

The application of total quality management standards in Egyptian physiotherapy colleges

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Abstract

Background: Higher education is the cornerstone of the progress of societies. it has become very important for the educational institutions to implement the concepts of total quality management (TQM) and their specific standards to improve the quality of educational outputs. So, this study was conducted to identify the extent to which TQM standards applied to Egyptian physiotherapy colleges from the point of view of their administrative leadership, to determine whether there is difference depending on the type of faculty (government or private) and to determine the correlation between the number of experience years and the extent of TQM application. **Methods:** The study sample consisted of 12 administrative leaders (deans and vice deans) from 7 faculties. The study tool was a questionnaire consisted of 55 items with established validity and reliability; the questionnaire was divided into 7 fields, reflecting the total quality standards in education. Statistical analysis was performed using the means and standard deviations of the areas of the questionnaire, independent sample t tests and using Pearson's correlation coefficient. **Results:** although the overall average of the means of the scores was high, there is statistically significant difference between the means of the degree of application of TQM in the faculties of physiotherapy in favour of government colleges. Additionally, the results showed no correlation between the number of experience years of the study sample and the grades of their answers on the question axes. **Conclusion:** implementing comprehensive quality programs in education is highly recommended, paying special attention to private colleges.

Key words: Administrative Leadership; Physical Therapy; Standards; Total Quality Management.

المستخلص

الخلفية: التعليم العالي هو حجر الزاوية في تقدم المجتمعات. تماشياً مع مفاهيم ومعايير إدارة الجودة الشاملة ، فقد أصبح من المهم جداً للمؤسسات التعليمية أن تنفذها لتحسين جودة المخرجات التعليمية. و اجريت هذه الدراسة لتحديد مدى تطبيق معايير إدارة الجودة الشاملة في كليات العلاج الطبيعي المصرية من وجهة نظر قيادتها الإدارية ، تحديد ما إذا كان هناك فرق يعتمد على نوع الكلية (حكومية أم خاصة) وتحديد العلاقة بين عدد سنوات خبرة القائد في وظيفته ومدى تطبيق إدارة الجودة الشاملة. **منهج البحث:** تكونت عينة الدراسة من ١٢ قائداً إدارياً (عمداء ووكلاء الكليات) من ٧ كليات (٢ حكومية م ٥ خاصة). كانت أداة الدراسة عبارة عن استبيان يتكون من ٥٥ فقرة تقسم الي ٧ مجالات مع صحة وموثوقية ثابتة ، مما يعكس معايير الجودة الشاملة في التعليم. تم إجراء التحليل الإحصائي باستخدام الوسط الحسابي والانحرافات المعيارية لمجالات الاستبيان ، اختبارات ت للعينات المستقلة واستخدام معامل الارتباط بيرسون. **النتائج:** على الرغم من أن المتوسط العام للإجابات كان مرتفعاً ، فهناك فروق ذات دلالة إحصائية بين درجة تطبيق إدارة الجودة الشاملة في كليات العلاج الطبيعي بسبب نوع الكلية حيث كانت الكليات الحكومية أفضل. بالإضافة إلى ذلك ، أظهرت النتائج عدم وجود علاقة بين عدد سنوات الخبرة في عينة الدراسة ودرجات إجاباتها على محاور السؤال. **الخلاصة:** ينصح بشدة بتنفيذ برامج ذات جودة عالية في التعليم ، مع إيلاء اهتمام خاص للكليات الخاصة والحديثة.

INTRODUCTION:

Quality education is a great concern in many societies across the world. In a highly competitive education sector, the success of academic institutions depends on the quality of education. Educationalists, policy makers, scholars, and researchers are showing their sincere interest towards the total quality management (TQM) as it is recognized as an effective management philosophy for continuous improvement, customer satisfaction, and organizational excellence. ¹

It is an integrated organizational approach in delighting both external and internal customers by meeting their expectations on continuous bases through getting everyone involved with the organizational working on continuous improvement of all products, services and procedures along with proper problem solving methodology. It is an approach to improve the effectiveness and flexibility of the organization as a whole, through total employee involvement in holistic term in all aspects, process and activities. ²

