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THE EFFICIENCY OF THE HIGHER EDUCATION FUND AND ITS IMPACT ON THE EDUCATIONAL PROCESS ANALYTICAL STUDY OF THE HIGHER EDUCATION FUND AT THE COLLEGE OF ADMINISTRATION AND ECONOMICS - UNIVERSITY OF KARBALA (2014-2023)

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Abstract:
The research seeks to measure the impact of the efficiency of the Higher Education Fund on the educational process, as improving the efficiency of the Higher Education Fund can lead to enhancing available resources and improving academic performance. The research community may be from the colleges of the University of Karbala, and the research sample represented by the College of Administration and Economics was selected for the period 2014-2023. The data envelope, data stability test (Extended Dickey-Fuller (developed)), Pearson correlation and simple effect were used through a set of statistical programs (EMS V. 1.3, Eviews Vs. 12, SPSS V. 25). The research reached a set of results, the most important of which is that there is a statistically significant impact of the efficiency of the Higher Education Fund in improving the educational process. In light of this, the research came out with a number of recommendations, the most important of which is that the college administration should benefit from these results to develop strategies aimed at enhancing the efficiency of the Higher Education Fund, which may contribute to improving the educational performance of the institution.

Keywords: Higher Education Fund efficiency, DEA, educational process.

INTRODUCTION:

The Higher Education Fund is one of the essential elements that contribute to developing the educational process and improving the quality of education in universities. The Higher Education Fund at the College of Administration and Economics - University of Karbala plays a pivotal role in supporting academic programs and promoting scientific research. This research seeks to evaluate the efficiency of using the Higher Education Fund and its impact on the educational process, by exploring how financial resources are allocated and their impact on the quality of education. The research also aims to analyze the extent to which the Fund achieves its goals of improving the educational infrastructure and providing scientific research opportunities. Through these analyses, we can understand the challenges and opportunities facing the College of Administration and Economics, which contributes to providing strategic recommendations to improve the efficiency of the Fund and enhance its role in achieving the goals of higher education. For this reason, the research was divided into four parts, the first of which included the research methodology, the second the conceptual aspect of the Higher Education Fund and the data envelope, and the third the practical aspect of the research. The research concluded with the fourth part, which was devoted to conclusions and recommendations.

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First: The research Methodology:

1. Research Problem

The research problem is how to increase the fund's revenues for the purposes of dispersing them in developing and growing the educational, service and research sectors in the college. This coincides with the continuous increase in expenses in recent years, and this disparity between revenues and expenses reflects major challenges facing the college in achieving its academic and administrative goals. The increase in expenses may be due to maintenance expenses, improving infrastructure, and increasing salaries. Under these circumstances, there is an urgent need to develop efficient strategies to enhance revenues and achieve financial balance, to ensure the sustainability of the college and its ability to provide good educational services. The research problem can be summarized in the following questions: -

• What is the direction of the Higher Education Fund's revenues and do they cover the expenses used to develop the infrastructure?

• Does the efficiency of the Higher Education Fund's management affect the educational process in all its aspects?

2. Importance of the research

Based on the pioneering role played by higher education in society, the research takes on its importance to shed light on the educational process and its financial resources that contribute to the advancement of the reality of education. The Higher Education Fund is one of these self-resources that was established to address the bottlenecks in the educational process, and its role emerged after the decline in the role of the general budget in bearing the expenses of universities.

3. Research objectives

The objectives of the research were as follows: -

• Identifying the extent of the contribution of the Higher Education Fund to the advancement of the reality of the educational process in Iraqi universities.

• Examining the efficiency of the fund to enhance the educational process, improve the infrastructure and support academic programs.

4. Research hypotheses

The hypotheses of the current research were formulated as follows: -

- ✓ The first research hypothesis: - The Higher Education Fund in the College of Administration and Economics suffers from low levels of efficiency in recent years.
- ✓ The second research hypothesis: - The time series of the efficiency of the Higher Education Fund and the educational process does not contain a unit root.
- ✓ The third research hypothesis: - There is no statistically significant correlation between the efficiency of the Higher Education Fund and the educational process.
- ✓ Fourth research hypothesis: - There is no statistically significant effect of the efficiency of the Higher Education Fund on the educational process.

5. Research community and sample

The research community represents the Higher Education Fund in the colleges of the University of Karbala, and the research sample focused on the College of Administration and Economics for the period from 2014 to 2023, and this sample was chosen intentionally due to its importance in studying the impact of the efficiency of the Higher Education Fund on the educational process, and to shed light on the challenges and opportunities facing the college in the context of funding and available resources.

Second: The conceptual aspect of the research

1. The concept of the Higher Education Fund

The Higher Education Fund was established pursuant to the provisions of Articles (10) and (47) of the Ministry of Higher Education and Scientific Research Law No. (40) of 1988, and based on these two articles, the instructions for the Higher Education Fund No. (122) of 1999 were issued, and then four amendments were made to it, the last of which was in 2023. The Education Fund is a means of supporting educational institutions with a self-financial resource from outside the state's general budget in order to improve the reality of the educational process and address the bottlenecks occurring in it. It can be defined from a legal perspective as a public financial fund with a legal personality and purely administrative and financial independence owned by government universities and colleges with the aim of achieving their financial and scientific orientations. It is also known as a financial vessel of a special and independent nature managed by a board of directors that differs according to the entity in which the fund is located in terms of the structure of its members (Taher, 2023, 107). 2. Higher Education Fund Resources and Disbursements The Higher

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Education Fund resources and disbursements can be identified by looking at the Higher Education Fund Instructions No. (122) of 1999. There are four levels of these resources: the first is at the ministry center level, the second is at the university level, the third is at the college and institute level, and the fourth is at the scientific research centers level. Table (1) shows the nature of these revenues and their disbursements for the third level, which is the college or institute.

