

The Impact of Applying ISO Standards Systems on Improving the Quality of the Performance in Higher Educational Institutions in Egypt

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Abstract – Applying ISO 21001:2018 standard ensures that universities have a competitive advantage as well as the achievement of their objectives. This study aims to identify the impact of implementing ISO 21001: 2018 management systems standards on the performance quality of higher education institutions. The study investigates the reasons why private higher education institutions seek ISO standards certificates in general and the specifications of management systems for educational institutions in particular. The study applied a set of statistical testing methods on paired samples as well as independent samples to ensure quality assurance. The study also proposes the required prerequisites that should be considered. The study investigated a hypothesis stating that "there are no statistically significant differences before and after applying the ISO 21001:2018 management systems specification for educational institutions in improving the quality of performance in higher education institutions" which was rejected by conducting an experiment in Future University in Egypt and accepting the alternative hypothesis. The study confirmed the impact of quality which was previously investigated by prior research that has been discussed in this study. The study further presented the need to apply quality based on determined criteria which were not considered in prior studies. Moreover, the study proposed the impact of ISO standards in educational institutions in general and in Egypt in specific. This recommendation is proved by this study to enhance the quality level in educational institutions.

Keywords: Personalization; Performance Quality, ISO standards systems, Higher Education Institutions management

1. INTRODUCTION

The term "quality" began as a concept in private organizations and industrial establishments [1]. This concept went beyond to include the field of services in general, on top of which are educational services and higher education [2]. It is certain that the number has multiplied a lot, as education is one of the main needs of all societies. These societies have worked to

develop educational institutions to meet the needs of the present and suit the requirements of the future [3]. The rapid change in the scientific, cultural, knowledge and technological structures in the world has led to the importance of this continuous development.

Educational institutions have a vision for the outputs of education, which is to obtain qualified learners who contribute to development [4]. This is performed

by applying specifications and standards that satisfy the concerned parties and are compatible with the requirements of the labor market and in line with technical progress in education, gaining knowledge and obtaining skills in the easiest ways, discovering and refining talents, and searching for the latest theories and methods [5]. There are many studies that dealt with the impact of management systems for educational institutions on the quality of performance of higher education institutions, but from different angles [6].

Although they mainly seek to identify the application of the quality system and ways to improve and develop it. In this chapter, we present some Arab and foreign studies.

All regimes and governments seek to improve and develop the educational system as the true measure of the present civilization of the nation. It could be considered the only choice in a world of many and successive changes through which we can draw the image of the future [7]. Predicting a qualified generation that can interact with the requirements and changes of the times could be achieved. Solving problems and keeping pace with advanced countries in the fields of medicine, industry, engineering, and innovation-based science is also one of the main objectives [8]. The successive events of this century have brought about many changes in economic, social, and cultural systems. They forced many educational systems in different societies to conduct changes to promote necessary education for survival, and those who reject or hinder change are condemned to annihilation. It has imposed attention to the specifications and conditions under which ISO, EFQM, is obtained [9].

Through the years, e-learning systems proved their applicability and advancement in the higher education sector. Many Educational Organizations focus on the students' benefits by applying the e-learning process since it ensures applying a scalable, reliable, and high performance of e-learning system to obtain student satisfaction and raise the student's level of education to achieve the ultimate desire of the educational process. Moreover, New Information Technology directs to increase the success of the e-learning process. An adaptive educational process for an e-learning system was proposed by applying e-learning on a cloud computing environment to support the load balance technique seeking the highest performance in the educational process which leads to a positive impact on the students' user satisfaction covered through an approach to evaluate where the results demonstrated [10].

Quality is the force needed to effectively drive the university education system to achieve its goals and mission by the community and interested parties in university education [11]. Recent trends in quality measurement and management enhance the directional, cognitive, professional, and behavioral characteristics of graduates, as well as the quality of the elements of the educational service delivery system [12]. Quality is one of the most important ways and means to improve

the structure of the educational system with its physical and human components and to improve its performance in the present era, which some intellectuals call "the age of quality" [13].