Further, the management in TQM implies that it is a management approach, not just a narrow quality control or quality assurance function. It should be remembered that everyone in the organization is involved in TQM not just the project head. ³ From these definitions, it is easily possible to identify the essential characteristics as well as the significant offerings of TQM, such as: continuous improvement; integration of people, functions and resources; systematic and structured approach; quality control at every level of the organization and at every step of the operating process; developing human and organizational capabilities; efficient utilization of resources; people participation; customer satisfaction; creating a quality culture and so on. ⁴

A lot of literature available points to a growing interest in applying TQM in education for a wide variety of reasons. Some of the reasons include pressures from society for continuous upgrading of academic standards with changing technology; government schemes with allocation of funds, which encourage research and teaching in the field of quality; increasing competition between various private and government academic institutions and reduction in the pool of funds for research and teaching, implying that only reputable institutions will have a likely chance of giving access to various funds.⁵

Bayraktar et al, reveal that a number of TQM elements have a critical role in process improvement including, “leadership”, “vision”, “measurement and evaluation”, “process control and improvement”, “program design”, “quality system improvement”, “employee involvement”, “recognition and reward”, “evaluation and training”, “student focus”, and other stakeholder focus” in higher education.⁶

The field of physiotherapy is one of the modern fields that have emerged to complement the medical system and meet the needs of patients and society. Many modern physiotherapy colleges have been established at the level of the republic in some public universities or private universities. These colleges aim to prepare physiotherapists able to raise the efficiency of the medical service provided to the patients or work to improve the performance of athletes and prepare researchers in the field of physiotherapy able to keep pace with local and regional development.

Physiotherapy is considered one of the most vital and important areas for its relevance to patients' health and the extent to which they are fit to practice their daily activities. Therefore, officials have given great attention to the study of this field and

many private and governmental physiotherapy colleges have been established at the republic level to prepare graduates capable of meeting the needs of the labor market.

College management is one of the basic pillars to achieve its objectives. Its administrative leaders must be taken care of and attention as a link between subordinates and workers and field, and to raise their competencies to achieve the objectives of the educational process better. So, this study was conducted to know the extent to which the quality management of the Egyptian physiotherapy faculties has been implemented from the point of view of its administrative leaders, to determine whether there is difference depending on the type of faculty (government or private) and to determine the correlation between the number of experience years and the extent of TQM application

MATERIALS AND METHODS:

This study was conducted during the 2017 – 2018 academic year. Participation was voluntary and Informed consent was obtained from each patient before participation in the study.

Study design:

An observational cross-sectional design was used.

Participants:

While there is a total of 13 physical therapy faculties in Egypt (4 governmental and 9 private), a total of 7 faculties were used as a sample for this study as follow:

2 governmental faculties (Cairo and south valley) which are considered the oldest and the newest governmental faculties in addition to 5 private faculties (October 6th, Pharos, Horus, El-Delta and Egyptian Chinese universities) which

include among them the oldest and the newest private faculty. From the whole faculties' a total sample of 12 administrative leaders participated in the study (5 from governmental faculties and 7 from private faculties)

The study tool:

A questionnaire was constructed to collect data from the study sample.

Validity of the questionnaire is an important requirement for the study tool, which is the ability to measure what is designed to measure it, and to know how appropriate the paragraphs are for the purpose for which it was prepared. In order to verify the validity of the tool and to verify its validity in terms of drafting, clarity and comprehensiveness, the researcher relied on logical validity, so the tool was presented to referees with experience and competence in the aspects of total quality management and its dimensions, in order to provide data and information about the truthfulness of the content of this tool. According to opinions, observations and suggestions of the arbitrators, some amendments were made to correct, modify and to rearrange some paragraphs.