Table (1) Higher Education Fund resources and their expenditures

College Fund Resources	Spending directions	Legal basis
A- 85% eighty-five percent of the tuition fees collected from evening study students in accordance with what is stipulated in Paragraph 1 of Clause Four of Revolutionary Command Council Resolution No. 148 of 1996.	These revenues are spent as follows: - First - 15% fifteen percent for the purposes of maintaining buildings and other fixed assets exclusively. Second - 70% seventy percent for the purposes of wages and salaries of employees, lecture fees and service requirements.	Article 10 of the Higher Education Fund Instructions No. 122
B - 85% eighty-five percent of the revenues generated from implementing Revolutionary Command Council Resolution No. 160 of 1985.	Revenues are spent at a rate of (30%) thirty percent for the purpose of motivating employees, and the remaining (70%) seventy percent is spent for the purpose of maintenance and addressing bottlenecks related to the scientific process in colleges and institutes.	Article 10 of the Higher Education Fund Instructions No. 122
C - 70% seventy percent of the revenues generated from implementing Revolutionary Command Council Resolution No. 82 of 1997.	The revenues generated in Clause C of Article 6 of these instructions shall be disbursed in accordance with Instructions No. 118 of 1999.	Article 10 of the Higher Education Fund Instructions No. 122
D - Half of the percentage allocated to the university, college, authority or institute from the revenues achieved in accordance with what is stipulated in Clause A of Article Thirteen of the University Service Law.	Revenues are spent at a rate of (30%) thirty percent for the purpose of motivating employees, and the remaining (70%) seventy percent is spent for the purpose of maintenance and addressing bottlenecks related to the scientific process in colleges and institutes.	Article 10 of the Higher Education Fund Instructions No. 122
E - Revenues from its services and activities.	Revenues are spent at a rate of (30%) thirty percent for the purpose of motivating employees, and the remaining (70%) seventy percent is spent for the purpose of maintenance and addressing bottlenecks related to the scientific process in colleges and institutes.	Article 10 of the Higher Education Fund Instructions No. 122
And - the revenues of scientific consulting offices that accrue to it in accordance with the applicable legislation.	Revenues are spent at a rate of (30%) thirty percent for the purpose of motivating employees, and the remaining (70%) seventy percent is spent for the purpose of	Article 10 of the Higher Education Fund Instructions No. 122

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	maintenance and addressing bottlenecks related to the scientific process in colleges and institutes.	
Z - 85% eighty-five percent of the profits achieved from investing the movable and immovable assets of the college or institute.	Revenues are spent at a rate of (30%) thirty percent for the purpose of motivating employees, and the remaining (70%) seventy percent is spent for the purpose of maintenance and addressing bottlenecks related to the scientific process in colleges and institutes.	Article 10 of the Higher Education Fund Instructions No. 122
H - Grants, gifts, donations, endowments and subscriptions in accordance with the approved legislation and regulations.	The grants, gifts, donations, endowments and subscriptions stipulated in Clause H of Article 6 of these instructions shall be spent on developing the educational process unless they have been allocated for special purposes.	Article 10 of the Higher Education Fund Instructions No. 122
D - Tuition fees for morning postgraduate and undergraduate studies at the private expense of the colleges, institutes and departments affiliated with the university.	These revenues are spent on expanding buildings, purchasing equipment and supplies related to the educational process, and paying the fees of external lecturers.	Article 10 of the Higher Education Fund Instructions No. 122

Source: Researchers based on Higher Education Fund Instructions No. 122 of 1999

3. Higher Education Fund Efficiency (Data Envelope)

Data Envelope is an efficiency measure and is a non-parametric technique used to measure and improve the relative efficiency of a set of independent and homogeneous decision-making units (DMUs). Efficiency is simply defined as having one input and one output, as follows (Sarrafa & Nejadb, 2019:7) (Popovic et al, 2020: 2), (Gastaldi et al, 2020:230):-

$$\boldsymbol{Efficiency} = \frac{\boldsymbol{Output}}{\boldsymbol{Input}} \quad \textbf{(1)}$$

Efficiency, which includes a number of inputs and outputs, can be defined as follows (Gastaldi et al, 2020:230), (Panwar et al, 2022: 5398):

$$\boldsymbol{Efficiency} = \frac{\boldsymbol{Weighted\ output}}{\boldsymbol{Weighted\ input}} \quad \textbf{(2)}$$

In the data envelopment calculation (DEA), inputs and outputs are used to classify the efficiency of the institution based on the possibility of generating the highest level of outputs within a possible set of inputs to be seen by many of those dealing with the institution, and that efficiency is expressed by the ratio of outputs to inputs. Accordingly, the mathematical equation for the data envelopment method (DEA) can be stated as follows (Saati et al, 2012: 626), (Al-Delaimi & Al-Ani, 2006: 139-141):

$$\boldsymbol{E_k} = \frac{\sum_{j=1}^{M} U_j O_{jk}}{\sum_{i=1}^{N} V_i I_{Ik}} \quad \textbf{(3)}$$

Where E_k Efficiency ranges between 0 and 1, K Number of DMUs in the sample (k=1,2,… k), N Number of inputs (i=1,2, …..N), M Number of outputs (j=1,2,… M), O_{jk} Observed level of output j from decision-making unit DMUk, I_{Ik} Observed level of input i from decision-making unit DM, V_i Weight of inputs, U_j Weight of outputs j.