The quality of educational work is no longer a theoretical or a kind of luxury sought by educational institutions or an alternative to educational systems. It is now a reality that no institution can abandon or stand away from entering. It is an urgent necessity dictated by the contemporary movement of life and refers to the specifications and characteristics expected in the educational product and in the processes and activities through which these specifications are achieved. The availability of integrated tools and methods that help educational institutions also achieve satisfactory, desired results, and quality in education which are related to the learning and education processes [10]. These achievements connect education to the needs of the community, make meaningful educational changes, and build and develop the queen of innovation among learners. Learning occurs when the learner interacts with the environment. Learning occurs when a change in the behavior of the learner occurs, and the role of education is to allow the interaction to take place so that learning can take place. The role of education is to provide an opportunity for interaction to require the development of process standards, including a specific education quality assurance system, so improving the quality of education has become a fundamental goal for all societies to improve current educational policies. But ensuring the education provided is of high quality.

The main objective of the current study is to identify the similarities and differences between the applications of ISO standards at private universities in Egypt. The study also aims at exploring the objectives, requirements, and challenges of applying the standards of management systems for educational institutions. To achieve the objectives of this study, a questionnaire which is composed of seven standard items is conducted. The study community participants included forty-seven participants from the teaching staff members and the heads of departments from the Faculty of Computers and Information Technology, Future University in Egypt.

The study presents the impact and challenges of implementing the ISO 21001:2018 standards for educational institutions. The study discusses a proposed vision for activating the ISO standards on educational institutions' management systems and the proposed procedures to meet their requirements and implementation steps. A hypothesis was examined which is stated: "There are no statistically significant differences before and after applying the ISO 21001:2018 management systems standard for educational institutions in improving the quality of performance in higher education institutions". The study confirmed the rejection of the hypothesis and accepted the alternative hypothesis with a confidence level of 99%.

The rest of the paper is organized as follows. Section 2 presents the background of the ISO 21001:2018 education organization management system. Section 3 discusses the literature review. The fourth section includes the research contribution. The fifth section discusses the developed research methodology while the results' analysis and discussions are discussed in section 6. The final section discusses the conclusion and implications for the future.

2. BACKGROUND OF ISO 21001:2018 EDUCATION ORGANIZATION MANAGEMENT SYSTEM

ISO 21001:2018 Education Organization Management System (EOMS) is an independent management system standard, consistent with ISO 9001 and focuses on the management systems of educational organizations as well as their impact on learners and other relevant stakeholders [14]. The system provides a common management tool for organizations that provide educational products and services capable of meeting the needs of learners and other beneficiaries.

Educational organizations are urgently and continuously needed to assess their degree of fulfillment of the needs of learners and other beneficiaries, as well as other relevant stakeholders, and to improve their ability to continue doing so.

Although educational organizations and educators around the world are the main beneficiaries of this document, all interested parties will benefit from unified management systems in educational institutions, e.g. employers who support and encourage employees to participate in educational services can also benefit from this document. The potential benefits of an organization implementing an EOMS based on this document are:

Ensure the alignment between the operated activities with the organization's mission and vision with encouraging the participants' innovation.

Fulfilling the organization's social obligation by offering a suitable quality level.

Providing a higher level of efficient learning system by considering the personalization features as well as online education with a more focus on the students with special needs and ensuring the continuous offering of educational opportunities.

Focus on raising the system performance through applying systematic and effective processes and efficiently applying the evaluation methods for continuous monitoring.

Raise the organization's credibility level and improve the stakeholder's culture which extends their willingness in the processes' participation.

Aligning the organization standards with the international framework.

The management system of the educational organization follows a set of principles including learners having the optimal focus, stakeholders' engagement, enhancement willingness, innovative leaders, a defined systematic secured approach and relationships management, proofed decisions, ethical conduct and equity, and society consideration and admitting responsibility.

This paper focuses on the standards for a qualified educational process. The paper proposes the alignment with ISO 9001 standards highlighting a focus on the required management standards that provide a positive impact on the educational process as well as on the participating stakeholders. The proposed ISO 9001 standards base educational process fulfills the implementation requirements from different perspectives with the ability to adapt to other aligned standards. Finally, the most important recommendations that have been reached and the most important research proposals will be presented

3. LITERATURE REVIEW

Different researchers have discussed the impact of quality on educational institutions. In [15] a study was applied to analyze the policies that control quality assurance at Ghanian Public University. The study followed the traditional methods for requirements determination including Interviews which have been conducted as well as analyzing the institution's documents with the stakeholders' observation. The conducted experiment revealed that the institution follows a robust road for raising the level of quality in the institution while the study also highlighted the requirement of other stakeholders' participation besides the management team by highlighting the factors that affect quality assurance such as examining the strategic plan, the available resources, the stakeholders' culture, ...etc.