The final questionnaire consists of 55 paragraphs divided into seven dimensions: strategic planning, administrative leadership, organizational structure, resources and potentials, scientific research, continuous improvement and community participation. The answers have been determined by a five point likert scale: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree. (**Appendix 1**)

Reliability of the tool is also one of the main requirements in the study tool, to give consistency in the results when applied multiple times, and to ensure the stability of the tool. The stability and internal consistency of the instrument as a whole and its

areas were calculated using the Kronbach Alpha equation and the result was alpha = 0.0764

Measurement procedure:

The study tool was constructed in both a paper form and an electronic form. The researcher distributed 9 paper questionnaires on the sample of the study participants who are easy to reach and interview them personally. After giving them the required time, 7 questionnaires were retrieved and approved for statistical analysis purposes. The electronic form questionnaires were sent to 8 people via email after telephone coordination with them. Only 5 replies were received and 3 responses were not received.

Data analysis:

Reported data were analyzed using Statistical Package for Social Sciences (SPSS) computer program (version 24 windows) (Charles R Flint, New York, USA) as follow:

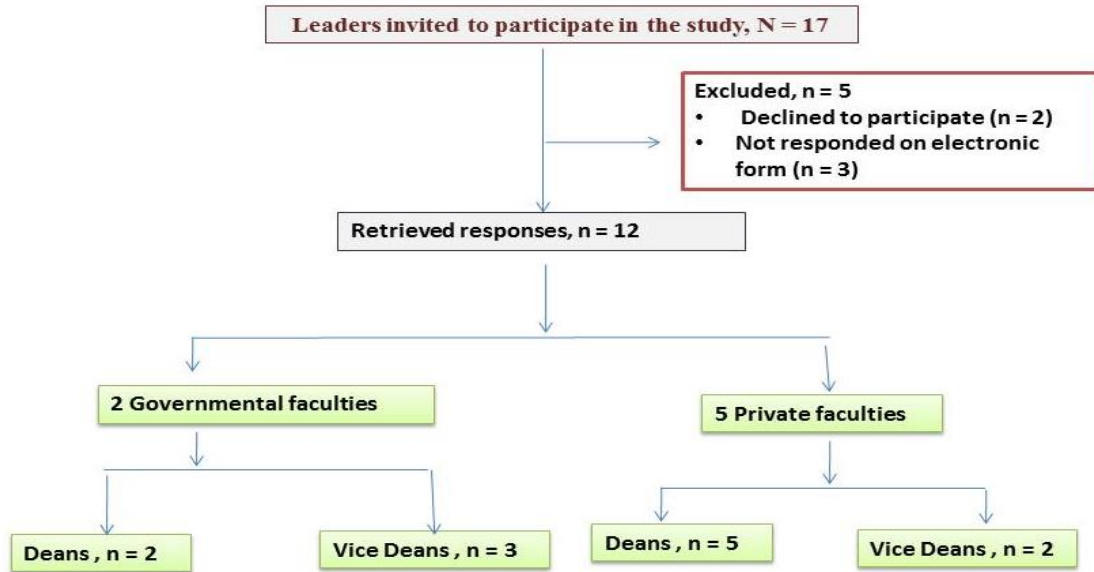
- Alpha-Cronbach correlation coefficient of the study instrument to ensure its stability
- The arithmetical averages and standard deviations of the areas of the questionnaire to determine extent of TQM application in Egyptian physical therapy faculties.
- Using independent sample t-test to determine whether there is a statistical significant difference between faculties depending on the faculty type either governmental or private
- Using Pearson's correlation coefficient to determine the correlation between the number of administrative leader experience years in his job and the extent of TQM application

RESULTS:

A total of 17 leaders from 10 faculties (7 leaders from 4 governmental faculties and 10 leaders from 8 private faculties) were invited to participate in the study using 9 paper questionnaires and 8 electronic questionnaires. 12 leaders (5 from 2 governmental faculties and 7 from 5 private ones) agreed to participate and their responses were retrieved. **Figure 1** shows a flow diagram of participants' invitation and retention while **table 1** show the details of the study sample.