For linear programming, there are two expressions that are similar to each other, which are (Al-Delaimi & Al-Ani, 2006:141), (Othman et al, 2016: 912), (Baziyad et al, 2024: 4-5):

The first problem: modified linear programming:

$$\boldsymbol{Max} \sum_{j=1}^{M} \boldsymbol{U_j O_{jk}} \quad \textbf{(4)}$$

S.to

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$\sum_{i=1}^{N} V_i I_{Ik} = 1$
$\sum_{j=1}^{M} U_j O_{jk} \leq \sum_{i=1}^{N} V_i I_{Ik}$
$U_j , V_i \geq \varepsilon > 0$
The second problem: - Modified binary linear programming
$Min\ \Theta - \varepsilon \sum_{j=1}^{M} S_j^+ - \sum_{i=1}^{N} S_i^-$ **(5)**
S.to
$\sum_{k=1}^{K} V_i I_{ik} = 1$
$\sum_{k=1}^{K} \lambda_k O_{jk} - S_j^+ = O_{jk}$
$\sum_{k=1}^{K} \lambda_k I_{ik} - S_i^- = \Theta I_{ik}$
$\lambda_k \geq 0$
The purpose of the DEA is to identify the decision-making unit that produces the largest amounts of outputs using the least amounts of inputs. This organization is considered efficient when the DEA is equal to 1. Efficiency scores are assigned ranging from zero to one. Efficiency scores are calculated using mathematical programming. For an inefficient organization, the DEA provides efficient organizations (i.e. their counterparts), which inefficient organizations can emulate to achieve performance that can improve their efficiency (Ramanathan, 2006: 1290). The advantages of the DEA include the following (Georgios & Papathanasiou, 2021: 2):
1. It does not require specifying any type of relationships between inputs and outputs.
2. It does not require any specific statistical distributions of input and output data.
3. It can provide information on how to improve the performance of an inefficient organization.
In data envelopment analysis (DEA) models, the solution to improve an inefficient organization is to reach an efficient organization, which consists of an efficient organization, i.e. DEA equals (1). In general, there are two types of solutions to improve inefficient organizations and reach efficient organizations (Seddighi et al., 2020: 3):-
• Reducing inputs without reducing outputs until the organization reaches efficiency (this approach is referred to as the performance improvement nature of organizations or input-oriented efficiency measures).
• Increasing outputs by reaching an efficient organization without attracting more inputs (this approach is referred to as the performance improvement nature or output-oriented performance measure).

4. The educational process

The educational process in Iraqi universities is one of the complex issues that face multiple challenges that affect the quality and efficiency of the educational process. Since 2003, until the global pandemic, these universities have been greatly affected by political, security and economic conditions. Among the challenges facing the educational process are the following (prepared by researchers based on a group of articles published on the Internet and mentioned in the list of sources):-
A. Funding in public universities depends largely on the state budget, which makes them vulnerable to economic fluctuations, and this lack of funding negatively affects the quality of education and scientific research.
B. number of universities suffer from a lack of appropriate facilities and infrastructure, which hinders the provision of good education, and despite efforts to improve these conditions, there is still a need to expand buildings and update devices and equipment.
C. Mismatch of skills with the labor market, as there is a large gap between the skills acquired by graduates and the needs of the labor market, which contributes to high unemployment rates among graduates.

Third: - The practical aspect of the research:

In this part of the research, the revenues received by the College of Administration and Economics, University of Karbala, for the period 2014-2023 will be analyzed, which are (private expense revenues, evening study revenues, morning study fund revenues), as well as analyzing the total expenses and analyzing the data envelope (the efficiency of the Higher Education Fund), as well as analyzing the expenses in terms of their contribution to the educational process, including expenses on expanding buildings and maintaining gardens and roads, which are as follows:

1. Analysis of private expense revenues

Private expense revenues represent an important part of the revenues of the College of Administration and Economics at the University of Karbala, and we note from Table (2) that private expense revenues witnessed high growth in the years 2015 and 2016, as they increased by 30.53% and 14.76% respectively, reflecting the increase in the number of students accepted at private expense as a result of the expansion of postgraduate seats, while in 2017, private expense revenues decreased significantly by 42.90% Which may indicate challenges such as the decrease in the number of students accepted at private expense as a result of reducing the number of study seats on this channel. In 2018, private expense revenues jumped by 488.93%, an unprecedented increase that may be due to a significant

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increase in the number of students registered at private expense for postgraduate studies. The fluctuations continued with a noticeable decrease in 2020 by 34.55% due to the Corona pandemic, as some students were unable to pay tuition fees due to the ban imposed at the time and the shift to e-learning. In 2021, private expense revenues increased by 108.39% due to some students paying their tuition fees for this year and the previous year, which doubled revenues, while revenues returned to normal again in 2022. 2. Analysis of evening study revenues

Evening study revenues also represent a basic pillar of the financial revenues of the College of Administration and Economics at the University of Karbala, as it is the only source of wages for evening study workers from teaching and administrative staff. Table (2) shows us that evening study revenues witnessed a noticeable increase in the years 2015 and 2016, as they increased by 16.31% and 14.46% respectively, as there were five scientific departments in evening study, which indicates the college's success in attracting students and there were no instructions to reduce tuition fees, and private colleges were not as attractive as they are now. In 2017 and 2018, evening study revenues decreased significantly, recording a decrease of 11.98% and 8.51% respectively, which may indicate a decline in the number of students enrolled in evening studies and the opening of a number of private universities that have begun to compete with government universities and their colleges in attracting students, and students' reluctance to register in one of the scientific departments, which is the statistics department, which caused its closure in subsequent years. In 2020, evening study revenues witnessed a significant decrease of 73.90%, due to the effects of the Covid-19 pandemic that affected higher education in general and evening study revenues in particular, as there were ministerial instructions to reduce tuition fees for evening study students by 50% of the annual tuition fee, taking into account the circumstances accompanying the global pandemic. In 2021, evening revenues rose again by 515.86%, which is not an actual increase in the number of students, but rather as a result of the return of study to normal and students paying their installments for the previous year due to their inability to pay due to the pandemic conditions and the return of payment by 100% from the previous year. In 2022 and 2023, evening study revenues declined by 19.13% and 24.75%, respectively, due to the decrease in the number of students, as private universities emerged as a major competitor to government universities in attracting students, on the one hand, as well as the arrival of many From the instructions for reducing tuition fees, the latest of which is the 50% reduction for those on social care in 2023, on the other hand.

