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# The Relationship Between Quality Costs And The Quality In Higher Education And Its Reflection On The Quality Level Of Iraqi Universities

**Mohammed Hazim Alghazali, Mhialgazale@uomosul.edu.iq (*)**
*Department of Accounting College of Administration and Economics University of Mosul, Iraq*

(*) Corresponding author

## Abstract

**General Background:** Higher education institutions continuously seek effective approaches to improve educational quality, institutional performance, and stakeholder satisfaction. **Specific Background:** E-governance and quality cost management have emerged as important mechanisms for supporting administrative efficiency and quality improvement within universities. **Knowledge Gap:** Although previous studies have examined governance and quality management separately, limited attention has been given to the mediating role of quality costs in the relationship between e-governance and higher education quality. **Aims:** This study aimed to examine the relationships among e-governance, quality costs, and quality in higher education and to determine the mediating role of quality costs. **Results:** Data collected from faculty members at the University of Mosul showed significant positive relationships among the study variables. E-governance explained a substantial proportion of variation in higher education quality and quality costs. The findings also revealed that quality costs partially mediated the relationship between e-governance and higher education quality. **Novelty:** The study integrates e-governance, quality costs, and higher education quality within a single analytical framework in Iraqi universities. **Implications:** The findings suggest that universities should strengthen e-governance practices, quality assurance systems, staff training, and quality cost management to support continuous improvement and sustainable institutional development.

**Keywords:** E-Governance, Quality Cost, Higher Education Quality, Quality Management, University Performance

**Key Findings Highlights**
Quality cost dimensions showed significant associations with educational performance indicators.
Governance practices contributed substantially to institutional improvement outcomes.
Cost management acted as an intermediary mechanism linking administrative processes with educational excellence.

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# 1. Introduction

"Scientific research in higher education institutions is a real indicator of the progress of countries and the progress of societies. Scientific research and the innovations, ingenuity and creativity that universities produce and market in all principles have become one of the criteria for evaluating and classifying them globally. It has also become a real requirement for sustainable development, because ensuring the quality of scientific research forms the basis for all types of technological, economic, social, political and cultural development that any country needs, because the priorities of scientific research are linked to the priorities of development plans, because of the solutions it provides to many crises of all kinds (Altbach & de Wit, 2020). Therefore, we must pay great attention to scientific research through the platforms of universities and educational institutions that can only achieve this goal through the field of e-governance entrusted with reforming the sector of higher education and scientific research (OECD, 2021)."
"The concept of E-governance has emerged to reflect the real crisis experienced by university institutions, whether at the level of decision-making related to educational curricula developed by the executive authority without the right to discuss or object to them, as well as methods of internal control over them; or at the level of allocation and management of resources aimed at the continuous improvement and development of services in the field of scientific research as a community service provided by the University Foundation. This has given rise to the concept of quality in higher education institutions (Majeed, 2012; Razak & Mhwise, 2017)."
"As the educational system realized the imperative of applying the quality assurance system in higher education, it was embodied in carrying out reforms aimed at upgrading the latter towards better levels through quality assurance based on a set of standards and criteria included in the references of the basic fields of scientific formation and research, university infrastructure, the relationship of university institutions with their social and economic environment, cooperation and movement between universities, governance and neutrality within the university, and the field of governance focuses on providing university institutions with a reliable and effective information and foresight system, through archiving and dissemination of pedagogical and scientific information in accordance with the laws in force. The Foundation puts digital services at the disposal of its students and employees in a manner that responds to the needs of users and national strategic directions for scientific research (Harvey & Green, 1993; Elken, 2023)."
In order to achieve the objectives of the research, it was divided into four main topics:

The first topic : The methodological structure of the research.
The second topic : The theoretical framework of the research variables.
The third topic : The field aspect of research and its Procedures
Topic 4: Conclusions and recommendations.

## 2. Research Problem

Contemporary studies have shown the need for universities to adopt the quality costs represented by information and communications technology to keep pace with the developments in the environment surrounding the estimated universities by harnessing e-governance towards developing the structure of educational institutions and linking universities with each other to advance the reality of the educational environment and achieve the Quality in higher education by harnessing governance towards choosing appropriate and effective methods that can be used to reduce the Quality cost based on a new philosophy of drawing a future vision to achieve the Quality in higher education at the lowest possible cost.
Based on the above, the problem of research revolves around the failure of universities to adopt studied methodological steps of a scientific nature to apply and benefit from the application of quality costs and not to employ them in translating the real crises experienced by higher education institutions, the most important of which is the high costs of access to quality and deanship in university performance.
Based on the above, the study problematic features are justified by the following fundamental question:
Lack of attention to quality costs negatively affects the quality of higher learning?
Besides the fundamental question, the following questions are subdivided:
1- What is the nature and level of quality costs and the high quality of teaching in educational institutions?
2- What is the level of relationship between the Quality in higher education and the Quality costs?
3- What is the level of impact between the high quality of teaching and the Quality costs ande-governance?
The answer to these questions represents the focus of the study in interpreting the variables and then clarifying the requirements associated with the problem and ways to find solutions to it.
**Second: The objectives of the research:**
The research in general aims to provide an answer to the questions raised in the research problem and achieve the following objectives: -
1- Preparing a conceptual theoretical framework for the Quality in higher education and the Quality cost .
2- A statement of the coefficient of agreement between the researchers about the practices of higher education quality and quality costs in the targeted sample.
3- Describe the relationship and impact between the research variables (Quality in higher education , quality costs) in the field of research.
**Third: The importance of research:**
The importance of this research stems from both theoretical and scientific aspects, as shown below:

1. Theoretical Significance

This research is a scientific contribution to the literature on the quality of higher education, as it focuses on the relationship between the costs of quality and the level of quality of Iraqi universities. The theoretical significance of the research is evident in the following:

A. Enriching the scientific literature: The research adds a deep understanding of the role of investment in quality and its impact on academic performance, a topic that has not been addressed in sufficient depth in the Iraqi context.
B. Integrating quality theories with the reality of higher education: The research is based on the Cost of Quality Theory and the Baldrige model of total quality, which contributes to the development of a theoretical framework that can be applied in other developing countries.
C. Analyzing the relationship between cost and quality: The research helps in identifying the factors affecting the achievement of higher education quality through effective spending, which opens the way for future studies on improving resource allocation.
D. Developing models for evaluating investment in quality: The research can be used as a basis for developing models to evaluate the efficiency of universities in investing their budgets to achieve academic quality.

