

The Effect of Using an Activity–Based Cost (ABC) System in Improving the Quality of Educational Services

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The study aims to identify the impact of the use of modern medical technologies on the cost of educational services, as well as to identify the impact of the use of modern technology on the quality of the educational or modern medical process and the advanced methods in the College of Dentistry at Muthanna University, which is an important factor in the development and success of the educational process. And its ability to provide the necessary data and information that helps the dental administration in evaluating the work of the administration and the decision-making process for planning and financing and using the available resources better away from waste and waste and knowing the importance and quality indicators in educational institutions in general and the College of Dentistry in particular. The researchers used the deductive approach through testing the study hypotheses and relying on the financial data of the College of Dentistry, Muthanna University for the fiscal years 2013, 2014, 2015 and 2016 in addition to a questionnaire distributed to the teaching staff at the College of Dentistry and the College of Administration and Economics. The researchers reached a set of conclusions, the most important of which are: 1 - Lack of understanding and know-how of the Deanship of dentistry and staff working in laboratories and clinics is a concept, importance, cost and quality of using modern medical technologies. 2- Through your visit to medical and internal clinics. Therefore, the study recommends the following: 1- The necessity of raising the level of competence of dental clinics by sending them advanced courses and workshops that raise the quality of the educational process or replace the educational staff with other experienced cadre. 2- The necessity of activating a control system in monitoring the devices used in dental clinics from wrong use which leads to malfunctions and damage to the devices and thus leads to great losses due to the high prices of spare parts and the lack of specialised medical maintenance cadres with high efficiency.

Key words: *Education Services, Medical Services, Activity-Based Costs*



Introduction

The world is living today in a great information revolution dominated by the heavy use of computers and information technology. The digital revolution is a prominent feature of the twenty-first century, which is characterised by a huge flow of information and data between the countries of the world which have witnessed fundamental changes as they entered the information age.

For this purpose, information and communication technology has contributed to changing the features of the educational system with its various sources, starting with a change in the role of the professor or academic supervisor as one of the elements of the educational system from a mere transmission of information to a professor or supervisor who is able to play the role of supervisor, trainer and constructive leader. These technologies have also changed the role of the student or learner from a mere recipient of knowledge to the role of the investigative investigator. All of this information confirms that the era of technology and information has led to a change in educational practices and beliefs that were prevalent in the past, and on this basis efforts came together to reform and develop higher education by making the most of the capabilities of modern technologies. Their application in education requires providing guidance models for all parties concerned with education.

Higher education institutions are the natural and basic source for supplying society with graduates who are able to meet their research, professional and functional needs affecting various sectors of society in an efficient and effective manner. What role these cadres can play in meeting the basic and necessary needs for community development in the short term and development represents the strategic goal of higher education institutions and scientific research.

Research Methodology and Previous Studies

First: The Research Problem

Despite great development in the means of modern technology, especially modern medical technology, there are governmental institutions that suffer from neglect and failure to develop their institutions, especially in the use of modern technologies. From these institutions are educational institutions that have a direct relationship to health and human education. Hence the problem of our study, which is represented in identifying the effects of the use of modern medical technologies on the cost of the existence of the educational process, and from here, the following questions can be raised:

1. Does the use of modern medical technology developments help reduce or reduce the cost of the educational process?
2. Does the use of modern medical technology developments improve the type and quality of the educational process at the Faculty of Dentistry, Muthanna University?

Second: The Objectives of the Study

1. Identify the impact of the use of modern medical technologies on the cost of the educational process.
2. Learn about the impact of the use of modern medical technologies on the quality of the educational process.

Third: Hypotheses of Study

1. There is a statistically significant relationship between the use of modern medical technology developments and the cost of the educational process.
2. There is a statistically significant relationship between the use of modern medical technology developments and the quality of the educational process.

