The implementation of total quality management in Arab universities: A proposed model

Abdul-Wasea Abdul-Ghani Saif Almekhlafi [1, 2, *]

[1]Community College, Prince Sattam bin Abdulaziz University, Al-Kharj, Saudi Arabia
[2]College of Administrative Science, Thamar University, Dhamar, Yemen

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ABSTRACT

The purpose of this study is to develop a model for the implementation of total quality management in higher educational institutions, Arab universities. This model exceeds the limitations in the implemented current models in various business organizations through implementing the systems approach and process entry in the design that includes inputs, processes, outputs, and goals. This study is a survey-based methodology in which the survey is designed based on the 7 famous models of implementing the total quality with an adaption within the framework of the total quality management concept. The final sample consists of 51 academic leaders at Prince Sattam bin Abdulaziz University who hold various experiences in working with different Arab universities. The results of this study indicate that the proposed model obtained high relative importance that reached at the axis level a high degree ranged between 76.39%-80.78%, and at the overall level reached a percentage of 80.39%. This confirms the importance of the model in expressing the intellectual content of management of total quality as an integrated system of universities as open organizations to their external context. This study recommends that high leaders should believe in the importance of total quality management and encourage its application through the proposed model with its essential criteria and its sub-dimensions and spreading the culture of total quality management and customer service among workers.

1. Introduction

Total Quality Management (TQM) is still the latest management theory that the world has witnessed widespread demand for its application since the end of the eighties of the last century, and universities were not immune to the pursuit of its application. The real interest of universities began in the year 1989 when the University of Oregon set its goal to apply total quality management during five years, the interest of universities continued during the nineties of the last century, in 1991 a descriptive survey study was conducted on 23 leading colleges and universities in the United States of America that implement total quality management, to identify the positives and restrictions of its application in American universities.

Applied models have emerged as one of the methods to facilitate the application of total quality management, where a number of application models have been developed, perhaps the most prominent of them at the global level, the Deming model, the Malcolm model in the American degree, and the European excellence model that was adopted by most of the states in the world and encouraged its application in public and private. In the field of education Shewart's model in education (Al-Nasir, 2011), Irvin's model in education (Irvin, 1995), and the Motwani and Kumar model in the University of Michigan in the United States of America (Motwani and Kumar, 1997). Some attempts have also emerged to design models for a comprehensive atmosphere in Arab universities, including the Al-Gara'an model and administrative units in Jordanian universities (Al-Gara'an, 2004), Samara'ay model in education (Samara'ay, 2006), and the Nasser model (Al-Nasir, 2011).

Perhaps the common denominator between these models is their lack of agreement on the quality and number of standards, which ranged between 5-11 criteria, and that most of these models have limited

their interest in internal processes on basis of inputs and outputs. With consideration to the dominance of traditional construction on administrative and academic systems in Arab higher education institutions, the weakness of the mechanisms of the administrative work system in them, and the consequent accumulation of problems that limited the ability of these universities to perform their scientific mission entrusted to them, whose impact has extended due to low levels of output quality versus increased aspirations. Al-Thebaiti (2017) viewed that Arab universities are at the forefront of institutions that need continuous development for their administrative methods and the re-engineering of their administrative processes. Hence, this research obviously comes to present a proposed model that expresses the overall content of total quality management. It includes the requirements for Arab universities to move to modern management and carry out their educational, research, and societal functions within the framework of the environment surrounding them. So that, they have to be able to increase the pace of administrative and academic work and achieve their aspirations to compete locally and internationally.

The research problem can be formulated in two main questions:

- What is the most appropriate entry point for the definition of TQM that reflects the overall content of TQM?
- What criteria (requirements) should consist of by the optimal applied model of total quality management in Arab higher education institutions at the level of inputs, processes, outputs, goals, and principles?

The research acquires its importance from the fact that it copes with the organizational structure of Arab higher education institutions as it is the container in which universities practice their activities and the tool that enables them to compete locally and globally in the field of education, scientific research, and community service. Moreover, it helps to contribute effectively to leading rational change as well as enhancing the self-commitment of universities to quality and developing standards that achieve continuous development and improvement of all its activities. Besides, this research article is so important that there is no model for comprehensive quality management approved for Arab universities.