2. Scientific Significance

The research gains scientific significance in terms of applying its results to improve the quality of Iraqi universities according to international quality standards. The scientific significance is as follows:

A. Supporting decision-makers in higher education: The research provides data and analyses that help universities and educational policy makers make evidence-based decisions regarding investment in quality.

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B. Improving the academic ranking of Iraqi universities: The research helps identify the factors that affect the ranking of Iraqi universities in international rankings, such as QS and Times Higher Education, and provides recommendations to enhance the competitiveness of universities internationally.
C. Enhancing the efficiency of the use of financial resources: The research can help universities restructure their budgets to ensure the best academic returns through effective management of quality costs.
D. Benefiting universities in developing countries: The research results can be generalized to educational institutions in other countries facing similar challenges regarding the quality of higher education and its financial management.
E. Bridging the gap between theory and practice: By analyzing actual data from Iraqi universities, the research contributes to linking theoretical concepts with applicable practical procedures in improving quality

Fourth: The research model and its hypotheses**:**
In the context of striving to achieve the objectives of the research, the researcher reviewed many previous studies that relate to the subject of the research and its variables, which helped the researchers to build a model that shows the relationship and impact between the variables. The hypotheses were formulated as follows:
The **first main hypothesis**: There is a statistically significant relationship and impact between the Quality cost and the Quality in higher education in terms of their dimensions.
The **second main hypothesis**: There is a statistically significant relationship and impact between the Quality in higher education and the Quality cost to indicate their dimensions.

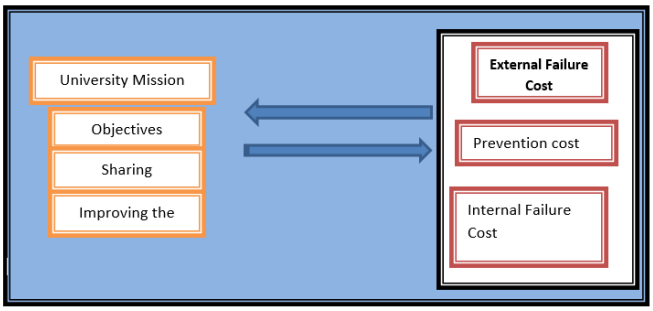

Figure 1. Search form Scheme No. (1) Research Form

**Fifth: Research Methodology:** The researcher used the descriptive analytical method because of its comprehensive view and peers describing the case by analyzing it and then drawing conclusions and basic indicators.
**Sixth:research Delimitations :** The limits of research are reed by the research Delimitations, where the research is determined by its variables, the Quality in higher education , and the Quality cost , while the spatial Delimitations represented Mosul University, to represent the human limits of the teaching staff at the university and its colleges. The research completion period was from 15/1/2018 - 24/3/2018.
**Seventh: Tools of statistical analysis:**
The researcher used the Statistical Group for Social Sciences (SPSS), in order to unload data and conduct statistical analysis processes to access information, and the path analysis was adopted in order to show the direct and indirect impact of the research variables.

**The second topic : the theoretical framework of the research variables**
**First: Quality Costs**
**1- Concept of costing quality**
The concept of quality has been associated with its cost since the poor quality represented an imperfect use of resources and energies as well as manpower and time, and it has resulted in high costs that have had significant effects on the rise in production costs and the total costs of the organization. Quality costs have been defined as the costs that the university spends to prevent and avoid poor quality. They have been defined as the costs achieved as a result of the possibility of having poor quality or its existence. Quality in this sense refers to compatibility with product design specifications (Al-Raqbi,2006: 4)
**2- Elements of Quality Costs**
Quality costs have been classified into four main items (Omachonu,2004:277):
A) The prevention cost (prevention)
B) Appraisal Costs
C) Internal Failure Cost
C) External Failure Cost
While the British Standard ( BS 6143-2-1990) classified the Quality cost into three categories (Halis,2002:101).
1. T The prevention cost.
2. T Appraisal Costs.
3. T Failure cost

It is noted that this classification is not different from its predecessor except in dividing failure cost into the cost of internal failure and the cost of external failure. Crosby classified the Quality cost into two categories (Al-Bakri,2000: 293).
1. Conformity price
2. Unconformity price .

**1- Prevention cost**
The Prevention cost takes precedence over the cost of other quality. It stressed that increasing the Prevention cost leads to improving the level of quality and thus reducing failure cost, which leads to helping to reduce the total Quality cost . The Prevention cost is the costs resulting from keeping failure cost and evaluation to a minimum. It is defined as the costs aimed at preventing the production of non-conforming products (Horngren,1996:611).

It **is also defined as the costs that arise in an attempt to prevent problems, failures and errors. The Prevention cost consists of a number of components:**
A) Quality cost Planning: The cost of benefiting from the experiences of people working outside the scope of quality operations (Al-Bakri,2000: 294).
B) Quality cost training: It includes the cost of learning the road and techniques in addition to auditing internal and external accounts as well as the cost of training programs inside and outside the university (Diphtheria,2005: 180).

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C) Cost of design and development of information related to quality equipment: Costs related to the time spent by people are represented in the design of inspection, quality measurement and testing equipment and the cost of product design and control equipment and do not include the cost of equipment or depreciation.

**D)** Other prevention cost: It includes all other expenses that help the quality control function by performing its objectives, such as secretarial, transportation, travel, dispatch, telephone and telegraph.

**2. Assign Rating**

The costs arising from the discovery of the condition of the product and defined as a cost that occurs in the application of the inspections, tests and evaluations planned and used to find conformity with the quality requirements

**3. Internal Failure Cost**

Refers to the costs arising from the failure of the results of the work to reach the standards of quality of design and discovered before delivery to the customer and that the cost of internal failure is those expenses that arise as a result of the production of poor quality goods or services that are revealed during the production processes inside the factory(Tsai Wen,1998: 719).