Fourth: The Importance of the Study

The importance of the study is as follows:

1. Knowing the effect of modern medical technology on the cost and quality of the educational process in educational institutions.
2. Knowing the importance of modern medical technology used in educational institutions.
3. Knowledge and importance of quality indicators and standards in educational institutions.

Fifth: The Study Methodology

The researchers approved the preparation of this study on two main aspects:

- Theoretical side: The researchers relied on the inductive approach through identifying and familiarising themselves with previous studies, research, theses, university theses, Arabic and foreign books, and research published online.
- The applied side: The researchers relied on the deductive approach through testing study hypotheses based on the financial data of the College of Dentistry, Al-Muthanna University for the years 2013, 2014, 2015 and 2016.

The Conceptual Framework for Cost Accounting and Health Quality

First: Cost Accounting

The Concept and Definition of Cost Accounting System

Cost accounting plays an upward role in economic life as it is considered the main pillar in accepting or not accepting investment projects through preparing economic studies, in addition to its effective role in contributing to the planning and control process (Shaqfa, 2007: 257).

Therefore, researchers believe that cost accounting can be defined as a time science that measures and records the operations that organisations perform by following a set of rules and procedures. These rules are not fixed, depending on the nature of their activity because they are not subject to accounting norms, including GAAP.

Requirements for Implementing Activities-Based Cost Accounting System

There are several requirements that would increase the effectiveness of a cost-based cost-accounting system through the following (Coopel, 1991: 196):

- A- The accounting system can provide the necessary and detailed data to determine and measure the relationship between cost and its assets.
- B - The need to make a change and development in the industrial, health and commercial environment through the high degree of technology, which leads to an increase in the percentage of indirect costs.
- C- The diversity and multiplicity of products.
- D - Increasing the number of supportive or auxiliary departments for productive departments.

The Fundamentals of a Cost Accounting System Based on Activity in Health Organisations

There are a set of specific elements that a cost-accounting system follows on the basis of activities in health organisations, and that it is necessary to implement and follow them when applying them. These components are (Michael, 2006: 240):

- A- The necessity to define activities accurately, with the necessity to indicate the activities that have a clear impact and affect the costs in health organisations.
- B- Classifying, grouping and identifying the activities that are related to homogeneous groups, indicating the types of costs and determining the costs associated with the various activities.
- C - The comprehensive and accurate identification of the occurrence or causes of costs in each activity of health organisations.

D- Determining the additional cost rates for each container because each unit causes these costs.

E- Determining the share of the services provided from the additional costs, through these services benefiting from the various activities in the health organisations.

ABC System Implementation Steps

The arrangement of the steps of the ABC system can be determined precisely as follows (Attia, 2000: 44):

The first stage: in which direct costs, indirect costs, and capital costs are determined, so that indirect cost sources are used as a first step in the ABC system.

The second stage: the separate and measurable project activities are defined and the management levels are lower.

The third stage: in which cost guides are established (the causal relationship between indirect costs and activity) and represents the appropriate basis used to allocate each type of operational cost to the various project activities.

The fourth stage: in which the cost guides (the causal relationship between activities and cost purposes) are defined and represent the appropriate basis used to allocate the costs of each activity to cost purposes (products and services).

Second: The Quality of Medical Services

The Concept of Quality

Cost quality is an instrument of continuous improvement and improvement of quality, as it helped in identifying weaknesses and failures and the sources of defects occurring through the use of statistical tools. Quality is also a good and strong indicator to motivate higher tools to apply and implement this concept in order to reach benefits from its application through reducing the total costs of a product or service for the purpose of controlling it aggressively, thus increasing the profits of organisations (Adili, 2014: 26).

Correct and sophisticated management of organisations and their various types, whether private or public or that are profitable or non-profit, service or commodity, seeks to achieve quality in its business. Several terms that refer to quality in the organisations such as production efficiency and effectiveness and other terms have been used to refer to management success. The term quality came with holistic concepts that accommodate other terms, because senior

management seeks to achieve quality that includes all aspects as it constitutes requirements to achieve quality (Al-Samarrai, 2012: 34).