The current research aims to determine the administrative and environmental requirements for applying total quality management and supporting Arab universities in developing their administrative systems at the level of inputs, processes, outputs, and goals.

2. Research methodology

The descriptive method was used in both analytical and statistical facets, the comparative approach, and the systems approach that complements each other, to survey and analyze the literature relevant to the topic of research, evaluate the results of previous studies and research and compare them, and hence analyzing those models and benefit from them in establishing the proposed model.

2.1. Sources of data collection

Data and information were collected from two main sources:

- The secondary sources: Those are taken from previous related books, periodicals, and researches.
- The primary sources: Such sources mainly are based on the respondents' opinions on the proposed model and their evaluation of the relative importance of the model criteria.

2.2. Concepts of the study

Total Quality Management (TQM): It is a complex concept that expresses a distinctive administrative orientation that represents an advanced stage of the inclusive development in the quality movement so that this concept in its compound form has many characteristics and features that distinguish it as an administrative entry from the previous quality entrances that have difficulty in finding a decisive and limited definition for it. There are multiple approaches from which these definitions were launched, including: (Total Quality Management as Concept, System, philosophy, Cultural Revolution, Tools, and Procedures). This diversity of concepts has given different indications of what Total Quality Management is, depending on the linguistic and idiomatic significance of those concepts, and that it can be said that these definitions do not reflect the inclusiveness of TQM, and confirms Edward Deming's statement that there is no specific definition of TQM, and that every researcher sets the definition that is consistent with his concept of it (Al-Nasir, 2011) and hence, the organizations should have its own definitions that reflect its concept of total quality management, expressing meanwhile its capabilities, ambitions, and its overall content. To overcome such differences, Doherty (1999) provided an explanation for TQM as an administrative theory, which includes all the elements of the theory that make it fully oriented in management. It is a system that works through inputs, processes, and outputs, it is a philosophy based on cooperation between operations, a culture that determines how things work, it is a complex concept of three terms: Management, quality, and overall, and yet it is a revolution that seeks to bring about a transformation entirely from traditional management through descriptive and statistical tools, which in all of this represent a set of procedures that are followed for implementation on the real ground. As defined by Edward Deming, "It is

a way of managing the organization, which aims to achieve the cooperation and continuous participation of workers in order to improve the goods or service, and activities that achieve customer satisfaction, employees' happiness, and community requirements." (Abu Al-Nasr, 2015). Thus, Fig. 1 shows the dimensions that makeup TQM and its overlaps that work together to bring about the desired changes for business organizations.
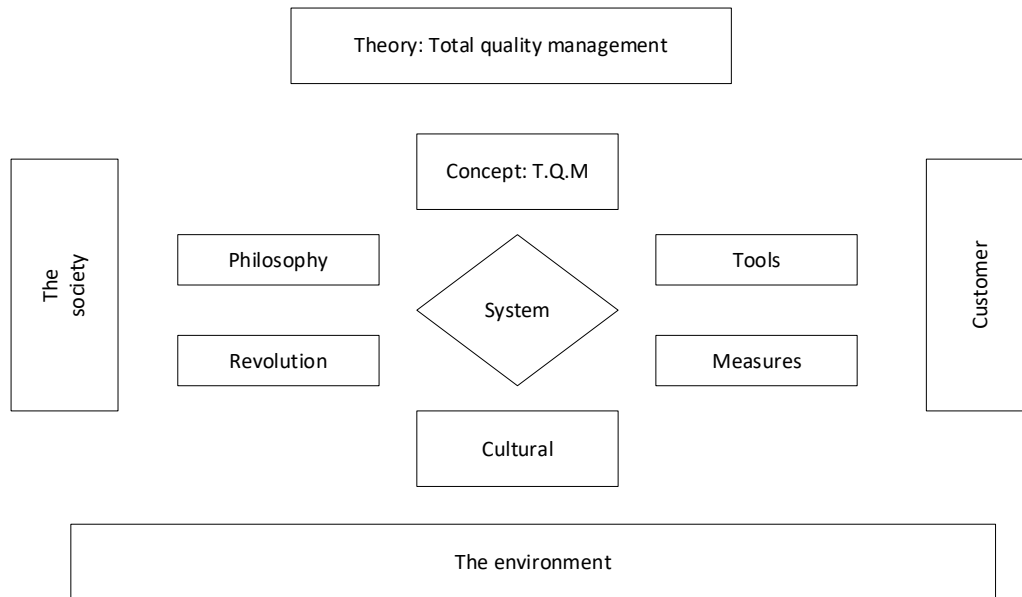

