.23	Unfavorable	1.88	0.35	Q3
Graduates	32. Diversity curriculum	3.40	Relatively favorable	1.97	1.43	Q4
	33. Disproportionate number of those admitted with a capacity of training	2.42	Relatively favorable	4.22	-1.8	Q4
	34. Educational Status of Graduates	2.94	Relatively favorable	3.92	-0.98	Q2
	35. Communication of the graduates with department	1.38	Unfavorable	4.84	-3.46	Q1
	36. Graduate employment in related job field	1.09	Unfavorable	4.53	-3.44	Q1
	37. The role of curriculum in vocational skills learned in school	2.12	Relatively favorable	2.41	-0.29	Q3
	38. Graduate student research activities	2.38	Relatively favorable	2.29	1.09	Q3
	39. Graduates view about the knowledge, competence and attitudes acquired in the framework of the curriculum	3.46	Relatively favorable	2.09	1.37	Q4

Table 3: Evaluation criteria and suggestions for their improvement

Criteria	Suggestions for improvement
Developing students abilities in order to generate new knowledge and its dissemination in the field of physical sciences	<ul style="list-style-type: none"> <li>• Holding methodology workshops, essay writing in order to encourage students to do research activities</li> <li>• Informing students about the conferences, congresses, related publications in order to persuade them to produce and disseminate scientific literature and research</li> </ul>
Students' academic achievement	<ul style="list-style-type: none"> <li>• using appropriate mechanisms to monitor students' progress during their studies and provide appropriate feedback</li> <li>• To provide necessary facilities for conducting research on student interest</li> <li>• To improve the quality of counseling services in educational and research issues</li> </ul>
Library and information system	<ul style="list-style-type: none"> <li>• Devoting a time of teaching to students' interesting topics</li> <li>• To hold monthly meetings of the authorities of college with university students and faculty members in order to provide information regarding the facilities and equipments of library</li> <li>• To create a broader level library with more capacity</li> </ul>
Computer services	<ul style="list-style-type: none"> <li>• To update and modernize library facilities and funding to purchase new books in the field of physics</li> <li>• Having access to educational and new computational software</li> <li>• Providing broadband for faculty members and students</li> </ul>
Educational and research Spaces of the department	<ul style="list-style-type: none"> <li>• Creating Computer site in a broader and more capacity and updating of computer facilities</li> <li>• Paying attention to the students comments in improving the classes facilities</li> <li>• Building amphitheater and a seminar room with global standards</li> </ul>
Teachers ability of expression and transfer	<ul style="list-style-type: none"> <li>• Improving the working rooms situation of faculty</li> <li>• Holding training workshops to exchange ideas and experience of faculty members about new ways to teach</li> <li>• Establishing measures to enhance the exchange of experience with liveried masters and experienced teachers about teaching methods</li> </ul>
Enthusiasm of the faculty to answer students' questions	<ul style="list-style-type: none"> <li>• Preparing criteria related to monitoring the progress of faculty members in related fields</li> <li>• Approving rules to devote time to counseling and fix issues in the case of students by faculty</li> <li>• Establishing measures to enhance the exchange of professional experienced professors with new professors</li> <li>• Organizing scientific camps resort to interact with professors and students in order to create more relaxation for the students and professors</li> </ul>
Appropriateness of the program with educational and research facilities	<ul style="list-style-type: none"> <li>• Allocating budget priority for the departments, according to the priorities and the needs and expectations of their customers</li> <li>• Needs assessment before compiling the educational programs regarding the current situation of education and research facilities</li> </ul>
Appropriateness of number of those admitted with the capacity of	<ul style="list-style-type: none"> <li>• Considering fixed working rooms for Ph.D. students</li> <li>• Assessment of the educational program</li> <li>• Paying attention to educational courses by considering training and the number of faculty members</li> </ul>
Relation of graduates with the department after graduation	<ul style="list-style-type: none"> <li>• Making the facilities and equipments of department so appropriate with the educational courses</li> <li>• Establishing an association for graduates and preparing an environment and obligation for participation of graduates in this association</li> </ul>
Graduate Employment related job field	<ul style="list-style-type: none"> <li>• Paying attention to entrepreneurship education and empowerment and self-employment in educational programs</li> <li>• Increasing the scientific and practical powers of graduates in the educational fields in order to accelerate their employment procedure in related working fields</li> </ul>

shortages of the department were reviewed and some solutions were presented in order to improve the quality of department which has been presented in the Table 3:

### CONCLUSION

The quality of higher education systems is one of the concerns which has been under attention during the past two decades in most of the countries of the world; Iran's higher education during the past two decades has faced with different challenges and different problems; the quantitative expansion of higher education, abundance of different educational institutes, the increase of university students and the existence of a great number of unemployed graduates are some of the challenges which has taken Iran's higher education in challenge. The expansion of higher education system without paying attention to the available potentials and the power of economic, social and cultural issues has been followed with the quality reduction of higher education system. In fact, we can not consider the quantity expansion and

increase of number of students and graduates as a reason on the favorable quality. In an era that globalization, structures changes, increase of request for education and such cases are considered the most important challenges of higher education, it is necessary that the promotion and progression of system quality to be parallel to the quantity growth of that and the attention of authorities and managers to be on higher education. These challenges clear the need of authorities' attention and responsibility in higher education system of Iran and it persuades the university system to revise its structure, message, objective, function and processes. Indeed, assessment brings a strategy by which we can find out the shortages and errors of the system. So in order to measure this issue that how is the situation (function) of an educational system and what are the strengths and weaknesses? We can only evaluate the condition and performance of its constituent elements and to judge it by an approach [45]. Reviewing the past evaluations in Iran indicate that the internal evaluation reports are usually descriptive and they have a gap from its main philosophy

which is compiling and finding the reasons of problems of educational departments' quality. According to the existence of gap between the internal evaluation results and evaluation based on other quality tools from one side and the need for paying attention to this issue that internal evaluation also as the same as other quality models in higher education has some strengths and improvable points from the other side, it is necessary that a balance to be created for internal evaluation. In the present study, at first by using the internal evaluation approach, the situation was described in seven factors including department objectives, faculty, students, graduates, teaching-learning processes, teaching and research facilities, academic programs and courses and educational projects. Based on the internal evaluation results, the second factor (faculty) is in favorable condition and the other six factors are in relatively favorable conditions. At the continuation by the use of IPA model, the importance of abovementioned criteria were evaluated. In fact, this research has combined the first stage of internal evaluation with importance model of IPA; so by this method we solved the main problem of internal evaluation approach according to the current situation of department and proposal of suggestions for improvement based on them; secondly, the IPA model has been stabilized based on more comprehensive information and by considering the importance of evaluation criteria based on the outlook of study population (e.g. faculty, students and graduates), it was lead to a more comprehensive perspective. In other words, due to the fundamental role of criteria in IPA model, getting accurate results from this method requires the use of accurate criteria as well. Therefore, accurate identification of components or criteria which are the bases for analysis can be considered an important step in accurate use of the abovementioned methods. So according to this issue, identification of components or criteria of education quality also are considered as the most essential and important activities in using IPA method in education quality insurance. So according to this, based on the national and international experiences, the internal evaluation is considered as one of the most comprehensive models of internal evaluation; in the current research, we attempted to combine these two models and to take a step towards quality insurance in higher education. The results of this stage indicated that 11 criteria are in the first quarter of the IP Matrix which indicates that the criteria that have been put in this area

require urgent correction activities; so some priorities should be considered for the criteria tht are situated at this quarter.

Totally, we can be hopeful that this research to be able to identify the current situation and ideal situation of Physics Department and to present an image of the requests of faculty, students, graduates and to help the improvement of this department in the future. In fact, conducting some projects in the field of quality assurance in the educational departments lonely cannot create valuable changes in the higher education system, except all the authorities of higher education to oblige themselves to implement the suggestions, so that the quality evaluation is considered as a tool to improve education quality.

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