Quality of Health Service

The quality of health services provided by health institutions or organisations can be considered one of the necessary things for the individual, because it has a direct relationship with one's health or the health of the patient. Where there is an increased interest by private hospitals or the health centre in the quality of health services through the role they play in achieving the competitive advantage where customers have become focused on organisations that provide high quality in the performance of their work, this is what meets the achievement of their goals and ambition (Halabi, Tasani, and others, 2007: 6).

Therefore, the researchers believe that the quality of health services can be summarised as follows:

- A- It is the degree of commitment and adherence to the accepted principles and standards in order to know the expected results as a result of providing the health service to the auditors or patients whose health organisations aspire to achieve their goals.
- B- Providing correct and harmonious treatment and diagnostic activities for each patient, ensuring that the best results are presented to them at the lowest cost and least risk.
- C- Reducing errors related to providing health services to auditors and patients to the lowest possible extent, ensuring that they continue to work by providing the correct, optimal and correct use of health services.

Applied Study on the Government Higher Education Sector (Muthanna University, College of Dentistry)

As stated in the instructions of the governmental accounting system, the following is a description of the research sample:

Table 1: Characterisation of the research sample according to technology implications

The years before the introduction of technologies	The years after the introduction of technologies
2013	2015
2014	2016

The Study Tool

To achieve the goals of the applied study, the two researchers measured and analysed the student's cost in the college for the years before the introduction of the technologies (2013-2014) and for the years after the introduction of the technologies (2015-2016) relying on the financial statements of the college for the years mentioned above,

Procedures for Calculating the Cost of a Student in the College of Dentistry

- 1- Studying the organisational structure of the college: as shown in the following chart.
- 1- Determining the cost centres in the college.

From studying the organisational structure of the college and knowing the nature of the tasks performed by each scientific branch, division, or unit of the college, it became possible to determine the cost centres in the college, as there is the nature of the activity that imposed the use of a set of criteria when determining the cost centres, including:

1. The cost centre should have a clear and specific link to the organisational structure.
2. Smoothing the inputs and outputs of the cost centre.
3. The relative importance should be the cost centre with an appropriate size and to a degree that makes it possible to allocate a large percentage of items of direct costs to it. Since the field of research includes a large number of scientific branches, the nature of its activity differs from the nature of the activity of the people and the units, which are different in the field of activity. some of them He performs his services for the scientific departments, while others are general, which honours all units and divisions. Therefore, it has become necessary to classify departments, divisions and units into cost centres of a similar nature. They are divided into:

- 1- The main educational cost centres represented by the Department of Dentistry.
- 2- The cost centres that support the educational process represented by the people and units.
- 3- The components that make up the student's cost in the college:

The elements of the costs in the college of the research sample have been categorised based on the general budget tabs of the state. These elements included the following:

- Employee compensation
- Commodity supplies
- Service supplies
- Maintenance
- Other expenses

The above cost elements have been calculated based on the data and information provided by the college financial records. The total college expenses were calculated for each paragraph of the component elements of the student's cost, and the researchers had data on the costs of two years before the introduction of the technologies (2013-2014), the year the technology was introduced (2015) and its post-introduction year (2016).

The college expenses for the period from 2013 to 2014 were calculated on the usage elements shown in the following tables:

Table 2: Average expense of college expenses for years before the introduction of medical technology

Type of use	Expenditure	Percentage %
Employee compensation	708,445,387	%87
Commodity supplies	54,309,048	%7
Service supplies	26,025,078	%3
Maintenance	24,051,850	%3
Other expenses	0	%0
Total	812,831,363	
percentage%	%100	%100

It is noted from the above table that the percentage of employees' compensation to the total of the banks of the college is 87%; while commodity requirements, service requirements and maintenance accounted for 7%, 3 and 3%, respectively. Other expenses amounted to 0%.