**4. External Failure Cost**

Those costs that arise after the delivery of defective parts or services to the customer, as they are defined as the cost of producing the product or providing the service, which fails to meet the requirements and expectations of customers and the consequent costs of this failure, such as the cost of returns, loss of customers, warranty, debris and lawsuits (Heizer,2001), the above definitions referred to a set of cost elements that fall under the title of the cost of external failure

**3- The optimal level of quality costs**

It is noted on this model that it maintains an acceptable rate of poor quality, called the acceptable level of quality (Acceptable Quality Level ), which cannot be eliminated, but in fact it constitutes additional costs as well as the Quality cost improvement ( Al-Sharifi, 2005, 54), and despite the simplicity of the traditional entrance to the behavior of the Quality cost and easy to understand in theory, the attempt to apply it in practice faces two basic problems:

A) The **problem of measurement accuracy**: This problem relates to the inaccuracy in measuring the cost of non-conformity in both categories. Although it is possible to obtain many elements of failure cost from accounting records such as the cost of examination, storage, rescheduling and repair of defective elements, there are many elements of failure cost that do not appear in accounting records and must be determined on a discretionary basis such as the negative impact on the reputation of the university and thus on its future sales to customers due to the delay in delivering orders to customers or because of sending units that do not conform to specifications. These costs are called for this reason the hidden Quality costs, unforeseen or hidden.

B) The **problem of determining equilibrium**: This problem appears as a result of the difficulty of determining in practice the point at which spending on compatibility activities should be stopped in exchange for savings in the cost of incompatibility (i.e. the difficulty of determining in practice the level of economic compatibility at which the marginal Quality cost is the lowest possible) ( Hussein,2000: 289).

**1.** The **contemporary model of the optimal level of quality** cost: In the advanced industrial environment, where severe competition prevails between international universities, quality is the important element of competition. At these universities, the traditional model is inappropriate, which forces these universities to devote their capital to reducing the number of defective units and at the same time reduce their Quality cost , as it turns to the method of reaching the management of the Quality cost . Under this model, the optimal distribution or level of quality cost is achieved when Zero Defect is produced. The zero defect is considered to be a zero defect when equating the cost of total quality, and the relationship here between the four categories of quality cost differs in its management from the relationship shown in the form of the traditional model.

The importance of governance is highlighted by the availability of transparency, clarity and accuracy in the financial statements and working in a transparent democratic manner and by separating the ownership of the organization and management to avoid the organization's administrative failures, exposure to bankruptcy and financial default as well as its role in maximizing the value of the organization in the market and ensuring its survival and growth.

**1- The concept of university governance**

The concentration of work on transparent principles, financial and administrative control and accountability within universities, which protects them from facing the same fate as collapsed universities, as the method of university governance is a means of enabling the community to ensure that universities are well managed in a way that protects the funds of investors and lenders, and leads to the creation of guarantees against corruption and mismanagement, as well as the development of the basic values of the market economy in society(Al-Babel:2002: 4).

It has been described as "the system through which the work of the organization is directed and monitored at the highest level in order to achieve its objectives and meet the necessary standards of responsibility, integrity and openness" (Hammad,2005:42).

**2. Relevance and objectives of governance**

Governance is important to determine the fate of the organization in the current era because the rules of governance and its obligations have become a powerful tool to create rules characterized by transparency and disclosure of accounting information through effective regulatory tools in addition to activating the role of oversight, which plays an important role in achieving the needs and requirements of the interests of society significantly. Recently, the importance of giving detailed explanations about the causes of the current financial crisis has increased more than ever. Good governance in the private and public sectors leads to demands for transparency, accountability and responsibility (Greenfield,2008). The importance of governance is shown in identifying deviations and excesses in the work of universities through control and control for the purpose of correcting deviations ( Al-Otaibi,2006:3) and to achieve the maximum and effective use of accounting and internal control systems, especially in internal control processes, and the importance of governance is embodied in **Khudairy, 2005,53)**

**A)** Fighting financial and administrative corruption in universities.

**B)** Ensuring the integrity, neutrality of all employees in the organization from the board of directors and executives to the lowest level of employees.

**C)** Avoid intentional mistakes or deviations, whether intentional or unintentional, and prevent their continuation or minimize them, using sophisticated regulatory systems.

**D)** Achieving the maximum benefit from accounting and internal control systems, achieving the effectiveness of spending and linking spending to production.

**E)** Adequate disclosure and transparency of financial statements.

**F)** Ensuring the highest effectiveness of auditors, and ensuring that they are highly independent and are not subject to any pressure from the board of directors or from executives.

**3. Principles and rules of university governance**

Governance is based on a set of rules, systems and procedures that achieve the best protection and balance between the interests of the organization's managers, shareholders and other related stakeholders ( Abdelfattah,2007 : 101), and in view of the important role played by university governance, universities and international bodies have made clear and concrete efforts with regard to the formulation and development of governance principles, foremost among these OECD universities, which issued governance principles in 1999 in cooperation with the World Bank WB and IMF to evaluate and improve the legal, institutional and legislative framework for university management for member and non-member countries. These principles have been

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developed from various points of view and for various countries, so they represent the basic conditions for university governance and the rules in force. Therefore, the principles of this organization are the starting point for testing a sound framework in all countries, especially developing countries ( Lutfi,2005: 755), and these principles were amended in 2004 to cover six basic areas, and each principle includes a set of detailed principles as they are**(**Organization for Economic Corporation**,2005 : 14)**

1) Ensuring that there is a basis for an effective framework for university governance encourages raising the level of transparency and efficiency of markets and that it is consistent with the provisions of the law and clearly defines the distribution of responsibilities between the various supervisory, regulatory and executive bodies.
2) The governance of universities provides protection for shareholders and facilitates the exercise of their rights and the governance framework protects the rights of shareholders.
3) The governance of universities ensures equal treatment for all shareholders, including minority and foreign shareholders. All shareholders should have the opportunity to obtain effective compensation for the violation of their rights.
4) The governance of universities recognizes the rights of stakeholders created by law, or arising as a result of mutual agreements, and to encourage active cooperation between universities and stakeholders in the creation of wealth and jobs and the sustainability of financially sound universities.