In [16], a hierarchical model was proposed for assessing the level of quality of the educational institutions' services in Mauritius based on both managerial and technical services' quality. The model included a set of fifty-three members representing the quality factors. These factors are revealed based on a conducted literature review, then assessing these factors' impact was conducted to confirm the validity of the proposed model. They reached a conclusion of five main factors including the level of quality of the administration activities, the institution's internal environment, the level of the educational processes quality, the level of quality of the available supportive services as well as the interaction.

In [17], research was conducted in Ghana for discussing the role of quality assurance in the stakeholders' satisfaction. The experiment was conducted at the University of Energy and Natural Resources. They highlighted the role of quality in the satisfaction level including the required services and roles as well as the regulations' executions. According to the conducted experiment,

the quality role has been confirmed with the objective of continuously improving the learning services' quality as well as raising the staff skills. Also, they highlighted the main requirement of quality awareness among the stakeholders with a further objective of adopting the institution's setting to be based on ensuring the required quality and continuous monitoring.

In [18], research was conducted in Tanzania aiming at illustrating the main parameters that have an impact on the stakeholders' satisfaction level. The experiment was conducted at the University of Dar es Salaam. The study applied the model proposed in [19] with a total of 153 participants. The results revealed the positive impact of the quality of the whole organization system, the staff performance, and the services' level of quality on the student's satisfaction. While no relation has been revealed between the course's level of quality and the satisfaction level. The research finally suggested considering the revealed relations in enhancing the quality level of educational institutions.

In [20], research was conducted in Germany with the objective of identifying the level of quality in educational institutions. The study focused on measuring the effective management process in raising the quality level and implemented a regression model based on questionnaire results which confirmed the focused relation between the management process activities and the significant role of the managers and quality assurance.

In [21], research focused on the impact of the quality culture in the organization and its internal quality assurance level. The study investigated this relationship in educational institutions located in Ho Chi Minh City, Vietnam. They highlighted that the activities of quality assurance are a pillar for setting a quality culture in educational institutions. The experiment included eight institutions with a total of 222 staff members. The study considered the variety of the institutions' types to be both public and private to avoid experiment bias. On the other hand, the conducted questionnaire included three main topics, the activities of quality assurance, the participants' awareness of these activities, and the institution's culture. While the research conclusion was detecting a correlation between the culture and the activities, however, it varied between the public and private sectors with a higher correlation in the private sector.

In [22], research focused on two main aspects of the private educational institutions in Bangladesh. The relation between the human resources activities and the educational institutions' quality level was the first aspect while the second aspect was the impact of the participants' commitments to this relation. Also, they focused on a set of human resources activities including securing the employees' jobs, employees' compensation, and the employees' independent behavior. A survey was conducted in twenty institutions and the results revealed the positive relationships between the two factors with the positive impact of the participants' commitments to the relationship.

4. RESEARCH CONTRIBUTION

The research contribution could be summarized in the following points:

1. Identify the impact of applying the ISO 21001:2018 Management Systems specification on the quality of performance of higher education institutions.
2. Identify why private higher education institutions seek ISO certification in general and the standards of management systems for educational institutions in particular.
3. Identifying the similarities and differences between applying ISO standards to Egyptian universities' stakeholders.
4. Develop a proposed vision for activating the ISO 21001:2018 Management Systems specification.
5. Identify the objectives, requirements, and constraints of applying the standards of management systems for educational institutions.

5. DEVELOPED RESEARCH METHODOLOGY

Since we are interested in identifying the impact of implementing ISO 21001:2018 management systems on the higher education institutions' performance quality. So, we can summarize our research contributions as follows: identify the impact of applying the ISO 21001:2018 management systems specification on the quality of performance of higher education institutions, identify the reason that private higher education institutions seek ISO certification in general, and the standards of management systems for educational institutions in particular, identify the similarities and differences between applying ISO standards at Egyptian Universities, develop a proposed vision for activating the ISO 21001:2018 management systems specification, and identify the objectives, requirements, and constraints of applying the standards of management systems for educational institutions. According to our research contributions, the proposed research methodology consists of six steps as follows:

Step 1: Preparing a data collection questionnaire (Pre and Post) applying the ISO 21001:2018 Management Systems specification.

Step 2: Application of the survey to the study sample (Pre and Post) application of the ISO 21001:2018 Management Systems specification.

Step 3: Analysis of survey results (Pre and Post) implementation of ISO 21001:2018 Management Systems specification.

Step 4: Make the necessary comparisons for the study.