Table 1: The details of the study sample:

Private faculties		Governmental faculties	
Faculties from 5 universities (October 6 th , Pharos, Horus, El-Delta and Egyptian-Chinese)		Faculties from 2 universities (Cairo and South valley)	
Females	Males	Females	Males
٣	٤	3	2
Deans	Vice deans	Deans	Vice deans
5	2	2	3
Total		Total	
7		5	



. **Figure 1:** a flow diagram of participants' invitation and retention

In order to determine the extent of TQM standards application in the Egyptian physiotherapy colleges from the point of view of their managers, the arithmetical averages and standard deviations were calculated for the responses of the study sample to each of the study instrument areas. It is clear that the highest priority is the strategic planning where the average answers of the sample: 4.72 and that the lowest axis is the scientific research where the average answers of the sample: 4.12. The results were promising, where the average responses of the sample were high in all the criteria. **Tables 2** shows the details.

Table 2: The average responses of the sample

Dimension	N	Minimum	Maximum	Mean	Standard Deviation
Strategic planning	12	4.00	5.00	4.73	0.373
Administrative leadership	12	3.88	4.75	4.44	0.323
Organizational structure	12	3.89	4.78	4.47	0.326
Resources and potentials	12	3.5	5.00	4.45	0.548
Scientific research	12	3.63	4.88	4.125	0.494
Continuous improvement	12	3.17	4.67	4.17	0.477
Community participation	12	3.6	5.00	4.55	0.474
Mean of the total	12	3.89	4.78	4.42	0.34

To determine whether there are statistically significant differences at the level of ($\alpha = 0.05$) depending on the type of employer (government or private), independent sample t-tests were used to find the differences between the two groups for the average responses of the tool as a whole and for each axis of the questionnaire.

The average responses on the tool as a whole showed that there are statistically significant differences between responses in favour of government colleges if compared to their counterparts in private colleges. Specifically, the differences were statistically significant for strategic planning axes, organizational structure, resources and potentials, scientific research, continuous improvement ($p < 0.05$). Differences are not statistically significant for both administrative leadership and community service.

(Table 3, Figure 2)

Table 3: Comparison between mean values of TQM application measured for governmental and private faculties:

Dimension	Governmental faculties		Private faculties		t-test	p
	mean	Standard deviation	mean	Standard deviation		
Strategic planning	5.00	0.00	4.57	.932	2.89	0.028*
Administrative leadership	4.469	.188	4.429	.394	.189	.855
Organizational Structure	4.778	0.000	4.302	.285	4.42	.01*
Resources and potentials	4.917	.1667	4.191	.513	3.44	.009*
Scientific research	4.625	0.5	3.839	.139	.076	.049*
continuous improvement	4.625	.0833	3.905	.395	3.52	.006*
Community participation	4.85	.100	4.371	.522	2.35	.052
Total	4.752	.0661	4.23	.277	4.75	.002*

