

## Proposing a model for the effect of performance-based budgeting on the qualities of higher education in Iraq

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### ABSTRACT

Nowadays, rivalry can be observed not just between businesses, but also between universities. Higher education institutions have been under increasing pressure from external factors including labor and education market rivalry to improve the quality of their programs by reevaluating their organizational structures and management practices. This study set out to determine how performance-based budgeting would affect the quality of Iraq's postsecondary institutions. The statistical subjects of this study are those involved in performance-based budgeting in Iraqi universities, including the deans of the faculty and deputy deans, the director of the accounting department, and the financial and accounting staff. Morgan's table suggests a minimum sample size of n=246. This is because 3519 individuals were sampled from the population of non-professional private higher education institutions in Iraq. A total of 198 completed surveys were submitted. The collected data from the questionnaire was analyzed using a structured equation model. The results indicated that performance-based budgeting benefited greatly from considering organizational commitment and rewards mechanisms. The results, however, showed that the competence of managers played no impact in the introduction of performance-based budgeting in Iraq's higher education sector. However, the results showed that performance-based budgeting had no effect on the quality of higher education in Iraq, and neither did the competency nor the organizational commitment of managers in these institutions, nor did reward schemes.

**Keywords:** Performance-based budgeting, Quality of higher education, Iraq

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### 1. Introduction

The commercial sector isn't the only one facing competition these days; universities are too. Colleges and universities are under increasing pressure from outside sources to improve the quality of their programs in order to remain competitive in the global labor and education markets. The goal is to keep their current footing in their respective national marketplaces [1]. At present, a higher education institution's competitive advantage, both internationally and domestically, is assessed based on the institution's merits and authorized by Accrediting Valuation Institute. Many states have provided regulations relating to new public administration practices to stimulate better quality higher education. One of its main goals is to promote performance-based budgeting and other good university governance practices among educational institutions. Research suggests that using a performance-based budget can improve business results. The mechanism is geared toward the outcomes, which is a benefit of performance-based budgeting [2]. It is clear that performance-based budgeting may clarify the connection between strategic goals, operational strategies, and KPIs [3, 4]. The goals of the organization can then be realized by working toward and achieving the KPI. It is projected that the quality of higher education will increase as a result of adopting performance-based budgeting [5] due to the importance placed on performance. There are a large number of universities in Iraq, 105 in total as of 2019. However, only 35 public universities are deemed to offer an adequate quality of education, while 70 private and non-profit colleges are

deemed to be of low quality. According to data culled directly from the website of the Iraqi Ministry of Higher Education's Sciences, these 70 universities are home to 435 faculties and a combined total of 3,915.

One of the key issues of higher education administration is maintaining the public's respect and trust [6], which is why quality is so important in universities. Low quality in higher education threatens the viability of the school since fewer students enroll as a result of diminished confidence among prospective students [7]. Furthermore, most academics contend that in this globalized era, countries' economic prospects hinge on their ability to build human capacity reserves through education [8, 9]. Given the positive effects of performance-based budgeting, it is strongly recommended that this policy be put into place in Iraq's private higher education sector. Given that quality control includes evaluating how well a college or university performs, it follows that the better its performance, the better its quality [5]. Furthermore, there have been scant empirical investigations of performance-based budgeting's impact on the quality of higher education. Research on the constraints of performance based-budgeting in the field of higher education has not been as prevalent as that on the impact of PBB. Since the implementation of performance-based budgeting in Iraqi universities in 2014 represents a novel policy, it is important to analyze the variables that contributed to the policy's success. According to Robbins and Judge [10] and the other studies [11, 12, 13], the success of any organization depends on the efficacy of its human resources, especially when it comes to reaching consensus on a new policy. In addition, Julnes and Holzer [14] found that companies need an incentive mechanism in order to effectively implement new regulations [15].

The organizational duty of management personnel is also crucial to the achievement of the budget execution policy [16, 17, 18]. The purpose of this study was to examine the impact of performance-based budgeting on institutions of higher learning by looking into three key aspects of its implementation: administrative effectiveness, organizational dedication, and incentive structures.

## **2. Theoretical foundations and development of hypotheses**

The economics of building projects and public works projects are two of the most common places where the concept of a performance-based budget is applied. In performance-based budgeting, the principle of activities and facilities necessary to perform is prioritized over the purchased products or services [19]. In other words, performance-based budgeting focuses on the activity and the costs associated with executing the activity but ignores the infrastructure needs associated with the activity [20]. In performance-based budgeting, the steps of expense identification, planning, and conclusion are the most crucial. Accurate documentation of performance-based budgeting statistics and credits is essential [21]. Another characteristic of performance-based budgeting is... This method of budgeting attempts to establish a connection between actual expenditures and the desired outcomes of the project. Each stakeholder in the project's implementation and evaluation under performance-based budgeting must therefore answer for their performance and explain how departmental funds were allocated [22].