3. Analysis of Morning Study Fund Revenues

From Table (2), we see that the Morning Study Fund revenues for the period 2014-2023 witnessed a significant increase in the years 2015-2016, as they increased by 6.68% and 17.53% respectively, due to students' desire to withdraw academic documents. However, in the years 2017 and 2018, these revenues decreased, recording a decrease of 20.84% and 6.32% due to the suspension of appointments, which in turn led to students' reluctance to withdraw academic documents. In 2020, the fund's revenues - morning study - witnessed a significant decrease of 41.44%, which can be attributed to the effects of the global pandemic that affected higher education in general and revenues in particular. In 2021, morning study revenues rose again by 81.41%, as a result of the stability of health conditions after the pandemic as well as the economy. In 2023, the fluctuations continued with a slight decrease of 4.32%. 4. Total Revenue Analysis

Through Table (2) and Figure (1) the total revenues, which are considered one of the main indicators that reflect the financial performance of the College of Administration and Economics at the University of Karbala, and include total revenues (private expense revenues, evening study revenues, and morning study fund revenues), we notice a significant increase in total revenues in the years 2015 and 2016, as they increased by 17.40%, 14.57% respectively, which reflects the success of the college in attracting the number of students in morning and private higher studies as a result of the increase in the number of seats according to this channel as well as the increase in the number of students in evening studies, but in 2017 the total revenues decreased by 15.52%. In 2018, the College of Administration and Economics - University of Karbala achieved a growth in total revenues by 27.45% as a result of the increase in private expense revenues. In 2020, total revenues witnessed a significant decrease of 58.77%, which is mainly attributed to the impact of the global pandemic that affected all aspects of education in general and revenues in particular. In 2021, revenues improved, increasing by 265.96%. This increase, as previously mentioned, is not due to an increase in the number of students, but rather because the process of students paying their tuition fees for the year 2020, the year of the pandemic, was in 2021, which led to an increase in the revenues received for this year. In 2022, the revenues of the College of Management and Economics decreased again by 25.16%, then decreased by 8.90% in 2023 due to the Ministry of Higher Education and Scientific Research's cuts for evening study students and private expenses, in addition to a large number of students resorting to studying in private universities, as these colleges have become a tough competitor. Government universities and their colleges must re-attract

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students through well-thought-out marketing plans if they want to maintain and develop their own revenues to develop the educational process. 5. Analysis of total expenses

According to the clear results in Table (2) and Figure (1), in 2015, expenses decreased by 4.21%, which may indicate the college's efforts to reduce expenses, while in 2016, expenses increased by 9.38%. In 2017, total expenses witnessed another decrease of 6.62%. In 2018, 2019 and 2020, total expenses decreased by (9.52%, 3.05%, 23.53%) respectively, while in 2021 expenses increased by 254.27%, which may reflect large investments to improve infrastructure. In 2022 and 2023, total expenses decreased again, decreasing by 10.42% and 35.25% respectively. From Table (2) and Figure (1), when comparing revenues and expenses for the College of Administration and Economics - University of Karbala, it faces volatile financial challenges that require efficient strategies to manage financial resources and achieve a balance between revenues and expenses. It is necessary for the college to continue to evaluate its financial performance and adjust its strategies according to economic and social changes to ensure its financial sustainability and achieve its academic goals in the long term. As we notice in recent years, total revenues have decreased and expenses have increased.

Table (2) Revenues and Expenditures of the College of Administration and Economics - University of Karbala for the period 2014-2023

Growth rate or change	Total expenses	Growth rate or change	Total Revenue	Growth rate or change	Morning study fund revenue	Growth rate or change	Evening study income	Growth rate or change	Private expense revenue	Year
	1,042,258,290		937,397,890		26,829,820		820,658,070		89,910,000	2014
-4.21%	998,335,963	17.40%	1,100,483,862	6.68%	28,622,140	16.31%	954,501,722	30.53%	117,360,000	2015
9.38%	1,091,991,371	14.57%	1,260,870,853	17.53%	33,639,790	14.46%	1,092,553,563	14.76%	134,677,500	2016
-6.62%	1,019,725,573	-15.52%	1,065,220,082	-20.84%	26,629,990	-11.98%	961,692,592	-42.90%	76,897,500	2017
-9.52%	922,669,386	27.45%	1,357,669,664	-6.32%	24,946,020	-8.51%	879,850,394	488.93%	452,873,250	2018
-3.05%	894,532,049	-1.15%	1,342,029,956	-25.43%	18,601,360	-6.50%	822,651,962	10.58%	500,776,634	2019
-23.53%	684,007,677	-58.77%	553,380,835	-41.44%	10,892,680	-73.90%	214,722,113	-34.55%	327,766,042	2020
254.27%	2,423,249,682	265.96%	2,025,173,786	81.41%	19,760,040	515.86%	1,322,378,861	108.39%	683,034,885	2021
-10.42%	2,170,736,488	-25.16%	1,515,601,064	14.56%	22,636,540	-19.13%	1,069,435,803	-37.99%	423,528,721	2022
-35.25%	1,405,529,604	-8.90%	1,380,702,088	-4.32%	21,658,130	-24.75%	804,722,789	30.88%	554,321,169	2023
	1,265,303,608		1,253,853,008		23,421,651		894,316,787		336,114,570	Mean
	546,301,428		367,158,056		5,941,652		272,398,621		208,006,148	S.D.