Table 3: Average total expense for years after introducing techniques

Type of use	Expenditure	Percentage %
Employee compensation	1,250,798,353	%89
Commodity supplies	32,350,250	3.2%
Service supplies	3,820,500	3%
Maintenance	62,544,625	4.4%
Other expenses	59,630,000	%4
Total	1,409,143,28	
percentage%	%100	%100

It is noted from the above table that the ratio of employee compensation to the total expenses of the college is 89%, while commodity requirements, service requirements, maintenance amounted to 3.2%, 3.0% and 4.4% respectively. Other expenses amounted to 4%.

By looking at Tables 2 and 3 it is clear that the ratio of employee's compensation to the total expenses of the college before the introduction of medical technologies was 87%, while after the introduction of the technologies it reached 89%. Commodity and service requirements and maintenance reached 7%, 3% and 3% respectively prior to introduction of technologies. While the post-introduction of technologies amounted to 3.2%, 3.0% and 4.4%, respectively. Other expenses were 0% before the introduction of the technologies, while the post-introduction of technologies reached 4%. There was an increase in employee compensation and expenses in favour of the years after the introduction of the techniques. The two researchers see that this increase is due to the increase in the number of students at a higher rate than the years prior to the introduction of the technologies.

Statistical Treatments and Hypothesis Results

First: The Effect of Using Technological Developments on the Cost of the Educational Process

To prove the validity of the first hypothesis, the data used to test the first hypothesis was collected by calculating the student's cost at the college level for the years before the introduction of medical technologies (2013-2014) and for the years after the introduction of medical techniques (2015-2016). These were analysed and a comparison made between them to reach results. For the purpose of the results, the total expenses shown in the table () must be distributed to the main centre and the supporting centres over the cost units (the student) in each scientific department, division and unit, for the years before the introduction of the technologies and the years after the introduction of the techniques. The organisational structure was studied and cost centres were identified. The components that make up the cost were calculated to find out and determine the total cost of the student in the dental department, which includes its share of the cost elements. The cost elements have been distributed according to the following contexts:

A- Employee compensation: The costs of this element have been calculated based on the payroll lists and records in the financial division. The total benefit accrued from the salary and allowances and the department's share of retirement has been approved.

B- The costs of the service requirements: The costs of the service supplies were distributed to the branches, units and people according to the beneficiary by referring to the records. As for the expenses of cleaning the department, it was calculated on the basis of need and relying on the criterion (per square meter) of the occupied area of the department, people and units.

C- Costs of commodity supplies: The costs of commodity supplies were distributed to the scientific department and units, depending on the number of lamps.

D- Maintenance costs: Maintenance costs (building maintenance, water and electrical installations, garden maintenance) are distributed from the records and the beneficiary on the basis of the occupied area (identified per square meter) for each department, division and unit.
E- Other expenses: The other expenses were distributed to the extra-curricular activities unit as they pertain to extra-curricular student activities (Department of Dentistry).

According to the above, the distribution of the total costs will be on the main centre and the supporting centres for the years before and after the introduction of the technologies in the college as in the following tables:

Table 4: The initial distribution of the costs of the head office (the dental department) and the centres supporting the educational process for the pre-admission years

Q	Branch / Division / Unit	Staff Compensation	Commodity Requirements	Service Requirements	Maintenance	Other expenses	Total	Percentage
1	Department of Dentistry	3542226935.	34603995.2	17609783.3	16274605.1		422711077.1	52.0047 %
2	Financial Supervision	2213891834.	1441833.13	1068608.8	987586.6		25636946.87	3.15403 %
3	Accounts	4427783668.	1441833.13	1068608.8	987586.6		47775865.21	%6.0937
4	Administration	6641675503.	1922444.2	1068608.8	987586.6		703950394.63	%9.0516
5	Data base	0	0	0	0		0	0
6	Stores	2213891834.	2883666.3	556567.1	514368.04		26093519.78	3.210200 %
7	University performance	2213891834.	1441833.13	556567.1	51436.04		24651686.61	3.032816 %
8	The library	2213891834.	2883666.3	890507.4	822988.9		26736080.94	3.28925 %
9	Registration	2213891834.	1441833.13	1068608.8	987586.6		25636946.897	3.154030 %
10	Internet	0	0	0	0		0	0
11	Maintenance	664167550.3	1441833.13	712405.9	658391.1		69229385.16	8.01706 %
12	Civil Defence	0	0	0	0		0	0
13	University security	2213891834.	0	0	0		22138918.34	%3.2367