Fig. 1: The contained dimensions of total quality management

Based on the foregoing, Total Quality Management can be defined as An administrative theory that includes an integrated system of principles and theoretical concepts, and applied tools that complement each other to provide a new description of the behavior that all employees must take in order to achieve success and move organizations towards new horizons of reform And the permanent improvement of its structures, systems, procedures and how it interacts with its external environment and its customers by focusing on achieving quality in all operations to improve productivity and reduce costs and provide high-quality services that meet the needs and desires of customers and gain their full and lasting satisfaction.

Standards: Are the requirements through which the practical application of TQM is carried out, representing meanwhile the basic requirements and other elements that derive from them to form measures for verifying the application of those standards (Al-Mikhlafi, 2006). The standards indicate what things should be, explain what should be done to introduce a product or process management. It reflects practical and applicable content and describes the minimum level of knowledge and performance of the organization in a specific field, as it directs innovation, increases productivity, makes organizations more successful, and sets the standards to determine the quality levels assigned to the organization and its activities result in facilitating transactions, protecting clients, and preserving their rights as well as assisting individuals to and organizations to evaluate their performance. Through the selected standard, managers and employees realize whether they do conform to the standards of their work or not, and anyhow they amend and reform based on such criteria as well (Badah, 2003). Thus, there are several norms at the university level to include students, teaching-staff members, plans and curricula, material capabilities, relationship to society, and an administration.

Principles: They refer to a set of rules, dominated morals, and beliefs that keenly distinguish between right and wrong. It explains and clarifies the basis of things and how they happen. The principle is a well-established belief, a scientific standard through which judgments and opinions are measured, and hence, the recognized knowledge base for its clarity and on the basis of which it adopted a set of practical applications.

The Model: The model is defined as a simplified representation, in the form of a scheme through which the various components of the theory represented in it can be identified, and shows the mutual effects between these elements (Al-Mikhlafi, 2009), which represent a set of administrative activities that are practiced as inputs, processes, and outputs. So, the model is merely a theoretical structure of the set of variables associated with logical or quantitative relationships, that enable us to conclude within an ideal logical framework, and the idealism in the model indicates the possibility that it includes assumptions that may be simplistic aiming to simplify the modeling process, and then begins the process of improving the model and its development to suit all circumstances through reducing simplistic assumptions, and improving relationships within the model. Therefore, it is sufficient for the model to provide reasonably approximate solutions to the issues at hand and does not demand very precise or decisive solutions.

3. Related literature and questions

The models of the application of total quality management received the attention of researchers, and several studies have emerged that have attempted to highlight its importance to develop the performance of universities, among which are the following:

Muzhar (2016) aimed at identifying the extent of applying the standards of global comprehensive quality models in the administrative and academic process at Naïf Arab University for Security Sciences from the viewpoint of teaching staff members and students. The study found complete contentment in the development of administrative and academic work in the university, the very leadership support to improve the quality of education, the use of data and information in decision-making, access to the satisfaction of faculty members and students, and focusing on planning and training to implement total quality.

Al-Bashir (2016) aimed at clarifying the main role of human resources quality in the growth and development of societies, and enriching these human forces with the high-quality education provided by higher education institutions. As well as its role in the development of any society, because it determines the quality of human life in general. This study dealt with the application of TQM tools in higher education institutions specifically at ALHOSN University, through the implementation of five tools at the College of Engineering at ALHOSN University including Quality Functions Posting, Affinity Diagrams, Tree Diagrams, Pareto Diagrams, and Fishbone Diagrams. The results showed that the application of total quality management tools has a great avail for higher education institutions as it revealed various probable areas for improvement in addition to the essential reasons behind some of the problems that face the College of Engineering. They also explained that the application of total quality management tools to the systems of higher education institutions has patently enhanced the performance of these institutions.