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Source: Prepared by researchers

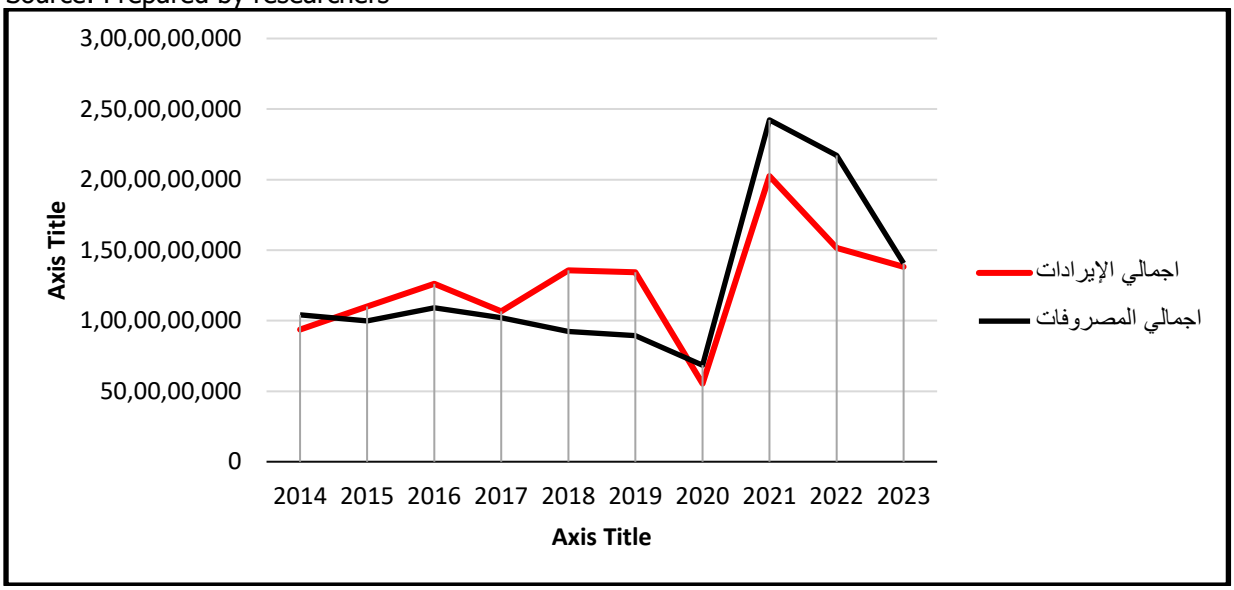

Figure (1) Revenues and Expenditures of the College of Administration and Economics - University of Karbala 2014-2023

Source: - Prepared by the researchers

6. Data Envelope Analysis to Measure the Efficiency of the Higher Education Fund

One of the most important methods for measuring the efficiency of the Higher Education Fund is the Data Envelope Analysis (DEA) method, using quantitative methods to evaluate and compare performance. In order to achieve the institution's goals efficiently, the Data Envelope Analysis (DEA) is one of the easiest and simplest methods. This method relies on a non-parametric test using the linear programming method to find the relative efficiency of decision-making units that use a variety of inputs such as (private expenditure revenues, evening study revenues, and morning study fund revenues) and outputs (total expenses). This method relies on building a single ratio by dividing the sum of outputs by the sum of the institution's inputs, as the efficiency unit is between zero (inefficiency) and one (perfect efficiency). The data envelope of the Higher Education Fund of the College of Administration and Economics - University of Karbala will be analyzed using the results of Table (3). We note from the table that the Higher Education Fund in the College of Administration and Economics - University of Karbala for the period 2014-2023 has achieved full levels of efficiency in the years 2014 and 2017. 2020, 2021 and 2022 all achieve full efficiency at a rate of 1, which means that they are operating at full capacity without any waste, due to the decline in revenues, which necessitated spending all revenues. However, in 2015, 2016, 2018, 2019 and 2023, efficiency appears to be less than 1, indicating an unequal use of resources, i.e. there are challenges that need to be addressed immediately to improve the overall performance of the Higher Education Fund.

Table (3) DEA for the College of Administration and Economics - University of Karbala for the period 2014-2023

DEA[1]	Outputs	Inputs			Year
	Total expenses	Fund Revenue Morning Study	Evening study income	Private expense revenue	
1.00000	1,042,258,290	26,829,820	820,658,070	89,910,000	2014
0.83033	998,335,963	28,622,140	954,501,722	117,360,000	2015

[1] Considering total expenses as outputs and revenues as inputs is a strategic approach that aims to maximize the efficiency of the College of Business and Economics. Through this approach, the use of financial resources can be improved, which leads to enhancing academic performance and the quality of education. It also contributes to increasing revenues, which ensures the financial sustainability of the college and enhances its competitiveness in the education market. That is, maximizing the college's revenues contributes to maximizing expenses, i.e. increasing expenses on investing revenues in improving infrastructure, developing educational programs, and increasing the quality of education.

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0.78221	**1,091,991,371**	**33,639,790**	**1,092,553,563**	**134,677,500**	**2016**
1.00000	**1,019,725,573**	**26,629,990**	**961,692,592**	**76,897,500**	**2017**
0.48749	**922,669,386**	**24,946,020**	**879,850,394**	**452,873,250**	**2018**
0.51620	**894,532,049**	**18,601,360**	**822,651,962**	**500,776,634**	**2019**
1.00000	**684,007,677**	**10,892,680**	**214,722,113**	**327,766,042**	**2020**
1.00000	**2,423,249,682**	**19,760,040**	**1,322,378,861**	**683,034,885**	**2021**
1.00000	**2,170,736,488**	**22,636,540**	**1,069,435,803**	**423,528,721**	**2022**
0.77152	**1,405,529,604**	**21,658,130**	**804,722,789**	**554,321,169**	**2023**

Source: - Prepared by researchers based on the outputs of EMS V. 1.3 program

Although the Higher Education Fund suffers from low levels of efficiency in some years, there are five years in which it achieved full efficiency at a rate of 1, which means that it is operating at full capacity without any waste, which necessitates rejecting the first hypothesis, i.e. the Higher Education Fund in the College of Administration and Economics does not suffer from low levels of efficiency in recent years.