14	Media	0	0	0	0	0	0	0
15	Free education	0	0	0	0	0	0	0
16	Dean's office	44277836 6. 8	4806110.4	1424811.8	1316782.2		51825541.08	6.375927 %
17	Research and development	0	0	0	0		0	0
	Total	70844538 7	54309048	26025078	24051850		812831363	%100

It is noted from the above table that the direct costs charged to the Department of Dentistry, the people and the units from the aforementioned expenses sections were according to the indicative ratios. In the Department of Dentistry they reached 52.0047% and the expenses ranged from 3.032816% for the University Performance Unit to 9.0516% Admin unit.

Table 5: The initial distribution of the costs of the head office (the dental department) and the support base for the educational process for the post-admission years

Q	Branch / Division / Unit	Staff Compensation	Commodity Requirements	Service Requirements	Maintenance	Other expenses	Total	Percentage
1	Department of Dentistry	62539916.5	20612548.7	2585135.5	42320614.5	59630000	750547475.2	53.2626 %
2	Financial Supervision	3908744.78	858856.2	156873	2568128.3	0	426	3.0281 %
3	Accounts	7817489.56	858856.2	156873	2568128.3	0	81758754.625	5.8020 %
4	Administration	11726234.34	1145141.6	156873	2568128.3	0	121132488.453	8.5961 %
5	Data base	0	0	0	0	0	0	0
6	Stores	3908744.78	1717712.4	81705	1337567	0	42224432.93	2.9964 %
7	University performance	3908744.78	858856.2	81705	1337567	0	43165576.73	2.9355 %
8	The library	3908744.78	1717712.4	130727.45	2140107	0	43075995.38	3.0568 %
9	Registration	3908744.78	858856.2	156873	2568128.3	0	42671306.03	3.0281 %
10	Internet	0	0	0	0	0	0	0
11	Maintenance		858856.2	104582	1712058.5	0	119937842.3	8.5113 %
12	Civil Defence	0	0	0	0	0	0	0
13	University security	3908744.78	0	0	0	0	39087448.53	2.7738 %

14	Media	0	0	0	0	0	0	0
15	Free education	0	0				0	0
16	Dean's office	7817489.56	28628545	209164	3424171.08	0	84671086.14	6.0086%
17	Research and development	0	0	0	0	0	0	0
	Total	1250798353	32350250	3820500	62544625	5963000	1409143728	%100

The initial distribution of the costs of the head office (the dental department) and the support base for the educational process for the post-admission years

Source Preparing the researchers based on the records of the Accounts Division

It is noted from Table 5 that the direct costs charged to the Department of Dentistry, the people, and the units from the aforementioned expenses sections were according to the indicative percentages; in the Department of Dentistry they reached 2626.53% of the total expenses, and the rest of the expenses ranged from 7738.2% for the university security unit to 5961.8% for the administrative unit.

Comparing the previous two tables, it is clear that the direct costs charged to the Department of Dentistry, the people, and the units from the aforementioned expenses sections were according to the percentages indicated. In the main centre (Department of Dentistry) they reached 52.0047% of the total expenses before the introduction of medical technologies; while after the introduction of technologies they were 53.2626%. The rest of the expenses ranged as shown in Tables 4 and 5.