**4. Mechanisms for applying modern e-governance**

To apply the rules of university governance, there must be mechanisms adopted by the management of the organization to ensure that its assets are used efficiently and ensure returns on its investments. University governance mechanisms have been defined as "the set of legal practices (tasks and characteristics) that ensure the organization to control the variables of its internal environment, and to adapt to the variables of its external environment with high disclosure and clear transparency, to achieve the demands of all interests" ( Al-Faleh,2006: 155). The mechanisms are classified into:

1. **Internal mechanisms:** the set of variables in the organization that negatively or positively affect the organization's performance ( Al-Obeidi,2006: 155)
2. **External mechanisms: External** mechanisms represent all the factors that affect the performance of the organization that originate from the surrounding external environment and are an important source of pressure for the application of governance rules, namely legislation and laws, external auditing, administrative work, mergers and acquisitions, and creditor monitoring **( Al-Tamimi,2008: 177).**

The application of governance through electronic control systems is as follows:

- **Computer Review**

The primary determinant of using this method is the clarity or presence of the consecutive review element. This comes when the initial documents and entries as well as the accounts are prepared in a form readable to the naked eye, as is the case in manual systems.

- **Censorship through computer**

This method is used in cases where there is no element of follow-up review, that is, the auditor cannot track the various processes from its inception to its end, because the data and information about inputs and outputs are stored on electronic means of preservation.

- **Computer-Aided censorship**

According to this method, electronic systems are audited by the auditor through electronic audit software, which is designed to carry out the audit. They may be general, that is, they may be used in any regulatory or private process, that is, they may be specifically designed for a particular audit. These programmes perform several functions in the implementation of the control process.

1. Testing stability in the application of accounting principles and methods.
2. Testing different calculations, preparing a debt age table for debtors and estimating the provision for doubtful debts.
3. Selecting a sample of debtors and processing the approvals to be sent to them, indicating the type of approval (positive or negative), making comparisons and extracting accounting ratios for different items.
4. Check records in terms of quality, completeness, consistency,and validity.

Where appropriate conditions and factors are present, it is preferable to use the computer-assisted monitoring method because of its many and multiple benefits. Because of its suitability for the nature of electronic data operation. The use of computers in data processing brings many benefits to the control process, such as improvements in performance:

**A)** Faster processing of other processes and data.
**B)** Greater accuracy in calculation and comparison with data and more discipline at the time of accounting and auditing reporting.

More accurate data storage, easier access to data when needed, and the provision of outputs.

**Second: Quality in higher education**

**1- The concept of Quality in higher education**

"The interests of man, groups and organizations in quality, and mastery in the performance of work, go back to the beginnings of human civilization, as those interests are due to the Babylonian and Sumerian civilization, and specifically to the provisions of the Hammurabi obelisk, where one of the provisions refers to (that the building that builds a house and falls on its occupants and kills them is punishable by death( In our modern era, the concept of quality is one of the latest administrative concepts that are based on a set of ideas and principles that any administration can adopt in order to achieve the best possible performance. He defined it " (Al-Banna,2006 :3) as a comprehensive applied approach aimed at achieving the needs and expectations of the client where quantitative methods are used for continuous improvement in processes and services in the organization. It is also defined by (Al-Bilawi et al., 2006 : 12) as the set of standards and procedures that it adopts and implements to achieve the maximum degree of objectives envisaged for the institution and continuous improvement in performance and product according to the required purposes and specifications in the best possible way and least effort and cost. It can also be defined (www.undohacentre.ohchr.org) as representing global standards to measure its outputs and outputs, a transition from a culture of minimalism, to a culture of mastery and excellence, a rapid move towards the future, a new management revolution, and the development of all means and methods of work. It can also be defined (www.kenanaonline.com) based on the management and monitoring of workers in the educational process to ensure quality at each stage of the educational process. As well as defined by (Aldouri, 2005 : 395) that quality is from the customer's perspective as the suitability of the product or service for use, but from the perspective of the product or service with two dimensions, the first is the responsiveness of the characteristics or specifications of the product or service to achieve the desired quality, and the second is the ability of the process to achieve the design specifications.Researchers have invented the definition of quality, including those who defined it as "the set of characteristics or features that accurately and comprehensively express the essence and status of education, including all its dimensions: inputs, processes, and outputs close and distant, and feedback, as well as the continuous interactions that lead to the achievement of the desired and appropriate goals for a particular society, and the extent of integrity of the substance varies levels of quality" (Al-Tala ', 2005 :16). It is also defined as "a modern management philosophy that is based on a number of guiding principles that combine administrative means, innovative efforts and specialized technical skills in order to improve the level of performance, continuous improvement and development and achieve the satisfaction of all employees in the institution and its beneficiaries" (Mujahid, 2008 :43), and from the standpoint of culture can be considered to be directed to create "a distinctive culture in performance, where managers and employees work and struggle continuously to achieve the expectations of beneficiary customers, and perform work correctly from the beginning with achieving quality with high effectiveness and in the shortest time" (Al-Tass, 2008-2009 :16), From this standpoint, it is considered "a modern management philosophy, taking a comprehensive management approach or system, based on making radical positive changes for everything within the organization, where these changes include: thought, behavior, values, organizational beliefs, and management leadership style..Etc., in order to improve and develop all the components of the organization, to reach the highest quality in its outputs (goods and services) and at the lowest

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cost, with the aim of achieving the highest degree of satisfaction of its customers, by satisfying their needs and desires, according to what they expect, in line with a strategy that recognizes that customer satisfaction and the goal of the organization are one goal, and the survival of the organization and its success and continuity depends on this satisfaction, as well as the satisfaction of all those who deal with it other than customers such as suppliers and others"(Aqeeli, 2009: 31), and thus" represents that comprehensive quality management is an entry point to the management of the organization that is based on quality and based on participation for all employees of the organization, and aims at long-term success through the satisfaction of the beneficiary and the achievement of the benefits of the workers of the organization and society as a whole"(Samarrai and Al-Nasser: 2012: 20), and thus can be defined as"It is the administrative philosophy of the institution through which it realizes the achievement of both the needs of the consumer as well as well as the achievement of the objectives of the project together, 2015 : 10). ")

**2. Quality Dimensions in higher education**

The quality framework in university education consists of a three-dimensional process of planning the university's mission and the active participation of its human elements in order to benefit from all these elements without exception for any of them, or reduce the value of any of them, and what is done in that process of continuous improvement on them leads to keeping pace with the latest scientific theories on them, and Figure (2) below illustrates this.