7. The educational process

The educational process at the College of Administration and Economics at the University of Karbala for the period from 2014 to 2023 focused on expanding buildings and maintaining gardens and roads. This topic is important to understand how it affects the educational process, so expenditures on expanding buildings and maintaining gardens and roads will be analyzed as follows:-

A. Building expansion

By examining and scrutinizing the results mentioned in Table (4), we see that the expansion of buildings at the College of Administration and Economics at the University of Karbala for the period from 2014 to 2023 reveals that the college did not witness any expansions during the period from 2014 to 2018. However, in 2019, one room was created for a lecturer in the Department of Business Administration with an area of 21 square meters. This step is the beginning of the expansion during the research period, although it is limited. However, in 2020, the College of Administration and Economics did not record any new expansions in the buildings due to the repercussions of the global pandemic COVID-19. However, in 2021, two classrooms were created in the Department of Financial and Banking Sciences with a total area of (28.86) square meters, which indicates a response to the needs of the educational process. In 2022, the college witnessed the largest number of expansions during the research period, as several rooms and classrooms were established (a room for the Graduate Studies Department, an information room in the College Deanship, two rooms for Business Administration Department instructors, two rooms for the Registration Department, two classrooms for the Business Administration Department, and two classrooms for the Accounting Department) with an area of (53.77, 24.15, 26.5, 104, 105) square meters, respectively. This major expansion in 2022 reflects the college's response to the increased demand for the educational process and the provision of an appropriate educational environment. As for 2023, we notice the absence of expansions in the buildings.

Table (4) Expansion of the buildings of the College of Administration and Economics - University of Karbala for the period 2014-2023

(Area (m^2)	Buildings	Year
0	Non	2014
0	Non	2015
0	Non	2016
0	Non	2017
0	Non	2018
21	Create a room for business administration department teachers	2019
0	Non	2020
28.86	Establishment of 2 financial sciences classrooms	2021
53.77	Establishing a room for the postgraduate studies department and an information room for the deanship	2022
24.15	Establishing room No. 2 for Business Administration Department teachers	
26.5	Establishing two rooms for the registration department	

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104	Establishment of two classrooms for the Business Administration Department	
105	Establishment of two classrooms for the Accounting Department	
0	Non	2023

Source: Prepared by researchers

B. Maintenance of gardens and roads

Through the clear results in Table (5), we see the maintenance of gardens and roads in the College of Administration and Economics at the University of Karbala for the period 2014-2023. In 2014, we note that no maintenance of gardens and roads was recorded at the college. However, in 2015, a number of projects were implemented, namely (planting American turf for the garden adjacent to the first scientific building, paving a muqarnas for the sidewalk adjacent to the first scientific building, and maintaining the second garden adjacent to the deanship, the deanship garden and the first garden adjacent to the deanship) with an area of (196, 260, 235, 162, 126) square meters, respectively, which indicates the interest of the college administration in improving the general appearance of gardens and roads. In 2016, a number of projects were implemented, namely (paving a road from the college to the presidency, covering the sidewalks surrounding the college deanship, and rehabilitating the staff parking lot by installing iron roofs) with an area estimated at (3420, 365, 28.86) square meters, respectively, indicating ease of access to the college and enhancing the services provided to students and employees. In 2017, we see that the college administration did not record any maintenance of gardens and roads, but in 2018, the college witnessed remarkable activity with the laying of a layer of artificial turf for the benefit of the accounting department corridors and the maintenance of the adjacent garden, which reflects an increasing interest in improving the educational environment. As for the period from 2019 to 2022, the college administration did not spend money on maintaining gardens and roads, and in 2023, a small area related to preparing and maintaining seasonal gardens was recorded, amounting to (33) square meters, which indicates the continuation of efforts to improve the green environment, although it is much less compared to previous years.

Table (5) Area of maintenance of gardens and roads at the College of Administration and Economics - University of Karbala for the period 2014-2023

Area m^2	Parks and roads	Year
0	Non	2014
196	Planting American turf for the garden next to the first scientific building	2015
260	Muqarnas paving of the sidewalk next to the first scientific building	
235	Maintenance of the second garden next to the deanery	
162	Deanery Garden	
126	The first garden next to the deanery	
3420	Paving a road from college to the presidency	2016
365	Roofed and sidewalks surrounding the deanery	
28.86	Rehabilitation of the employees' parking lot by installing iron roofs	
0	Non	2017
1263	Spread a layer of artificial turf on the sides of the .accounting department corridors	2018
1263	Maintenance of the garden next to the accounting department	
0	Non	2019
0	Non	2020
0	Non	2021
0	Non	2022
33	(College Gardens (Seasonal Equipment and Maintenance	2023

Source: Prepared by the researchers

8. Statistical analysis and testing of statistical hypotheses

A. Testing the stability of the data through the expanded Dickey-Fuller test (developed)

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o When looking at the results shown in Table (6), we see that the time series data for the efficiency of the Higher Education Fund are stable (static) across the model (without time trend and constant None) at the first and second differences, which necessitates rejecting the null hypothesis stating that there is a unit root, i.e. the time series data for the efficiency of the Education Fund enjoys stability.
o When looking at the results shown in Table (6), we see that the time series data for the expansion of buildings is stable when using the second differences, while it is less stable at the original level and the first differences, which necessitates rejecting the null hypothesis stating that there is a unit root, i.e. the time series data for the expansion of buildings enjoys stability.
o When contemplating the results shown in Table (6), we see that the time series data for the maintenance of parks and roads are stable when using the first and second differences, while they are less stable at the original level, which requires rejecting the null hypothesis stating that there is a unit root, i.e. the time series data for the maintenance of parks and roads are stable.
Table (6) the expanded Dickey-Fuller (developed) test for the time series of the efficiency of the Higher Education Fund and the educational process