Distributing the Costs of the Centres Supporting the Educational Process to the Main Centres for the Years Before the Introduction of the Technologies

The descending distribution method was used to allocate the costs of the support centres to the main centre (Department of Dentistry), whereby the costs of the support centres were distributed to all centres benefiting from their services, meaning that the services are not exchanged between them; where the support centres were arranged according to the criterion of importance (Fadel Kamel Odeh, p. 106), and the support centres in the College of Dentistry divided the study sample into two centres, A and B, for the years before and after the introduction of the techniques as shown in the following tables:

Table 6: Average expenses Supporting Centre (A) Pre-introduction of technologies

q	Statement	Total cost
1	Financial supervision	25636946.87
2	Accounts	47775865.21
3	Admin	70395394.63
4	Database	0
5	University performance	24651686.61
6	The library	26736080.94
7	Registration	25636946.87
8	Internet	0
9	Media	0
10	Free education	0
11	Dean's office	51825541.08
12	Research and development	0

The source is prepared by the two researchers based on the unit accounts records.

Table 7: Average expenses of the supporting centre B before the introduction of the technologies

q	statement	Total cost
1	Stores	26093519.78
2	Maintenance	69229385.16
3	Civil Defence	0
4	University security	22138918.34
5	Total	117461823.28

The source is prepared by the two researchers based on the unit's records.

Table 8: Average expenses of the support centre A after the introduction of the techniques

q	statement	Total cost
1	Financial supervision	42671306.03125
2	Accounts	81758754.5625
3	Admin	121132488.493
4	Database	0
5	University performance	41365576.73
6	The Library	43075995.38
7	Registration	42671301.03
8	Internet	0
9	Media	0
10	Free education	0
11	Dean's office	84671086.14
12	Research and development	0
	Total	457346508.36675

The source is prepared by the two researchers based on the records of the Accounts Division

Table 9: Average expenses support centres (b) after the introduction of the technologies

q	statement	Total cost
1	Stores	42224432.93
2	Maintenance	119937842.3
3	Civil Defence	0
4	University security	39087448.53
5	Total	201249723.76

The source is prepared by the researchers based on the records of the accounts division.

After identifying the support centres in the college, the two researchers will distribute the costs to the main centre (Department of Dentistry), and to Centre A and B to reach the centre's share of the support centres that represent the indirect costs of the main centre (Department of Medicine) Teeth) depending on the number of workers in each department, division and unit as a basis for distribution A, as shown in Table 10 and Table 11 as follows:

Table 10: Distribution of the costs of the support centres to the main centre before introducing the technologies

Data	Main centres	Supportive centres		Total
	Dentist	B	A	
Additional costs charged to the college Basis of distribution	422711077.1	117461823.28	225958462.21	
Number of employees	16	5	11	32
Service				
Centre Cost Distribution (A)	164333427.1	51354195.95	–	
Distribution of the cost of the service centre (B)	168816019.23	–	–	

It is noted from Table 10 that the direct costs charged to the support centres A and B of the expenses sections respectively were according to the indicative ratios of the total expenses 225958462.21 and 117461823.28.

Table 11: Allocating the costs of the support centres to the main centre (Department of Dentistry) after the introduction of the techniques

Total	Supportive centres		Main centres	data
	B	A	Dentist	
	457346508.3675	201249723.76	750547475.2	Additional costs charged to the college Basis of distribution
32	11	5	16	Number of employees
				Service
	51354195.95	–	164333427.1	Centre Cost Distribution (A)
			168816019.23	Distribution of the cost of the service centre (B)

It is noted from the table that the direct costs charged to the support centres A and B of the expense's expenditures, respectively, were according to the indicative ratios of the total expenses 2012 49723.76 and 457346508.3675.