Gangly (2105) intended to examine the extent of applying total quality systems in university institutions of the global milieu in the United States and Sweden. Among the most prominent recommendations of the study, the necessity to focus on training all workers within the university on the model of total quality, and the need to develop a clear vision and administrative plan for the educational institution.

Al-Nasir (2011) aimed at identifying the concept of total quality management and its successful application models in international universities, and establishing a model for university management that consists of ten elements; leadership, university mission, organizational environment, strategic planning, information technologies, human resources management, management operations, continuous improvement of quality, customer satisfaction, and feedback. The most important

recommendations are that the model axes can be worked in a phased manner and applied in one of its colleges gradually and that university administrative leaderships do not have the sufficient knowledge and know-how in the stream of quality management.

Asif et al. (2013) aimed at identifying decisive success factors for implementing total quality management (TQM) particularly in higher education (HE) and developing states. The study was applied to Pakistani universities. Data were collected from university faculty members through questionnaires. The results showed that leadership, vision, measurement and analysis, process control and evaluation, program design and resource allocation, and stakeholder focus are all explicitly appearing as decisive success factors for Total Quality Management (TQM) in higher education.

Badah (2003) intended obviously to develop a model for total quality management and identifying the degree of its applicability in public Jordanian universities. To achieve the aims of the study, the researcher used the theoretical-structural analytical method as a way to identify the concept of total quality management and through literature and studies, the researcher was able to clarify the proposed model for its application in the Jordanian public universities which consists of ten areas. The research sample consisted of 508 of the deans of colleges, heads of academic departments, and managers of administrative units for all public Jordanian universities. The researcher designed a questionnaire consisting of 100 paragraphs. The researcher adopted the appropriate statistical means for the research. Among the results reached by the study is the possibility of applying the model of total quality management in Jordanian public universities. Also, they exposed the existence of differences in the degree of applicability of the model in favor of college deans without the heads of academic departments and managers of administrative units in Jordanian government universities.

Carey (1998) intended to know the factors that contribute to the application of total quality management in universities, depending on the Costin model, which consists of five elements: the environment, inputs, the political system, outputs, and feedback. The study concluded that the incomes of the external milieu including support and requirements as well as internal factors such as practices and budget-cuts have had a profound impact on motivating college deans and university rectors to implement TQM whereas, in the other thread, the political system has had no impact on 50 of the colleges and universities that were included in the research.

Thus, the previous studies reflect the importance attained by TQM as an applied field, as it revolves around evaluating the application of TQM or seeks to design models that help in its application. Also, the models that have been studied have mostly focused on administrative processes and neglecting the external environment, especially at the level of inputs. This reflects a lack of researchers'

perceptions of what is total quality management, as studies have shown a variation in the criteria for these models and the motives for their application as well as the separation between the administrative side and the academic side, with positive molecular results achieved as a result of the application of these models. Accordingly, this research seeks to present a proposed model that exceeds the shortcomings of the previous models and that it reflects the overall content of total quality management and is able to achieve the aspirations of Arab higher education institutions, and therefore the question that the research seeks to answer is that, Is there an agreement about the relative importance of the proposed model for applying total quality management in Arab universities among members of the research sample?.

4. The importance of developing a model for total quality management (TQM)

Besides the shortcomings of the current application models, there are many justifications for establishing a model for the application of total quality management in Arab universities. Among the most important of these, the distinguished successes achieved by international universities have applied models for total quality management such as Auburn University, Aston University, Stand-Ford University, and Wisconsin University. In the United States of America and elsewhere, the model constitutes a picture of the needs of the current Arab universities and the achievement of their future aspirations, as its application would work to achieve important developmental aspects of the administrative and academic process, implement job security in the lives

of workers, and enhance the relationship with society. Moreover, it helps to understand reality and to recognize the basic relationships that exist in it, and to facilitate controlling it and possibly predicting with others (Al-Nasir, 2011).

5. Process concept and model construction

The process method was used to construct the proposed model, which includes the basic dimensions that should be formed from any model, as illustrated in Fig. 2.

According to these approaches, the researcher has taken a number of steps to build the model, based on as follows:

1. Surveying and analyzing the definitions provided for the concept of total quality management, and coming up with a definition that includes the overall dimensions of total quality management.