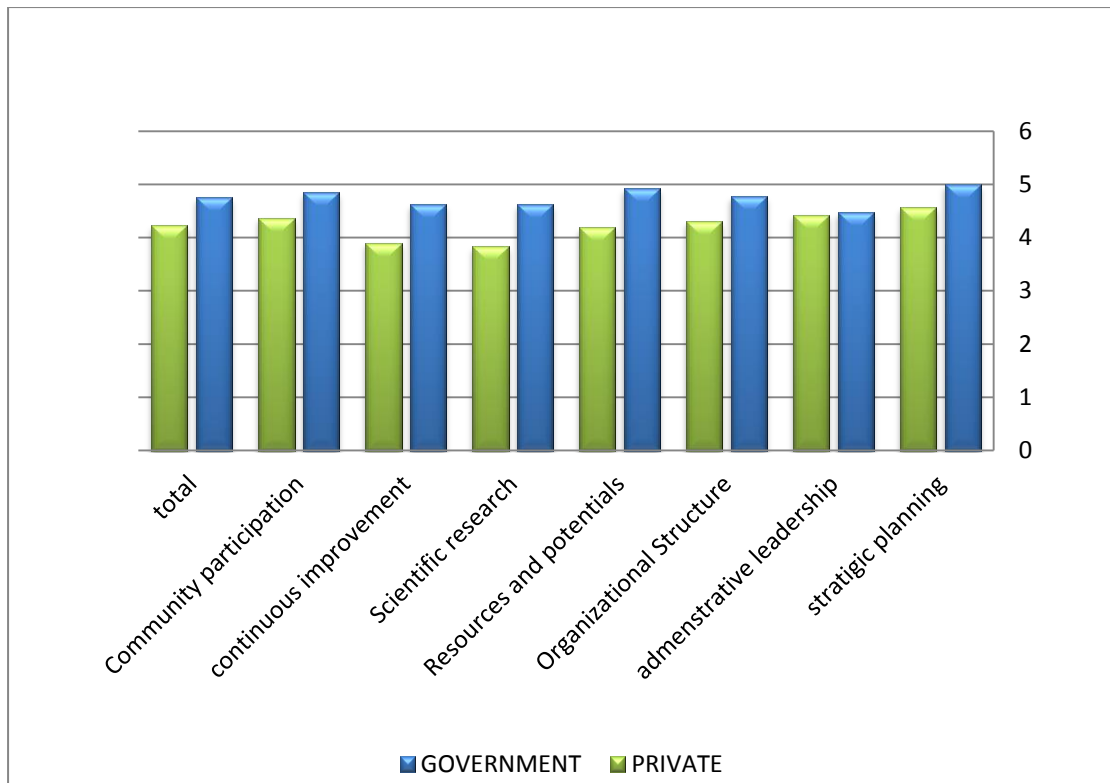


Figure 2: Application of TQM standards in government and private physical therapy colleges

To determine whether there is a correlation between the questionnaire dimensions and the number of leaders experience years in their jobs, a person correlation was used. The results showed that there are no correlations ($p > 0.05$) except for community participation dimension where there is a negative correlation between its application and the number of the leader experience years in his job. .

(Table 4)

Table 4: Pearson correlation between the number of leaders experience years in their jobs and TQM application

Dimensions	Number of experience years	
	P	Pearson correlation
Strategic planning	0.44	-.260
Administrative leadership	.228	-.396
Organizational Structure	0.720	-.123
Resources and potentials	.692	-.135
Scientific research	0.394	-.286
Continuous improvement	.877	-.053
Community participation	.99	-.004
Total	.532	-.212

DISCUSSION:

In this study, we aimed to determine the extent of TQM application in Egyptian faculties of physical therapy from their leaders' point of view and to investigate whether there is difference between governmental and private faculties. Finally we investigated the correlation between the number of leaders experience years in their current jobs and TQM application.

The results of the study were characterized by a degree of balance and objectivity. There was no extreme in the arithmetical averages of the application ratings, whether positive or negative, and the overall mean of the approval scores was high. Most of the responses of the study sample members can be viewed with satisfaction and optimism in the seriousness of the leaders in applying TQM standards and directing the resources and efforts to achieve quality and excellence through the

use of educational techniques and modern educational innovations in educational situations.

For the second question, there are statistically significant differences depending on the faculty type either governmental or private, The results were surprising and showed the superiority of government colleges to the implementation of TQM standards. The relative novelty of private colleges and the lack of sufficient human resources and therefore lack of attention to the processes and attention is only to outputs, which is contrary to the standards of TQM.

Finally, in relation to the last question concerning the correlation between the number of years of experience in the current job and the answers to the respondents, the results showed that there is no correlation, which is reassuring because it provides the opportunity for the transfer of authority and confirms that the application of TQM depends on the established system in the institution as a whole and its culture and not only in the directions and views of their current leaders because they are variables.

A lot of literature available points to a growing interest in applying TQM in education for a wide variety of reasons. Some of the reasons include pressures from industry for continuous upgrading of academic standards with changing technology; government schemes with allocation of funds, which encourage research and teaching in the field of quality; increasing competition between various private and government academic institutions and reduction in the pool of funds for research and teaching, implying that only reputable institutions will have a likely chance of giving access to various funds.⁷

Unless strategy is focused on the quality of the teaching system and improvement, goal of TQM cannot be fulfilled. TQM in education cannot be

accomplished without everyone in the organization from top to bottom being committed to achieve results a passion for quality and decisions based on performance data.⁸

According to Corrigan (1995) unless an organization builds a customer driven, learning organization dedicated to total customer satisfaction TQM cannot be successful.⁹ A set of fundamental core values forming building blocks of proposed TQM framework is leadership and quality cultures continuous improvement and innovation in educational process; employee participation; and development; fast response and management of information customer - driven quality and partnership development; both internally externally.¹⁰