Model 3 None		Model 2 Trend and Intercept		Model 1 Intercept		First-order autoregressive models	Time series
Prob*.	t-Statistic	Prob*.	t-Statistic	Prob*.	t-Statistic		
0.3723	-0.729657	0.3666	-2.371616	0.1516	-2.470598	Level	Higher Education Fund Efficiency
0.0094	-2.968870	0.4024	-2.266837	0.1267	-2.653617	1st difference	
0.0059	-3.359564	0.3488	-2.422850	0.0976	-2.918897	2nd difference	
0.0164	-2.582007	0.6484	-1.732154	0.0923	-2.827159	Level	Bolding Expenses
0.0109	-2.886143	0.0167	-5.679918	0.0559	-3.311949	1st difference	
0.0001	-7.348361	0.0003	-13.92777	0.0008	-8.426556	2nd difference	
0.0240	-2.380710	0.0162	-5.344639	0.0670	-3.054086	Level	Garden maintenance
0.0001	-6.015461	0.0139	-5.912032	0.0013	-7.009655	1st difference	
0.0001	-9.618085	0.0074	-7.514775	0.0010	-8.064586	2nd difference	

Source: Prepared by the researcher based on Views Vs.12
B. Testing the correlation hypotheses
Pearson's correlation coefficient was used to determine the relationship between the efficiency of the Higher Education Fund and the educational process, to test the third main hypothesis (there is no statistically significant correlation between the efficiency of the Higher Education Fund and the educational process). The correlation relationship between the efficiency of the Higher Education Fund and the educational process was presented in Table (7) below, and the correlation relationships will be explained as follows:-
• It is clear from the results shown in Table (7) below that there is a direct correlation relationship with statistical significance between the efficiency of the Higher Education Fund and the expansion of buildings, as the value of the correlation coefficient between the two variables reached (0.846**), which is statistically significant at a significance level of 5%, which means that the more efficient the Higher Education Fund is, the more effective the expansion of buildings will be.
• The results shown in Table (7) below show that there is a statistically significant direct correlation between the efficiency of the Higher Education Fund and the expansion of buildings, as the value of the correlation coefficient between the two variables reached (0.891**), which is statistically significant at a significance level of 5%, which means that the more efficient the Higher Education Fund is, the more effective the maintenance of parks and roads

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can be, which reflects the importance of investing in higher education as part of planning and sustainable development.

• From the above, we conclude that the third main hypothesis should be rejected and the alternative hypothesis should be adopted, i.e. there is a statistically significant correlation at the 5% level between the efficiency of the Higher Education Fund and the educational process.

Table (7) Correlation between the efficiency of the Higher Education Fund and the educational process

Garden and road maintenance	Building expansion	Search variables	
.891**	.846**	Pearson Correlation	Higher Education Fund Efficiency
.001	.002	Sig. (2-tailed)	
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

Source: Prepared by the researcher based on SPSS V.25

C. Testing the impact hypotheses

1- The fourth research hypothesis: There is no statistically significant impact relationship for the efficiency of the Higher Education Fund in the educational process, and two sub-hypotheses branch out from this hypothesis: -

2. The first sub-hypothesis: There is no statistically significant impact relationship for the efficiency of the Higher Education Fund in expanding buildings

We see from Table (8) the test of the first sub-hypothesis emanating from the fourth main hypothesis, i.e. we note that the value of (Sig) reached (0.002052) which is lower than the 5% significance level, which means that the efficiency of the Higher Education Fund affects the expansion of buildings and that the simple linear regression equation (Y1=-26.77950+78.10463X), the fixed limit -26.77950 means that if the efficiency of the Higher Education Fund is zero, then the expansion of buildings is valued at -26.77950, and if the efficiency of the Higher Education Fund increases by one unit, then the expansion of buildings will increase by 78.10463, which means The efficiency of the Higher Education Fund will have a direct effect on increasing the expansion of buildings, as we note that the interpretation coefficient (R2) reached 0.7151, which explains 71.51% of the nature of the relationship between the efficiency of the fund and the expansion of buildings, and the value of the F-statistic reached (20.08381) at a significance level of (0.002052).

Table (8) Parameters of the simple linear regression model to measure the effect of the efficiency of the Higher Education Fund X on the expansion of buildings Y_1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-26.77950	14.99301	-1.786133	0.1119
Higher Education Fund Efficiency	78.10463	17.42825	4.481496	0.0021
R-squared	0.715138	Mean dependent var		38.73271
Adjusted R-squared	0.679531	S.D. dependent var		18.60528
S.E. of regression	10.53245	Akaike info criterion		7.723656
Sum squared resid	887.4602	Schwarz criterion		7.784173
Log likelihood	-36.61828	Hannan-Quinn criter.		7.657269
F-statistic	20.08381	Durbin-Watson stat		2.976204
Prob(F-statistic)	0.002052			

Source: Prepared by the researcher based on Views Vs.12.

3. The second sub-hypothesis: There is no statistically significant effect relationship for the efficiency of the Higher Education Fund in maintaining gardens and roads

We see from Table (9) the test of the second sub-hypothesis emanating from the fourth main hypothesis, i.e. we note that the value of (Sig) reached (0.000537) which is lower than the 5% significance level, which means that the efficiency of the Higher Education Fund affects the maintenance of gardens and roads, and the simple linear regression equation (Y2 = 6.895565 + 0.296250X), the fixed limit 6.895565 means that if the efficiency of the Higher

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Education Fund is zero, then the maintenance of gardens and roads is worth 6.895565, and if the efficiency of the Higher Education Fund increases by one unit, then the maintenance of gardens and roads will increase by 0.296250, which means that the efficiency of the Higher Education Fund will have a direct effect in increasing the expansion of buildings, as we note that the interpretation coefficient (R^2) reached 0.794203, i.e. it explains 79.42% of the nature of the relationship between the efficiency of the fund and the maintenance of parks and roads, and the value of the F-statistic reached (30.87323) at a significance level of (0.000537).