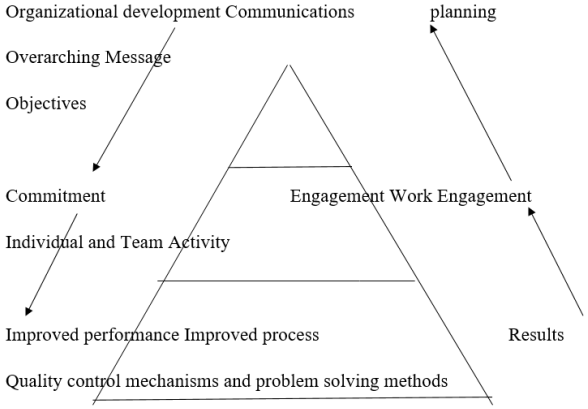


Figure (2) shows the three total quality management framework in university education. Reference : Fawzi Harb Abu Odeh and Muhammad Abu Malouh, Quality Indicators in University Education, Research submitted to the First Educational Conference held in the College of Education, Islamic University, Research submitted to a conference,2004, 538.

It is based on the mission and general objectives, the structure of the programs, the educational environment, the quality of the accepted students, the study system, the success rates, the quality of the graduates, the quality of the teaching staff, the educational facilities, external communication and knowledge exchange, and the internal evaluation of quality (Abu Odeh and Abu Mallouh, 2004 : 538).

**3.Principles of quality education**

It is an endless process that includes every component and every individual in the organization, as it aims to introduce them into the system of continuous quality improvement and focuses on the occurrence of mistakes by ensuring that the work has been performed correctly, from the first time to ensure the quality of the product and its continuous upgrading, and from this point of view, the Quality in higher education consists of the following principles (Al-Douri, 2005: 28).

A- Customer Focus: Organizations must understand the current and future needs and expectations of their customers, and strive to achieve all expectations . The client here means the student, the community, and the labor market that accommodates graduates .

B - Leadership: The leadership of education is concerned with unifying the vision, goals and strategies within the education system and preparing the educational climate to achieve these goals at the lowest cost .

C- Participation of workers: Emphasizing the effective and equitable participation of all workers involved in education from the bottom up without discrimination, each according to location, and with the same importance, which will lead to their full integration in work, and thus allow the use of all their abilities and potentials for the benefit of the educational organization.

D- Focusing on the means : It is a fundamental difference between the concepts of total quality management and the concepts of quality assurance that focus only on the product and solving the problems that emerge in real time .

E- Decision-making on the basis of facts: Effective decisions focus not only on data collection but also on analysis, putting conclusions at the service of decision makers.

F- Continuous improvement: Continuous improvement must be a permanent goal of educational organizations.

G. Independence : Total quality management depends on independence .

**4- Elements of quality education**

A number of writers and researchers on the topic of total quality management touched on several elements, but these elements differed from one person to another, as some writers identified them with four elements, and some identified them more than that . The most important elements agreed upon among researchers can be identified as follows (Samarrai and Nasser, 2012: 39-43):

A- Supporting senior management: The importance of supporting senior management goes beyond merely allocating the required resources, as each organization puts a set of priorities for it. If senior management is unable to show its long commitment to supporting this management, it will not succeed in implementing total quality management.

B- Beneficiary Satisfaction: The beneficiary (service recipient) is the service in total quality management where his needs and desires represent the driving force required to start all administrative processes.

C- Continuous improvement of quality : It is the continuous search for methods that improve operations. This includes comparing with distinct applications and developing the sense and awareness of individuals of their ownership of activities and operations.

D- Employee participation: Total quality management is a basic task for all individuals working in the organization.

(E) Training and education: Total quality provides the basis for a better and continuous way to improve individuals in the organization.

F- Common culture: This means that there should be one clear and common vision that represents a unified direction for the administrative organization.

**5. Education quality stages**

To measure the Quality in higher education in universities, there are stages to complete this measurement, which are as follows ( Qasim,2012: 8-9):

A- Initial stage (evaluation): At this stage, the situation at the university is recognized in terms of human and material capabilities and the way in which the educational system is applied, and that the results of the student 's educational achievement and the measurement of the extent of the relationship between the university and society, as well as the evaluation of the elements of the educational process.

B- Secondary stage of documentation and development of the quality system: The system is developed at this stage through the development

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andimplementation of a comprehensive plan to meet all therequirements and specifications required according to (ISO 9002) by creating a quality manual and its procedures through work plans andinstructions in order to ensure obtaining the required quality systems in cooperation with the university's employees and then approved by the senior management.
C- A third stage of applying the quality system: In this stage, the quality system is applied to the university from administrative departments and other units, and the qualified university and the work team manage education by following up and ensuring the implementation and application of the quality system procedures and instructions.
D- A fourth stage of the preparation and training of staff on the programs: The university at this stage prepares teaching andtraining materials for various administrative levels throughout the period of application of the system with the distribution of these materials to all employees at the university to view them in preparation for training on them.
E- Fourth stage of training: This stage trains a number or a group of university employees on the quality system (ISO, 9002) and its applications. The trainees implementE later for training for the rest and training based on the optimal method for conducting internal audit.
F- A fifth phase of internal review: It is through the work teams B The university in which the quality system is applied, andthe internal review aims to ensure that all departments of the university BApply the instructions andprocedures of the system with the discovery of non-conformity cases for the purpose of amending them BIn the light of the requirements of the international standard (ISO, 9002), then thereview is by the senior management (Ministry of Higher Education and Scientific Research) for the purpose of ensuring the application of the system and activating it in the field.
G- The penultimate phase of the external review: It is by the grantor to certify an external review while meeting the quality system within the requirements of the required specifications with the discovery of non-conformity cases for the purpose of taking preventive andcorrective measures to address them.
J- Final stage of license: External review is carried out after the certificate issuer, where the decision to grant the university certificate is taken JThe international quality certificate (ISO 9002) B As soon as it is fully compliant with the specifications.