Step 5: Measuring the impact of the implementation of the ISO 21001:2018 Management Systems Standard on the quality of performance of higher education institutions in Egypt.

Step 6: Submission of recommendations and proposals for future research in light of the results.

This study is based on the descriptive approach to fit the nature of the research which is based on the data collection resolution tool and to design the resolution in light of the research objectives and questions. The research is directed in particular to teaching staff members and department managers in the Faculty of Computers and Information Technology, Future University in Egypt (Private University). The sample of the study was applied to teaching staff members and department managers in the Faculty of Computers and Information Technology, Future University in Egypt. The total sample was equal to fifty-five members, thirty-eight are full-time professors, and seventeen are full-time technical staff. SPSS was used to analyze data, repetitions, arithmetic averages, and standard deviations. Testing has been extracted by statistical testing (T) for paired samples test and statistical testing (T) for independent samples test.

6. RESULTS ANALYSIS AND DISCUSSIONS

The First stage was examining differences between the opinions of Teaching Staff Members and Managers – Future University (Pre & Post) which results are illustrated in Table 1.

Table 1. Paired Samples T-Test Results – Future University in Egypt

Standard Items	T	df	Sig. (2-tailed)
Context of the organization	-12.991	46	.000
Leadership	-15.898	46	.000
Planning	-16.165	46	.000
Support	-16.123	46	.000
Operation	-15.839	46	.000
Performance Evaluation	-20.175	46	.000
Improvement	-13.978	46	.000
Total	-20.170	46	.000

It is clear from the table that there are statistically significant differences Pre and Post the implementation of the ISO 21001:2018 Management Systems specification, where morale (0.000) was below 0.05, which is evidence of the rejection of the zero hypothesis that "There are no statistically significant differences before and after the application of the Management Systems specification For educational institutions ISO 21001:2018 and improving performance" at Future University. Consequently, the research accepts the alternative hypothesis that there are statistically significant differences between tribal and dimensional applications in favor of the dimensional application. The same examination is conducted in the second sample and the results are illustrated in Table 2.

It is clear from the table that there are statistically significant differences before and after the implementa-

tion of the ISO 21001:2018 Management Systems specification, where morale (0.000) is below 0.05, which is proof that we reject zero-based imposition, "there are no statistically significant differences before and after the implementation of the ISO 21001:2018 Management Systems specification and between education institutions Improving the quality of performance".

Table 2. Paired Samples T-Test Results

Standard Items	T	df	Sig. (2-tailed)
Context of the organization	-13.345	51	.000
Leadership	-17.509	51	.000
Planning	-15.183	51	.000
Support	-15.562	51	.000
Operation	-14.521	51	.000
Performance Evaluation	-15.415	51	.000
Improvement	-11.491	51	.000
Total	-18.781	51	.000

From the above, it is clear that the first hypothesis that "there are no statistically significant differences before and after the implementation of the ISO 21001:2018 Management Systems specification for educational institutions in improving the quality of performance in higher education institutions" is rejected and the alternative hypothesis is accepted.

The second stage is measuring the differences between the opinions of Teaching Staff Members and Managers - Future University in the application (Pre) and the opinions of Teaching Staff Members and Managers in the departments of another sample. The results are illustrated in Table 3.

Table 3. Independent Samples T Test—for Pre-Application

Standard Items	T	df	Sig. (2-tailed)
Context of the organization	1.079	97	.283
Leadership	.849	97	.398
Planning	.046	97	.964
Support	2.351	97	.021
Operation	.770	97	.443
Performance Evaluation	-.963	97	.338
Improvement	.960	97	.340
Total	.897	97	.372

It is clear from the table that there is no difference between the opinions of faculty members and directors of departments in future University (private university) samples before applying the management systems specification for educational institutions ISO 21001:2018 Prior to the implementation of ISO 21001:2018 Management Systems Specification, this is evidence of the acceptance of zero-enforcement prior to the implementation of the ISO 21001:2018 Management Systems specification and the improvement of performance quality in higher education institutions.

Then, another measure is conducted which included the differences between the opinions of Teaching Staff Members and Managers - Future University samples in the application (Post) and the opinions of Teaching Staff Members and Managers of the departments in the application (Post). The results of the conducted stage are illustrated in Table 4.