For the successful implementation of TQM in education quality circles are to be formed. A quality circle consists of small groups of people that meet on a regular basis to discuss problems to seek solutions and to cooperate with management in the implementation of those solutions. Quality circles utilize organized approaches to problem solving, operate on the principle that employee participation in decision making and problem solving improves the quality of work. In education quality deals with monitoring and identifying the areas that affect the levels of teachings.¹¹

TQM is a philosophy which insists on the improvement, enhancement, betterment and change, of all the services provided to the students in education, the improvement, betterment, enhancement and change of every aspect of an organization or field. It needs to bring efficiency to every dimension whether it is teaching, learning, curriculum or infrastructure. There is a need of amelioration, augmentation of every aspect, from management through infrastructure to classroom teaching.

Administrators should investigate the benefits of implementing a comprehensive TQM program in their institutions. ¹²

Toremen, et al. (2009) also reveal the need for an effective change in management, educating staff and utilizing human resources to attain a system-wide quality improvement, to implement the principles of TQM. Originality/value: Quality improvement is a continual process that should be taken up from the operational level to senior management. Primary schools, as the basic subsystem of educational super-system, affect upper level schools with their outcomes. So TQM efforts at primary schools are fundamentally important to achieve a high quality education system. This paper sheds light on how to improve quality at this basic level. ¹³

Leadership, cooperation, accountability are those dimensions of TQM without which, it cannot have any effect on the organization. Therefore these aspects of TQM are to be implemented, improved and made efficient for the better functioning, performance and quality. ¹⁴

Limitations:

The study was limited to the administrators points of view without reviewing staff members, employee and more importantly, students' points of view. Furthermore, depending solely on the questionnaire as a measurement tool for TQM reduces the objectivity of the findings.

CONCLUSION:

As the results have been positive, they give promising and optimistic visions of the field of physical therapy in Egypt. Our results strongly suggest paying attention to the private and modern colleges and taking care of scientific research as a locomotive

for advancement and consolidating the concept of culture change and development in society.

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Conflict of Interest:

The Authors declare that there is no conflict of interest.

Recommendations:

- Adopting educational and administrative policies that are meaningful and supportive towards implementing TQM in education.
- Reviewing academic programs and modern educational institutions and controlling all their inputs and outputs to achieve high quality requirements that meet the needs of the market and the aspirations of the members of society.
- To consolidate the concept of culture change and development in society, and to convince individuals that this change and development is a modern national demand.
- Adopting continuous evaluation and training methods for faculty and leadership and all college staff
- Faculties are subject to academic accreditation.

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APPENDIX I

Questionnaire

Dear prof. Dr/

The researcher: Alia Mohammed El-Abd is conducting a study entitled:

" The application of total quality management standards in Egyptian physiotherapy colleges from the point of view of its administrative leaders"

We hope that you will be able to cooperate in filling out the questionnaire below carefully and objectively, which will help the researcher in achieving the objectives of the study, knowing that your answers will be used for the purposes of scientific research only.

Since you have extensive experience in the field of administrative leadership and total quality management, we would like to use your good opinions in answering each paragraph of the questionnaire to describe the reality of applying the TQM standards at your institution by marking the paragraph that you deem appropriate.

The answers can be determined by a five point likert scale: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree.

"Thank you for your cooperation with us"

Best regards,
Aliaa M El-Abd.

First: Demographics:

1- Gender: (male – female):

2- Job (dean – vice dean):

3- Scientific specialization:

4- Working place:

5- Number of experience years in the current job:

6- Number of experience years in Quality management:
.....