**The third topic : The field aspect of research and its Procedures**

**First: The variables of the study and the field objective of the research:**

1- University : Includes the University of Mosul.
2- Colleges: These include the colleges of Mosul University, (18) colleges.
3- Target sample: university professors from the university center and colleges.
4- Gender: Male and female teaching staff.

"A deliberate, stratified sample of (70) teachers was selected from the university and its colleges, and then the questionnaire was distributed, which was the main tool for collecting data to reach the research goal, where (70) questionnaires were distributed by the researcher and its paragraphs were clarified to obtain accurate data and the researcher was able to retrieve (65). After auditing to conduct the coding process for data entries, the researcher found that there were (2) incomplete forms that were excluded to be approved (63) and constitute (90%) of the total number of distributed forms.
The questionnaire was presented to a group of arbitrators with experience and specialization in the field of research to make their observations on the formulation and content, and the observations were taken into account to produce an integrated questionnaire.

**Second: Evaluation of the study tool**

The questionnaire was subjected to a series of tests to ensure the validity of the scale, as described below:
1- content Validity: The questionnaire was presented to a group of experienced arbitrators to ensure the accuracy of the measures and their suitability to what was prepared for, and the amendments were made according to the opinions of experts and in proportion to the awareness of the field in question.
2- Internal validity of the dimensions of the variables: The table below shows the internal validity of the associated dimensions

Table (1) for internal validity measurement

| No. | Search Dimensions | Correlation | Sig | ADescription |
|---|---|---|---|---|
| Quality in higher education | | | | |
| a | University Mission and Planning | 0 .878* * | .000 | Satisfactory |
| b | Purpose | 0 .888* | .000 | Satisfactory |
| C | Sharing | 0 .812* * | .000 | Satisfactory |
| d | Improving the quality of the process | 0 .871* * | .000 | Satisfactory |
| Quality cost | | | | |
| a | Prevention cost | 0 .766* * | .000 | Satisfactory |
| b | Internal Failure Cost | 0 .898* * | .000 | Satisfactory |
| C | External Failure Cost | 0 .871* * | .000 | Satisfactory |

Source: Preparation of the researcher according to the results of the statistical program. (spss)

"It is clear from Table No. (1) that there is a correlation between the internal dimensions and the research variables in the sense of all the paragraphs used in the construction of the questionnaire, after the level of the function has reached the level of the function(0.000), and it indicates a direct relationship and reliability between the paragraphs, dimensions and variables, and it is clear that the relationship is significant in the sense that the occurrence of the correlation is due to homogeneity and the internal entanglement between the dimensions and not to chance, thus achieving the structural validity of the questionnaire."

**3- research tool stability (questionnaire)**:

"The researcher relied on stability by finding the coefficient of (Cronbach Alpha) to ensure the extent to which the questionnaire represents the target community, and through the results it became clear that the stability of the research tool reached the coefficient of (Alpha), for the Quality in higher education (0.80) and the Quality cost (0.75) to reach the value of (Alpha) for the questionnaire in total (0.84), and it is a positive result that translates into the possibility of relying on the questionnaire for the purpose for which it was prepared."

**Third: Describe the link between the dimensions of the research and its availability in the target field:**

To identify the importance of the variables, the correlation coefficient between the variables was found according to the views of the target sample, as shown below:

1- The **correlation relationship between variables:** The correlation relationship between variables was found to show the degree of correlation between the research variables by presenting a clear picture showing the level of the relationship and as shown in the following table:

Table No. (2) correlation of relationships for research variables

| **Search Parameters** | **Quality Management Application Requirements** | **Work team strategy** | **Technology** |
|---|---|---|---|
| **Quality in higher education** | 0 .737 | 1 | |
| **Quality cost** | 0 .898* * | 0 .732* * | 1 |

Source: Researcher's preparation based on the results of the program. (spss.
All the results in the table show a positive relationship between the research variables after the results of the correlation coefficient ranged between (0.787* *- 0.898* *).

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2. **Selection of autonomy for independent changes**

**The correlation analysis came through the Pearson correlation coefficient to determine the level of correlation between the dimensions of the independent variable and to show the extent of independence of the independent variable, as shown in the following table:**

**Table (3) The correlation between the dimensions of the independent variable**

| 1- Dimensions | Prevention | Internal Failure | Chapter 1External Failure |
|---|---|---|---|
| **Prevention** | 1 | 0.501** | 0.433** |
| **Internal Failure** | 0.501** | 1 | 0.567** |
| **External Failure** | 0.433** | 0.567** | 1 |

**Source: Prepared by the researcher based on the results of the statistical program. (spss.)**

"From the results of table(3), it is clear that the independent variable is independent from the dependent, so that the effect coefficient can be found for each dimension on the dependent variable after it was found that the problem of multiple linear correlation did not appear, as the correlation coefficient between the internal dimensions of the exploited variable ranges between"(0.433**- 0.567**).