Table 4 confirms that there are statistically significant differences after the implementation of the ISO 21001:2018 Management Systems specification (0.000), which is less than (0.05) which is evidence of statistically significant differences between the opinions of different Teaching Staff Members and Managers of departments - Future University (Private University). Following the implementation of ISO 21001:2018 Management Systems Specification and the opinions of Teaching Staff Members and department managers after applying the Management Systems specification for educational institutions ISO 21001:2018 to improve the quality of performance in higher education institutions. Moreover, it is also confirmed that there are no statistically significant differences in private universities in applying the ISO 21001:2018 Management Systems specification to educational institutions in partially improving performance quality".

Table4. Independent Samples T Test—for Post Application

Standard Items	T	df	Sig. (2-tailed)
Context of the organization	3.604	97	.000
Leadership	4.084	97	.000
Planning	4.658	97	.000
Support	4.008	97	.000
Operation	4.530	97	.000
Performance Evaluation	6.183	97	.000
Improvement	6.573	97	.000
Total	5.474	97	.000

7. CONCLUSION AND FUTURE WORK

This paper focused on the standards for a qualified educational process, the paper proposed ISO 9001 standards base educational process fulfills the implementation requirements in different perspectives with the ability to adapt to other aligned standards. In this research, a hypothesis was examined which stated: "There are no statistically significant differences before and after applying the ISO 21001:2018 management systems standard for educational institutions in improving the quality of performance in higher education institutions".

The result of the T-test for double samples at Future University in Egypt. The results confirmed the existence of statistically significant differences towards the specification items (improving the quality of performance) at a confidence level of 99%, as the significance of the test was all less than the level of significance of 1%, and these differences were in favor of the test.

The post-test and the percentage of improvement in the ETA coefficient ranged between 72.14% to 85.74% and at the level of overall performance quality 87.37%, and the improvement rates ranged from 25.19% to 33.61%, which reflects the impact of applying the management systems specification for educational institutions ISO 21001: 2018 in improving the quality of performance in educational institutions higher.

From the above, it is clear that the first hypothesis is rejected, stating that "there are no statistically significant differences before and after applying the ISO 21001:2018 management systems specification for educational institutions in improving the quality of performance in higher education institutions" and accepting the alternative hypothesis.

Fulfilling the study highlighted a set of recommendations which can be summarized as follows:

- Update the functional standards and mechanisms for assessing performance at universities periodically and continuously, to keep up with future work developments and needs to make the evaluation process and its results in college management the basis of individuals' desire to work, taking into account the privacy and responsibility of each job.
- Make the evaluation process more than once a year, make initial models within departments, and then make key models between colleges and universities.
- University departments should promote a culture of performance appraisal among all employees, but performance evaluation is not an oversight function of employees, but rather a response to and treatment of negative points. The aim of a system of assessment of developmental and structuring performance should be more than an objective through which accountability and accountability are carried out in order to punish or reward.
- Performance evaluators should be qualified to track the performance of staff; both heads and supervisors; all the time to discuss their needs, problems, and proposals at work. This leads to developing them, eliminating negative points in the college, and increasing positive points.
- The need for feedback follows the performance appraisal process so that employees can identify the results of their assessment, identify weaknesses, attempt to eliminate them, avoid them, identify strengths, encourage them, and motivate them so that the outcome of the assessment is more meaningful to the employee's actual performance.
- The activation and application of the system of moral and material rewards and incentives at university colleges and their link to the performance appraisal process, which has a significant impact on the progress and development of the level of performance.

- Linking training programs and plans to the results of performance analysis and the need to prepare well for courses of action, to cover performance deficiencies, improve performance, increase skills, and develop their behavior.
- Keep in mind that the performance appraisal of workers is based on job efficiency and not on position so that everyone is equal in the assessment process.
- Universities must promote a culture of performance appraisal among all workers that performance appraisal is not a waste for employee monitoring, but rather for addressing and addressing negative points, with the goal of performance assessment being more developmental and constructive than an accountable and accountable goal for punishment Or reward.
- Quality attention should be self-interested, generated from within the entire staff of the Organization, quality-aware and cost-effective, and quality-oriented programs needed to continuously improve quality.
- For administrators and members of the administrative machinery within universities, their well-trained computer training can help them to organize the work at the university in an excellent way that enables them to meet the demands of both students and university students.

Future directions following this research could focus on the application of the management systems specification to educational institutions 21001-2018 which has affected the career satisfaction of staff in higher education institutions. Another direction is developing a strategy to overcome the obstacles to the implementation of management systems for educational institutions 21001-2018 in educational institutions. Moreover, comparing theoretical and practical colleges could be conducted.

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