Second: The questionnaire dimensions

Dimension I: strategic planning

Dimension	N	Statement	Strongly agree	agree	neither agree nor disagree	disagree	Strongly disagree
Strategic Planning	1	The college has a clear mission					
	2	I participated in drafting the college mission					
	3	The college mission is a reference in achieving its objectives					
	4	College Mission serves the community					
	5	The College's mission is consistent with the University's mission					
	6	There is a Relationship between the mission And all important college Activities					
	7	The college has a clear vision for its future					
	8	The College is keen to involve the concerned parties in determining their strategic plan					

	9	The college plan corresponds to the purpose for which it was established					
	10	College plan is suitable for the continuous technological development					
	11	The objectives of the college are in line with the needs of the society.					
	1 2	The college has specific strategic objectives that it seeks to achieve					
	1 3	The college seeks to distinguish its students morally					

Dimension II: Administrative Leadership

Dimension	N	Statement	Strongly agree	agree	neither agree nor disagree	disagree	Strongly disagree
Administrative Leadership	1	Leaders are chosen based on competency standards					
	2	The college administrators believe that the quality in the education is its way and philosophy to implement and conduct its work					
	3	The Managers publish the quality culture among the college staff					
	4	Top managers encourage and stimulate employees continuously					
	5	Administration involve all employees to participate in decision making to achieve quality In the education process					
	6	The department organizes regular training courses to develop the capabilities of the employees					
	7	Managers catalyze development and improvement initiatives					

	8	The college use training programs to prepare new cadres of leaders					
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Dimension III: Organizational Structure

Dimension	N	Statement	Strongly agree	agree	neither agree nor disagree	disagree	Strongly disagree
The organizational structure	1	There is a specific job description for all employees					
	2	Managers are keen to distribute tasks between staff in a the college clearly and carefully					
	3	Administrators work to strengthen cooperation spirit between staff and employees					
	4	There are specific criteria for assessing the performance of employees					
	5	There are specific criteria for selecting employees					
	6	There are specific and declared standards in the powers and authorizations of employees					

	7	The Quality Assurance Unit of the College has qualified cadres					
	8	The internal regulations of the Quality Assurance Unit include an organizational structure with clear dependency and relationships					
	9	Quality assurance unit has annual plans, reports and databases					

Dimension IV: Resources and Potentials

Dimension	N	Statement	Strongly agree	agree	neither agree nor disagree	disagree	Strongly disagree
Resources and potentials	1	College management provides a database of material resources and needs related to college programs and services					
	2	Financial resources are used transparently to support programs and education service in the college					
	3	Buildings space and utilities in the college are suitable for its purposes					

	4	The College provides modern teaching facilities for its students					
	5	The College provides maintenance resources periodically and continuously					
	6	The financial plan of the college is evaluated annually according to declared standards					

Dimension V: Scientific Research

Dimension	N	Statement	Strongly agree	agree	neither agree nor disagree	disagree	Strongly disagree
Scientific Research	1	There is an accredited, certified and documented research plan for the college.					
	2	College administration depends on a clear mechanism to follow implementation of its research plan					
	3	The College believes in the importance of continuous scientific research					
	4	The research plan fits the human and material potential of the college					

	5	The College Administration is working to provide research skills and development programs					
	6	The College is associated with scientific cooperation agreements with international and Arab universities					
	7	The College seeks grants and research fellowships for faculty members					
	8	The College provides a special financial budget to support scientific research					

Dimension VI: Continuous improvement:

Dimension	N	Statement	Strongly agree	agree	neither agree nor disagree	disagree	Strongly disagree
<i>Continuous improvement</i>	1	The College Administration is working to establish committees to coordinate continuous improvement processes					
	2	The College prepare a guide that includes training courses and is announced to all faculty members					

	3	The college administration relies on modern methods and tools to improve quality in the educational process					
	4	The College establishes a quality guide that explains the work instructions and procedures to improve quality processes					
	5	The College administration is keen on continuous improvement in student service systems in order to improve quality in the educational process					
	6	The quality unit prepares the improvement plans based on the programs courses reports					

Dimension VII: Community participation

Dimension	N	Statement	Strongly agree	agree	neither agree nor disagree	disagree	Strongly disagree
Community participation	1	There are cooperation agreements between the college and some employers to train students and graduates					

	2 Communication between the faculty administration and the work parties is conducted to identify the skills required to distinguish the graduates of the college in the l market					
	3 College has an active community service plan					
	4 College administration uses appropriate means to assess the views of the community and the work organizations					
	5 The College Administration shall take corrective action appropriate to the results of the evaluation					