**2- The importance of the research variables in the company discussed:**

The arithmetic mean, standard deviation and coefficient of variability were found for the data of the importance of the variables and the extent of their perception in the target field based on the responses of the sample members and as shown, which:

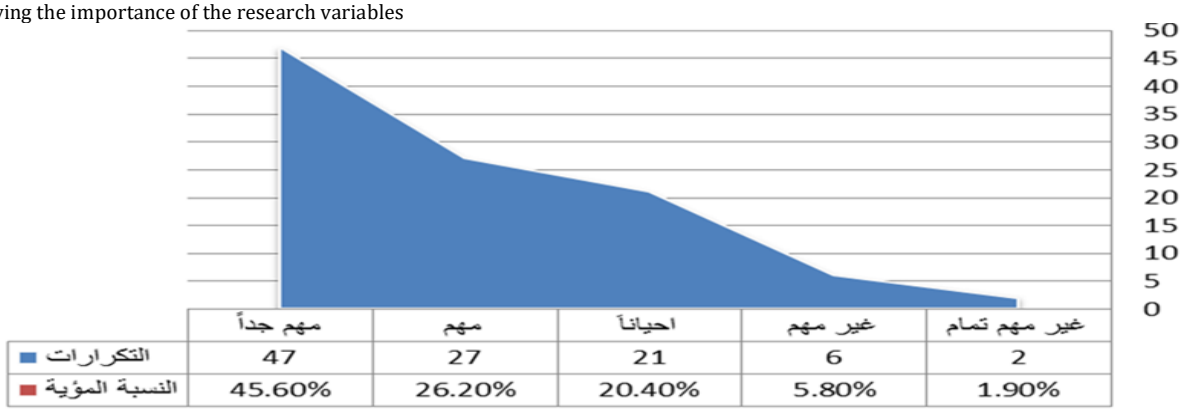
**Table (4) Description of variables for research**

| | No. | Variables | arithmetic mean | Standarde | Coefficient of variation | Rank |
|---|---|---|---|---|---|---|
| Pur evariables | 1 | Prevention cost | 3.56 | 084 | 23.595 | 3 |
| | 2 | External Failure Cost | 3.36 | 0.78 | 21.876 | 2 |
| | 3 | Internal Failure Cost | 4.27 | 0.56 | 15.222 | 1 |
| | **Quality cost** | | 3.23 | 0.90 | 27.863 | 3 |
| | 1 | Purpose | 4.22 | 0.95 | 22.511 | 3 |
| | 2 | University mission and planning | 3.93 | 0.88 | 22.391 | 3 |
| | 3 | Improving quality | 4.05 | 0.75 | 18.656 | 1 |
| | 4 | Sharing | 3.96 | 0.78 | 19.696 | 2 |
| | **Quality in higher education** | | 4.02 | 0.84 | 20.895 | 1 |

**Source: Prepared** by the **researcher according to** the **results of the statistical program**

The results in the above table show that the members of the target sample are aware of the research variables. This shows that the nine universities are striving to reach the highest levels of merit, especially after the Quality cost and e-governance has obtained a greater coefficient of difference than the Quality in higher education. This represents a negative aspect because universities must strive to achieve quality by establishing a culture of use and reducing costs because high costs lead to the loss of quality value.

A chart showing the importance of the research variables




Source: Outputs of the statistical analytical program.

**Fourth: Testing research hypotheses:** The hypotheses are tested to confirm the content of their validity by showing the correlation and impact relationship between the research variables (quality cost, Quality in higher education ), as shown below :

**Table (5) Testing research hypotheses**

| | Quality in higher education | | | Quality Costs | | | Quality in higher education | | |
|---|---|---|---|---|---|---|---|---|---|
| | Beta coefficient (B) | T test | Sig | Beta coefficient (B) | T test | Sig | Beta coefficient (B) | T test | Sig |
| **Quality Costs** | - | - | | - | - | - | 0.722 | 4.122 | 0.00 |
| **Technological Governance** | 0.679 | 3.241 | 0.00 | 0.791 | 4.032 | 0.01 | - | - | - |
| **Coefficient of stability (a)** | 1.011 | | | 1.212 | | | 1.165 | | |
| **Coefficient of determination(R2)** | 0 .535 | | | 0 .748 | | | 0 .769 | | |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Correlation coefficient (R) | 0 .731 | | | 0 .701 | | | 0 .677 | | |
| Chapter 2ANOVA | Chapter 359033 | | Chapter 40 .000 | Chapter 5 1118 | | Chapter 60.00 0 | Chapter 757 119 | | Chapter 80.000 |
| Chapter 9F | Chapter 10 Sig | | | | | | | | |
| | Quality in higher education | | | Quality Costs | | | Quality in higher education | | |
| | Beta coefficient (B) | T test | Sig | Beta coefficient (B) | T test | Sig | Beta coefficient (B) | T test | Sig |
| Quality Costs | - | - | | - | - | - | 0.722 | 4.122 | 0.00 |
| Technological Governance | 0.679 | 3.241 | 0.00 | 0.791 | 4.032 | 0.01 | - | - | - |
| Coefficient of stability (a) | 1.011 | | | 1.212 | | | 1.165 | | |
| Coefficient of determination(R2) | 0 .535 | | | 0 .748 | | | 0 .769 | | |
| Correlation coefficient (R) | 0 .731 | | | 0 .701 | | | 0 .677 | | |
| Chapter 11 ANOVA | Chapter 12 59033 | | Chapter 13 .000 | Chapter 1 1118 | | Chapter 15 .000 | Chapte 7119 | Chapter 17 0 | 0.00 |
| Chapter 18 F | Chapter 19 Sig | | | | | | | | |

**Source: Preparing the researcher according to the results of the program (spss)**

2- We conclude from the results in the table above that there is a relationship and an impact between e-governance and the Quality in higher education , where e-governance explained an important part of the variation in the Quality in higher education by the amount of the coefficient of determination($R^2$=0.73), and this shows that e-governance explains (73%) of the change in the Quality in higher education, and from the regression coefficient of (0.67=β), which means that the increase of e-governance by one unit is accompanied by an increase of (67%) in the Quality in higher education , and it is considered a significant impact according to the value of (3.24 t=), which indicates that morale is greater than (2), and this achieves the first hypothesis.

2- It is clear from the results that there is a relationship and an impact between e-governance and the Quality cost , as e-governance explained an important part of the variation in the Quality cost by the amount of the coefficient of determination(R2=0.70). Thus, it becomes clear that e-governance explains a value of (70%) of the change in the Quality cost , and from the regression coefficient of (0.79=β), which means that the increase of e-governance in one unit is accompanied by an increase of (79%) in the Quality cost , and it is considered a significant impact according to the value of (4.03 t=), which indicates that the significance is greater than (2), and thus the second hypothesis is achieved.