2. Analyzing 7 applied models for total quality management that have been applied in governmental and private business organizations and Arab and foreign higher education institutions, and dismantle the elements of those models and rebuild them to benefit from them in constructing the proposed model.

3. Determining the criteria for the proposed model to include the administrative and environmental structure, design a questionnaire for those standards, and present it to an intended sample of academicians who are concerned with quality, and management professors to know their views on the relative importance of the standards and scale special for each standard.
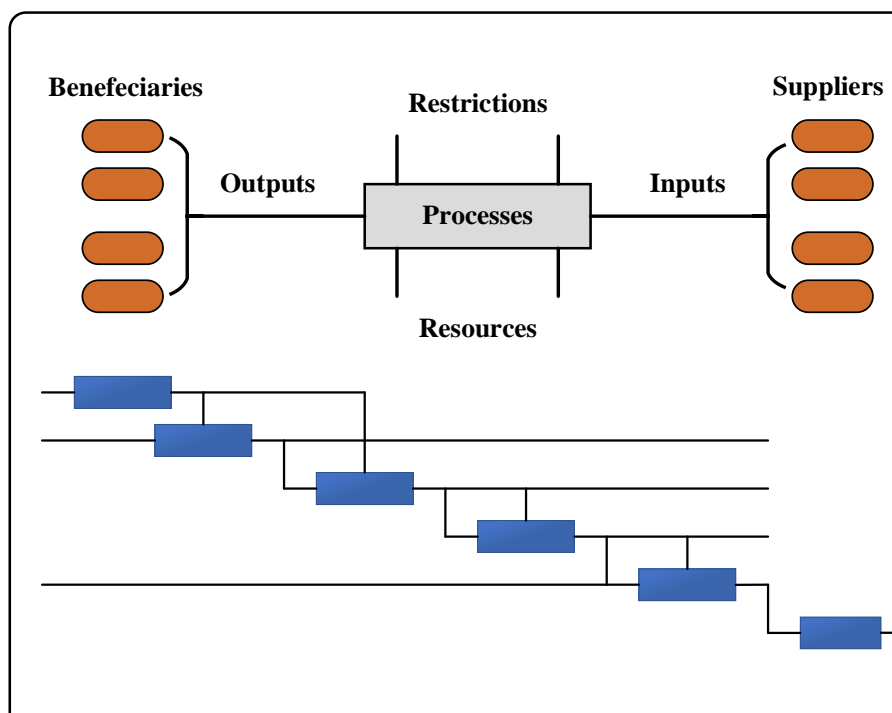

Fig. 2: The most prominent components of the process

6. Field study procedures

6.1. Total quality models approved for the study

The researcher relied on studying and analyzing a number of models that were chosen on the basis of the model's universality and popularity, or its relationship with universities and higher education institutions in general, and the models chosen for the study are as shown in Table 1.

Table 1: The selected forms

S.	Model Name	Criteria Number
1.	European Foundation for Quality Management (EFQM)	9
2.	American Model of Excellence in Performance (Baldrige Award)	8
3.	The Japanese model (Deming Award)	10
4.	Shewhart Model	7
5.	The European Model in the Higher Institutes	9
6.	Arvin's Education Model	9
7.	Scottish Quality Model (SQMS)	10

6.2. Discussing the models

A review of the previous models shows the following:

- The Japanese Model for Quality (Deming Award): is considered as one of the oldest models, as it was established in 1951 in Japan and turned to the worldly level in 1984. It consists of (10) standards, and the Model Award is awarded to institutions and individuals.
- The American Model: (Malcolm National Prize Award for Quality). It appeared in 1987, consisting of 8 criteria. It is clearer than the Japanese model in terms of the sequence of internal operations, but it ignored the external environment, as it didn't refer to the inputs that the processes convert into outputs. As well, it doesn't determine the goal that the outputs seek to achieve.
- The European Model of Excellence (EFQM) emerged in 1991. It consists of 9 elements and is distinguished from the Baldrige model by indicating to the community as one of the parties concerned that the quality of the results should be measured through it. Even if it has participated with a model of Baldrige in neglecting the inputs, and the three models are designed to serve all institutions without distinguishing between the natures of their various activities. The models have represented a reference for many of the models that have appeared later.
- The European model in the higher institutes, which is a development of the European model, in which elements and indicators are added to it to be compatible with the educational activity in the higher institutes, and the added standards are:

  ▪ A measure of student satisfaction with the educational service.