To calculate the cost of the student on the basis of the total costs, which represent the direct costs of the main centre (Department of Dentistry) plus the indirect costs, which represent its share of the costs of support centres A, and B represented by the people and other units on the number of students in the department the following formula is used:

The cost of one student in the dental department = the sum of costs ÷ the number of students in the department

Table 12: The cost of one student in the dental department (in Iraqi dinars) for the years before the introduction of the techniques

Statement	Direct costs	Indirect costs	Total costs	No. of students	Cost per student
Department of Dentistry	422711077.1	390120285.9	812831363	163	4986695.47
The ratio	%52	%48	%100		

Table 13: The cost of one student in the dental department (in Iraqi dinars) for years after the introduction of the techniques

Statement	Direct costs	Indirect costs	Total costs	No. of students	Cost per student
Department of Dentistry	750547475.2	658596252.8	1409143728	576	2446430.08
The ratio	%53	%47	%100		

By calculating the significance of the differences between the variables before the introduction of the technical development and after the introduction of the technical development on the cost of the educational process, the researchers used the Mann and second equation to calculate the significance of the differences between the independent variables as shown in Table 14:

Table 14: Comparing the student's cost in the dental department for the years before and after the introduction of the techniques

Variables	The difference of technologies	N	Mean ranks	Sum of ranks	Mann-Whitney U	Z	Sig.(2-tailed)
Direct cost	Before Tec	2	2.67	6.00	2.000	1.107	.268
	After Tec	2	4.23	12.00			
Indirect cost	Before Tec	2	2.00	6.00	0.000	*2.236	.025
	After Tec	2	5.00	14.00			
Total cost	Before Tec	2	2.00	6.00	0.000	*2.236	.025
	After Tec	2	5.00	14.00			
No of student	Before Tec	2	2.00	6.00	0.000	*2.236	.025 .
	After Tec	2	5.00	14.00			
Cost per student	Before Tec	2	5.00	14.00	0.000	*2.236	.025
	After Tec	2	2.00	6.00			

To calculate the impact of technological developments on the cost of the student and the educational process, the researchers used the equation of the two-factor correlation coefficient for the levels and table that shows that:

$$R_{rb} = \frac{2(mr1 - mr2)}{(n1 + n2)}$$

Table 15: The effect of technological developments on the cost of a single student in the dental department (in Iraqi dinars) for the years before and after the most recent techniques

Variables	The difference of technologies	N	Mean ranks	Sum of ranks	R_{rb} value	Impact level
Direct cost	Before Tec	2	2.67	6.00	0.553	medium
	After Tec	2	4.23	12.00		
Indirect cost	Before Tec	2	2.00	6.00	1	very strong
	After Tec	2	5.00	14.00		
Total cost	Before Tec	2	2.00	6.00	1	very strong
	After Tec	2	5.00	14.00		
No of student	Before Tec	2	2.00	6.00	1	very strong
	After Tec	2	5.00	14.00		
Cost per student	Before Tec	2	5.00	14.00	1	very strong
	After Tec	2	2.00	6.00		

Second hypothesis: The effect of using technological developments on the quality of the educational process

Table 20: The extent of the education quality in the college

s	Questions	Agree deeply	agree	natural	I don't agree	I do not agree deeply	Mean	St. deviatio	Ranking	The gene trend
		no	no	no	no	no				
		per	per	per	per	per				
1	Education technology enriches scientific method.	4	22	9	2	0	3.7568	.72286	1	Agree
		10.8%	59.5%	24.3%	5.4%	0%				
2	Education technology helps to acquire student cognitive skills	8	16	7	6	0	3.7027	.99624	2	agree
		21.6%	43.2%	18.9%	16.2%	0%				
3	Education technology helps increase learner experience, which makes it more milling to teach.	5	20	5	7	0	3.6216	.95310	2	agree
		13.5%	54.1%	13.5%	18.9%	0%				
4	Modern educational aids help to stimulate interest among students to satisfy their need to learn	8	15	10	4	0	3.7297	.93240	1	agree
		21.6%	40.5%	27%	10.8%	0%				
5	New technologies help save scientific material continuously and at the lowest cost to the learner	9	15	9	4	0	3.7838	.94678	2	agree
		24.3%	40.5%	24.3%	10.8%	0%				