3- The results show a relationship between the Quality cost and the Quality in higher education , where the cost of merit explained an important part of the variation in the Quality in higher education by the amount of the coefficient of determination(R2=0.67). Thus, the Quality cost explains the value of (67%) of the change in the Quality in higher education and the regression coefficient of (0.72=β), which means that the increase in the Quality cost in one unit is accompanied by an increase of (72%) in the Quality in higher education , and it is considered a significant effect according to the value of (4.12= t), which indicates that the significance is greater than (2), and thus the third hypothesis is achieved.

It is clear from the constant limit coefficient that there is interest by the universities discussed in the Quality in higher education even if there is less focus on electronic governance because the constant limit coefficient (a) in all tests was more than zero.

To prove the fourth hypothesis and to confirm that the Quality cost represents an intermediate variable, reliance was placed on the analysis of the path and the statement of direct and indirect impact, as shown below:

**Table(6) Results of the hypothesis test**

| Variables | Quality in higher education | | |
|---|---|---|---|
| | Beta parameter (B) | Test (T) | Sig |
| E-governance | 0.414 | 4.113 | 0.023 |
| Quality cost | 0.345 | 1.024 | 0.010 |
| Coefficient of stability (a) | 1.212 | | |
| F / Sig | 71.12 | 0.000 | |
| Chapter 20 Coefficient of determination(R2) | 0.718 | | |
| Correlation coefficient (R) | 0.872 * | | |

**Source: Prepared by the researcher based on the results of the program. (spss)**

The results of the path analysis show that the introduction of the Quality cost in the proposed model with the requirements of e-governance remaining as a variable. This results in positive results represented in the increase in the coefficient of determination to reach ($R^2$) (0.87), that is, an estimated(0.87) of the change in the Quality in higher education is explained by the e-governance. This increase is due to the introduction of the Quality cost , and all the results contained in the table show the overall significance of the research model, and to ensure that the Quality cost is mediated between the exploited and dependent variable.

The direct and indirect impact was found to show the nature of the direct influence of the independent in the dependent and the indirect influence in the dependent through the intermediary, as shown in the following table:

**Table (7) Measuring the direct and indirect impact of the research variables**

| | |
|---|---|
| The Independent Variable | Quality cost |
| TheDependent Variable | Quality in higher education |

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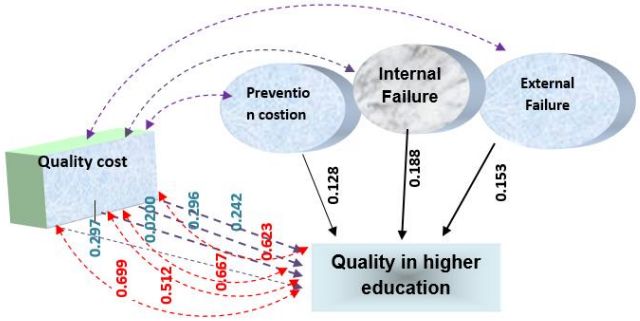
| | Impact | Sig |
|---|---|---|
| **Direct Influence** | **0.137** | **0.00** |
| **Indirect Influence** | **0.241** | **0.00** |
| **Total Effect** | **0.387** | **0.00** |
| **Indirect Impact Ratio** | **0.62** | **0.00** |

**Source: Prepared by the researcher based on the results of the statistical program . (spss n = 63**

It is clear from the table above that the direct and indirect impact of the dimensions of the Quality in higher education through the Quality cost , as it became clear from the results received that the Quality cost partially mediates the relationship between the costs of prevention and the Quality in higher education , and this applies to internal failure, while the relationship between external failure and the Quality in higher education is mediated entirely, and this applies to the dimension of justice as well, and from the above and the moral of the direct and indirect impact, it becomes clear to the researcher that the Quality cost represents an intermediate variable that can be invested in improving the Quality in higher education by reducing costs so that the achievement of quality is meaningful so that the Quality costs are acceptable, and the impact of which does not entail the loss of institutions aimed at upgrading in their entity. The figure below shows the direct and indirect impact and the percentage of indirect impact of the research variables:




A chart showing the direct and partial impact of the dimensions of quality costs and high learning needs. Source: Prepared by the researcher.

## 3. Conclusions

- Positive correlation between quality costs and higher education quality in Iraqi universities. Prevention costs such as training, curriculum development, and quality assurance, along with evaluation costs like testing and internal auditing, improved educational and research performance.
- Knowledge management strategies strengthened work teams and improved performance outcomes.
- Ignoring quality costs contributed to weak focus on quality in higher education.
- Limited use of advanced technology reduced application of quality standards.
- Variation existed in prioritizing research variables, with emphasis on higher education quality.
- Universities strive to adopt modern practices and empower teams.
- E-governance had an indirect effect on higher education quality through quality costs as a mediating variable.
- These findings highlight importance of integrating governance and quality cost systems to enhance sustainable development and improve institutional performance in Iraqi higher education institutions and future continuous improvement through evidence based policy making process.

**4.Recommendations**

1- Strengthening the academic accreditation and continuous evaluation system to ensure that universities adhere to international quality standards.
2- The Department emphasizes the planning, design and development of quality in order to prevent excessive costs so that quality can serve as a strategy through which universities have achieved two purposes, the first is to improve the level of education and the second is to rationalize costs.
3- Using a computerized database and an information database to reduce waste of time, effort and resources.
4- The university is interested in conducting quality training courses inside and outside the university in order to provide employees with the necessary skills and clarify to employees the results of studies that have shown the relationship of governance to quality so that there is a full awareness and understanding of the importance of these concepts.
5- Focusing on consolidating the values of the university environment centered on the possibility of achieving justice in the event of achieving the Quality in higher education .
6- Focus on field studies that emphasize the importance of the variables discussed and at the same time seek to harness all efforts to research the possibility of achieving the Quality in higher education at the lowest possible cost.

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