▪ A measure of employee satisfaction and identifying of their feelings towards services and senior management.
▪ A measure of the impact of higher education on society and the surrounding environment.
▪ Effectiveness measure, that is, the relationship between the results and the proposed plans.

The Scottish Quality Model (SQMS), which is one of the international models and parallels the European model of excellence, was designed to fit the nature of technical and vocational education. It consists of 10 standards, some of which were devoted to education-specific activities while the criteria namely are; strategic management, quality management, marketing, and customer care, resources humanity, equal opportunity, health and safety, communication and management, guidance services, program design and implementation, and evaluation and certification. It has been adopted by many countries as a system of self-evaluation for the development of educational institutions.

- Irvin Model consists of 5 standards. It includes environmental reference and most of the processes are keenly related to leadership and constructing of strategic options to focus on administrative implementation and commitment building, which made the model characterized by an extreme simplicity and lack of clarity.
- The Shewart Model in education consists of 7 standards. They are representing the development of one of the tools for improving quality, which became known as the Deming Cycle, which is applied within the framework of the application of total quality management, and consists of four steps, known as (PDCA).

It should be noted that many models have appeared in the Arab world that researchers submitted for application in educational institutions, but it is noted that they have imitated other models as in Al-Gora'an model, or lack of distinction between the practical model for total quality management and the organizational structure as it is obvious in the Samara'ay paradigm (Al-Nasir, 2011).

Thus, in general, the previous models were characterized by the following:

- The difference in the number of criteria from which those standards consisted and the nature of those standards, which necessarily reflects a difference in the perception of the providers of these models for the content of total quality management.
- Focusing of the models on operations and their agreement to neglect the system's inputs, in addition to that they did not distinguish between the system's outputs and objectives, as in the European model.
- Some models did not distinguish between TQM and the Deming Quality improvement cycle, which is applied as a methodology in all operations.

So, taking into account the shortcomings of these models individually, they together constitute a framework for benefiting from them in building a comprehensive model for application in Arab universities within the framework of a more comprehensive definition of total quality management.

6.3. Constructing of the study's tool

On basis of the previous models and the definition reached by the researcher for total quality management (TQM) criteria and dimensions of the proposed model were defined and formulated as questionnaire paragraphs that were presented to a random sample of faculty members at Prince Sattam bin Abdulaziz University to determine their validity and relative importance.

6.4. Population and research sample

The research community is represented in academic leaders holding a Ph.D. degree and occupying deans of colleges and support deanships, deputy deans, advisors, and heads of academic departments, at Prince Sattam bin Abdulaziz University, and some of them worked in different Arab universities and they reached 114 leaders. The number of retrieved questionnaires reached 51 forms including approximately 48%, as in Table 2.

7. Findings

For the purpose of answering the research question "Is there an agreement regarding the relative importance of the proposed model for applying total quality management in the Arab university among the members of the research sample?, the views of the respondents have been analyzed and hence the results have been found out as in Table 3.

Table 2: Demographic characteristics

	Frequency	Percentage %
Age		
25-30	10	19.6
35-45	21	41.2
More than 45	20	39.2
Gender		
Male	37	72.5
Female	14	27.5
Experience		
Less than 5 years	8	15.7
5-10	12	23.5
10-less than 15	16	31.4
More than 15	15	29.4
Job title		
Dean	10	19.6
Agent	18	35.3
Heads of Depts.	10	19.6
Consultant	13	25.5

Table 3 shows that there is the high relative importance of the proposed model for applying total quality management in Arab universities among the members of the research sample, where the relative importance at the level of the axes reached a high degree that ranged between 76.39%-80.78%, and at the total level a high percentage amounted to 80.39%, and this confirms the importance of this model in expressing the intellectual content of TQM as an integrated system that addresses the sharp organizing at the level of inputs, processes, outputs, goals, and principles that control the general orientations of work in Arab universities.