Table (9) Parameters of the simple linear regression model to measure the impact of the efficiency of the Higher Education Fund X on the maintenance of parks and roads Y_2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	6.895565	0.045867	150.3377	0.0000
Higher Education Fund Efficiency	0.296250	0.053317	5.556368	0.0005
R-squared	0.794203	Mean dependent var		7.144052
Adjusted R-squared	0.768478	S.D. dependent var		0.066965
S.E. of regression	0.032221	Akaike info criterion		-3.855524
Sum squared resid	0.008306	Schwarz criterion		-3.795007
Log likelihood	21.27762	Hannan-Quinn criter.		-3.921911
F-statistic	30.87323	Durbin-Watson stat		1.255211
Prob(F-statistic)	0.000537			

Source: Prepared by the researcher based on Views Vs.12.

The above shows the rejection of the fourth null hypothesis, which states (there is no statistically significant effect of the efficiency of the Higher Education Fund on the educational process), and the adoption of the alternative hypothesis, which states (there is a statistically significant effect of the efficiency of the Higher Education Fund on the educational process).

Fourth: Conclusions and recommendations

A. Conclusions

1. We conclude from the practical side the importance of integration between the efficiency of higher education and infrastructure, as improving the efficiency of the Higher Education Fund can contribute to enhancing the effectiveness of the educational process.
2. A decrease in the revenues received compared to the expenses, which leads to a lack of financial sustainability for the college, which affects its ability to provide distinguished educational services.
3. From the practical side, we conclude that there is an increase in expenses, which reflects the efforts of the college administration to improve the quality of education and services provided, but it may also lead to financial pressures if the revenues are not sufficient to cover these expenses.
4. The Higher Education Fund suffers from low levels of efficiency in some years, but there are five years in which it achieved full efficiency at a rate of 1, which means that it operates at full capacity without any waste, which necessitates not rejecting the first hypothesis, i.e. the Higher Education Fund in the College of Management and Economics does not suffer from low levels of efficiency in recent years.

B. Recommendations

1. The need to develop strategies for the institution and the parties responsible for planning to expand buildings and maintain gardens and roads, to ensure that new projects are in line with the needs of the institution.
2. The need for periodic evaluation of the efficiency of the Higher Education Fund, to ensure the achievement of the desired goals.
3. The college administration should benefit from these results to develop strategies aimed at enhancing the efficiency of the Higher Education Fund, which may contribute to improving the educational performance of the institution.

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4. The college should develop efficient strategies to increase revenues from private expenses and evening study, such as increasing promotion of study programs to attract new students, including the use of social media and digital advertisements.
5. The college should review the expense structure and identify areas in which expenses can be reduced without affecting the quality of education.
6. Offer discounts to outstanding or low-income students to attract more students and motivate them to enroll in college.

REFERENCES:

1. Higher Education Fund Instructions No. 122 of 1999.
2. Taher, Linjah Saleh Hama. "The Legal System of the Higher Education Fund in Iraqi Law," Journal of Legal and Political Sciences, Volume 12, Issue 1, 2023.
3. https://www.bayancenter.org/2022/07/8683/.
4. https://www.ina.iq/206626--2003-.html.
5. https://eprints.lse.ac.uk/120575/1/Higher_education_in_Iraq_after_2003_Arabic.pdf.
6. Ahmad, Syed Raziuddin, et al, "Financial efficiency analysis: Empirical evidence from the emerging stock market." Corporate Law & Governance Review, vol.4, no.2, 2022.
7. Baziyad, Hamed & Kayvanfar, Vahid & Toloo, Mehdi, A data envelopment analysis model for opinion leaders, identification in social networks, Computers & Industrial Engineering, 2024.
8. Gastaldi, M., Lombardi, G. V., Rapposelli, A., & Romano, G, The efficiency of waste sector in Italy: An application by data envelopment analysis, Rigas Tehniskas Universitates Zinatniskie Raksti, vol. 24, no.3, 2020.
9. Georgios, Tsaples & Jason, Papathanasiou, Data envelopment analysis and the concept of sustainability: A review and analysis of the literature, Renewable and Sustainable Energy Reviews, 2021.
10. Othman, F. M., Mohd-Zamil, N. A., Rasid, S. Z. A., Vakilbashi, A., & Mokhber, M., Data envelopment analysis: A tool of measuring efficiency in banking sector, International Journal of Economics and Financial Issues, vol. 6, no.3, 2016.
11. Panwar, A. & Olfati, M.& Pant, M., & Snasel, V., A review on the 40 years of existence of data envelopment analysis models: historic development and current trends, Archives of Computational Methods in Engineering, vol.29, no.7, 2022.
12. Popović, M., Savić, G., Kuzmanović, M., & Martić, M., Using data envelopment analysis and multi-criteria decision-making methods to evaluate teacher performance in higher education, Symmetry, vol. 12, no.4, 2020.
13. Ramanathan, Ramakrishnan, Data envelopment analysis for weight derivation and aggregation in the analytic hierarchy process, Computers & Operations Research, vol.33, no.5, 2006.
14. Saati, S., Hatami-Marbini, A., Agrell, P. J., & Tavana, M., A common set of weight approach using an ideal decision making unit in data envelopment analysis. Journal of Industrial and Management Optimization, vol. 8, no.3, 2012.
15. Sarraf, Fatemeh & Nejad, Shabnam Hashemi, Improving performance evaluation based on balanced scorecard with grey relational analysis and data envelopment analysis approaches: Case study in water and wastewater companies, Evaluation and program planning, 2020.
16. Seddighi, Hamed & Nosrati Nejad, Farhad & Basakha, Mehdi, Health systems efficiency in Eastern Mediterranean Region: a data envelopment analysis, Cost Effectiveness and Resource Allocation, vol.18, 2020.
17. Shahooth, Khalid; Battall, Ahmed Hussein; AL-Delaimi, K. Using data envelopment analysis to measure cost efficiency with an application on Islamic banks, Scientific Journal of Administrative Development, vol.4, no.6, 2006.