6	Education technology provides the best method in absorbing the scientific material presented	10	18	7	2	0	3.9730	.83288	1	agree
		27%	48.6%	18.9%	5.4%	0%				
7	Education technology helps to share positive student's acquisition experience	11	9	3	4	0	4.0000	.91287	2	agree
		29.7%	51.4%	8.1%	5.4%	0%				
8	Education technology helps to eliminate individual differences for students	9	20	6	1	1	3.9459	.88012	2	agree
		24.3%	54.1%	16.2%	2.7%	2.7%				
9	Education technology helps to arrange and the ideas continue for students	12	20	4	1	0	4.1622	.72700	1	agree
		32.4%	54.1%	10.8%	2.7%	0%				
10	The development of modern technologies has a positive role to improve university education	14	17	5	1	0	4.1892	.77595	2	agree
		13.5%	45.9%	13.5%	2.7%	0%				
11	Education technology increases efficiency Graduates	10	22	3	1	1	4.0541	.84807	1	agree
		27%	59.5%	8.1%	2.7%	2.7%				
12	Education technology helps increase communication between the	16	18	2	1	0	4.3243	.70923	2	agree
		43.2%	48.6%	5.4%	2.7%	0%				

	student and the teacher and between the students themselves									
13	Education technology helps provide information for a long time	15 40.5%	17 45.9%	3 8.1%	2 5.4%	0 0%	4.1622	.98639	2	agree
14	Technology helps processions the evolution of the world	11 29.7%	20	5	1	0 0%	4.10821	.73725	1	agree
15	Education technology helps to provide sound concepts	9 24.3%	20 54.1%	7 18.9%	1 2.7%	0 0%	4.0000	.74536	1	agree
The average relative weight of the axis								3.9652		

Conclusions and Recommendations

First: Conclusions

The researchers reached a set of conclusions through conducting personal interviews with senior management in the College of Dentistry and access to financial statements:

1. Lack of understanding and know-how of the Deanship of Dentistry and the staff working in laboratories and clinics is a concept, importance, cost and quality of using modern medical technologies.
2. The lack of suitable teaching and staffing staff leaves a clear impact on the quality of the educational process.
3. The failure of the College of Dentistry to hold courses and workshops for workers in laboratories and clinics to keep abreast of developments in this field.
4. Through our review of the Accounts Unit in the College of Dentistry, it was found that:
 - A- There was a lack of financial data for the year 2013, which compelled us to review the presidency of Al-Muthanna University, Financial Affairs Department, to extract financial data, in which we used an unnatural time and effort in extracting financial statements for 2013.
 - B- The lack of an accounting cadre that is appropriate to the structure and unit of accounts and it was found that the number of employees is 2.

5. There is a correlation and impact through the use of continuous modern medical technologies on the cost and quality of educational services, which is as proven by the statistical aspect.

Second: Recommendations

1. The necessity of the deanship and staff of the College of Dentistry to familiarise themselves with the concepts of quality and cost and how important they are in introducing modern medical technologies.
2. The necessity of appointing the presidency of Al-Muthanna University and seeking to obtain experienced teaching staff capable of creativity in this field, which is reflected positively in raising the quality of education to keep pace with the developments of this modern era.
3. The necessity of activating a control system in monitoring the devices used in dental clinics from wrong use, which leads to malfunctions and damage to the devices and thus leads to great losses due to the high prices of spare parts and the lack of specialised medical maintenance personnel with high efficiency.
4. Through our visit to the Accounting Records Unit, our recommendations were the following:
 - A- The necessity for the Accounts Unit to obtain and maintain the 2013 financial statements in order to avoid legal questioning.
 - B - The necessity of the Deanship of the College, in coordination with the Presidency of Al-Muthanna University, to appoint an accounting cadre to suit the nature of the administrative structure.
5. The necessity of raising the level of competence of dental clinics by sending them advanced courses and workshops that raise the quality of the educational process or replace the educational staff with other experienced cadre.

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