Table 3: The relative importance of the model elements

Standards	Dimensions/Extents	Importance	Standard Deviation	Arithmetic Average
(Inputs Needs, Relationships)	Customers' Needs	80.78	1.06	4.04
	Resources (human, financial, Significant, Materialistic, Time	81.18	1.10	4.06
	Relationships with Suppliers	79.22	1.20	3.96
	Strategic Partnerships	97.22	1.17	3.96
	Community Needs	79.61	1.24	3.98
	Ongoing Studies of Environmental Problems	80.39	1.17	4.04
	Total	80.07	0.99	4.00
Processes (Practices)	Leadership Commitment	80.78	0.90	4.04
	Strategic Planning	83.64	0.79	4.17
	Human Resources	76.39	0.95	3.82
	Quality System	79.76	0.77	3.99
	Total for Operations	80.0975	0.8525	4.005
Outputs (Results of Operations)	Results of educational processes	80.39	1.16	4.02
	Scientific Research Results	80.39	1.19	4.02
	Community Service Results	80.39	1.12	4.02
	Results of the overall performance of the organization	78.04	1.06	3.90
	Total for Outputs	79.80	0.99	3.99
Objective (Customer and Community Satisfaction)	Measuring of Customers Satisfaction	80.39	1.19	4.02
	Measuring of Community Satisfaction	80.39	1.12	4.02
	Total for Satisfaction	80.39	1.155	4.02

8. The proposed model for Arab universities

The proposed model consisted of main criteria constituting the general framework of the

universities 'methodology of work within the framework of concepts of total quality management. The specific standards for each criterion have been

determined representing the practical steps for implementing such standards as follows:

1. Inputs:
1.1. Needs and relationships, which are:

1.1.1. Customers' needs.
1.1.2. Community needs.
1.1.3. Resource requirements (human, material, financial, informational, and time).
1.1.4. Relationships with Suppliers.
1.1.5. for strategic partnerships.

2. Operations:
Through which the inputs are converted into outputs, given their importance and their multiplicity in the model, a number of measures have been set for each of them, as follows:

2.1. Leadership commitment: This standard is achieved by finding the following:

1.2.1. Clear Quality Policies.
1.2.2. Efficient information systems.
1.2.3. Developing the Quality Organizational Structure
1.2.4. A clear view of the university.
1.2.5. Dissemination of Quality Culture.
1.2.6. Creating capabilities and material resources.
1.2.7. Regulations governing various activities.

2.2. Strategic Planning: Strategic planning is applied by finding the following:

2.2.1. A distinguished message for the university.
2.2.2. Periodically analyzing the internal and external universities environment.
2.2.3. Strategic goals that express the university's ambitions.
2.2.4. Strategic Plan for Risk Management.
2.2.5. Strategic Performance Measurement System.

2.3. Human Resources: This standard is achieved by finding the following:

2.3.1. Effective Human Resources Management
2.3.2. Planning requirements of human resource
2.3.3. Continuing Education Opportunities for Employees
2.3.4. Various training programs
2.3.5. Active Staff Participation in Decision Making
2.3.6. Fair Pay
2.3.7. Significant rewards system
2.3.8. An adequacy of material incentives
2.3.9. Encouraging and rewarding the teamwork
2.3.10. Highlighting the achievements in quality

2.4. Quality System: This standard is achieved by finding the following:

4.2.1. Building an uncomplicated organizational structure.

4.2.2. Design for jobs according to the concept of operation.
4.2.3. An accurate guide to business procedures.
4.2.4. Quality assurance in the input.
4.2.5. Control the quality of operations.
4.2.6. Standards for work and ways of its constituting.
4.2.7. Continuous improvement of all system activities.
4.2.8. The cost of quality in all administrative processes.

3. Outputs: Results
3.1. Results of the educational process
3.2. Results of scientific research
3.3. Community service results
3.4. Results of the overall performance of the organization

4. Objective: To measure satisfaction
4.1. Measuring customer satisfaction
4.2. Measuring community satisfaction.

5. The principles that guide the functioning of the system according to the proposed model are:
5.1. System Approach
5.2. The customer manages
5.3. Fact-Based Decisions
5.4. Feedback

Thus, the model can be expressed in Fig. 3.

9. Discussion

The results of this study revealed that the proposed model for total quality management is characterized by achieving complementarity and interconnection between inputs, processes, outputs, and goals, and homogeneity between the main standards and the scales for achieving them. As well, the classification of standards according to their objective, intellectual and practical homogeneity in a way that helps in a partial, an overall analysis of the impact and relationships of those standards with each other, and highlighting the external environment and what it represents as a basic anchor in the work of the system and its effectiveness at the level of inputs and goals. To add, it helps to define the principles that guide the application of all standards and metrics to achieve them. Also, this model can be used as a tool to measure the success of universities in applying total quality management, in addition to the validity of the model to measure institutional excellence in Arab universities and higher education institutions in general and to award excellence awards to the best university that succeeds in its application. In specific, the proposed model in this study differs from the 7 well-known models used to develop this model as aforementioned in terms of the standards and the methodological design.

10. Recommendations

The application of the proposed model in universities requires the belief of high leaders in the importance of total quality management and support for its application through the proposed model with its basic standards and its sub-dimensions. Also, it requires the dissemination of a culture of total quality management and customer service among workers through extensive training on concepts of total quality management and tools to achieve them,

and linking between the applying of the model and achieving the strategic plan for universities. Furthermore, it helps to set a plan to implement the model, so that it becomes flexible that can be adapted to developments, gives the application of the model a priority with the units concerned with quality, and establishes specialized units for clients to involve them in all stages of planning, implementation and evaluation.
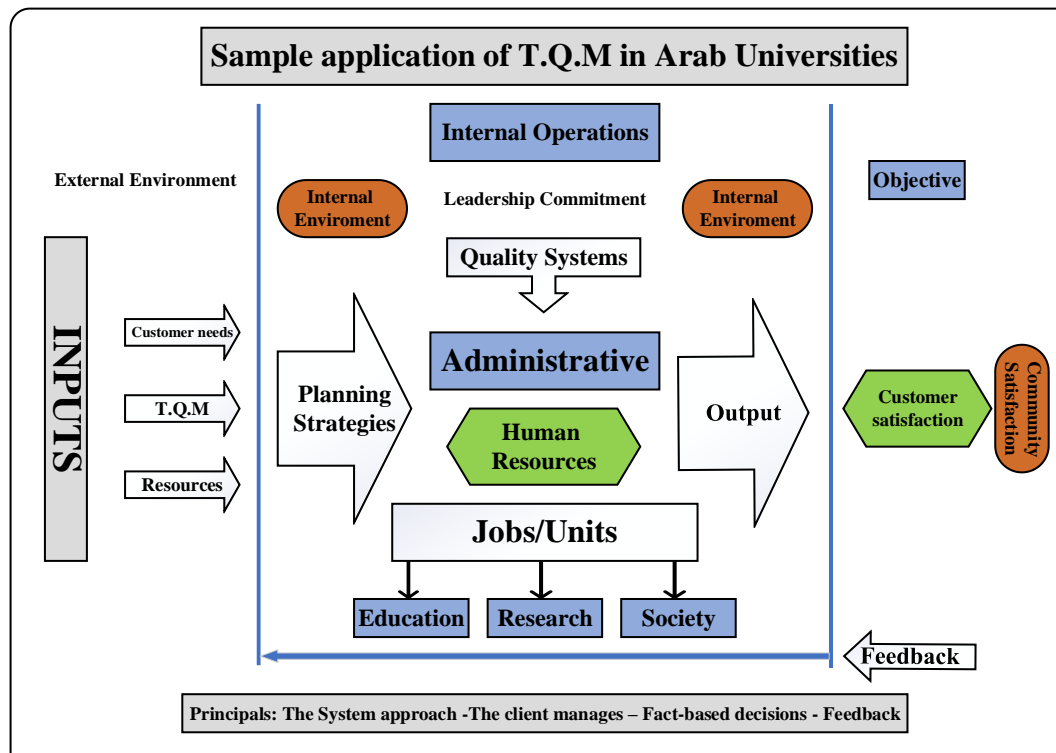

Fig. 3: The proposed model for applying total quality management in Arab universities

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Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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