### **2.1. Higher educations**

According to Wikipedia, higher education consists of "degree-granting institutions such as universities, colleges, and institutes of technology." When we talk about "higher education," we mean the kind of schooling that can result in a Ph.D. Education beyond the high school level is an option for those who want to continue their formal education. According to the most recent revision of the International Standard Classification of Education (2011), these reflect levels 6, 7, and 8. There are a number of distinct names for advanced degrees in education, but they all refer to the same thing [23]. The right to pursue and complete a postsecondary education is recognized in a number of international human rights accords. Higher education shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular by the progressive introduction of free education, as stated in Article 13 of the International Covenant on Economic, Social, and Cultural Rights (ICESCR) of the United Nations in 1966. Article 2 of Protocol I of the European Convention on Human Rights, adopted in 1950, mandates that all signatory states ensure the right to education for all of their citizens [24]. Institutions such as universities, colleges, and polytechnics that provide degrees and other credentials beyond high school are included.

The initial version of the Education International Standards Classifications' 1997 schema was implemented in 1997, classifying all of higher education. After the introduction of the Associate's and Bachelor's degrees at level four, the Doctoral program was launched at level six. Then, levels 6, 7, and 8 represented the completion of a bachelor's, master's, or doctoral degree program in higher education. It was recommended once again in the 2011 categorization that the non-degree level of higher education, often known as further education and / or

continuing education, be placed at level four, with level five reserved for some higher course. Higher education is often mistakenly used to mean secondary education when pupils make little to no progress after elementary school, which just adds to the existing confusion. High schools are currently the generic term for all the institutions where American children ages 11-18 receive their formal education. "(Great Britain and Australia)" [25].

Some institutions at the college level, such as vocational schools, universities of applied sciences, trade schools, and other career-oriented colleges, also contribute to the United States' higher education system. Degree completion is frequently denoted by the term "continuing education," while non-degree completion is sometimes denoted by the term "additional education." Teaching, research, and rigorously practical labor (as in the medical sciences school and the dental sciences school, for example) are all components of higher education [26]. As a teacher, you have the option of working with students at both the undergraduate and graduate (master's degree) levels. In most of the English-speaking world, including North America, the highest level of schooling is called "graduate education." In addition to degree-specific knowledge and abilities, prospective employers value demonstrated critical thinking, analytical reasoning, teamwork, information literacy, moral judgment, decision-making, communication, problem-solving, and breadth of liberal arts and sciences [26].

## **2.2. Organizational commitment**

Commitment to the organization is a predictor of positive outcomes such as job satisfaction, teamwork, leadership, productivity, and security. The dedication of workers to their jobs is crucial. The term "organizational commitment" refers to employees' emotional investment in their place of employment. A person's dedication to their job is a major factor in whether or not they will remain with their current employer and whether or not they will work enthusiastically toward the company's goals [27]. The three-component model, a prominent theory in the study of job dedication, predicts that there are three parts to an individual's commitment to their organization [28].

## **2.3. Emotional commitment**

This dedication represents the personal investment that each worker has in his or her company. According to this section of the theory, an employee's likelihood of remaining with the company over the long term increases if he demonstrates a high level of active commitment. An employee whose commitment is "active" is one that is not just satisfied with their work environment but actively contributes to its success by things like meeting attendance, constructive feedback, and initiative on the job.

## **2.4. Continuous commitment**

The employee in this scenario is so invested in the company that he believes it would be detrimental to his career to leave. Employees that exhibit continuous commitment are emotionally and psychologically attached to their workplace, which makes them wish to remain there for a longer amount of time. For instance, after working somewhere for a while, everyone develops some sort of emotional attachment there, which is why many people don't leave their jobs but instead feel obligated to stay [28].

## **2.5. Normative commitment**

When an employee has this kind of dedication to his or her organization, he or she feels like sticking put is the moral thing to do. What caused us to feel obligated in this way? Is it unethical to remain in a position only because you have the support of your peers? Or perhaps they don't risk leaving since they believe the company treats them fairly. It is thought that they should remain in this role [28].

It's crucial to keep in mind that individual employees' levels of organizational commitment may vary depending on a number of circumstances. Let's say someone is employed by a prosperous research firm and pulls in a healthy salary. The pleased employee here has a personal investment in staying with the company. He may feel obligated to stay since he is dependent on the job's salary and benefits. Finally, he is normatively committed to the company because of the nature of his position within it [29].

## **2.6. Competence of managers**

To be competent in management, one must first be able to identify the most important abilities that person needs to succeed in their position, then cultivate and optimize those skills so that they mesh with the business strategy of the company. When searching for a new employee, many businesses simply focus on his unique set of qualifications. However, in practice, organizations and firms with an experienced human resources management

pay attention to his communication (soft) abilities in addition to his specialist (hard) talents. These businesses understand the significance of these abilities to the success of their employees in the workplace. Each individual needs some level of expertise in order to succeed in the role they have been offered. Competence, however, has a substantial impact on the quality of the output. To be competent, one must display the qualities essential for success in one's chosen field. Competence, on the other hand, refers to a set of personal traits that enable an individual to perform optimally in a certain role [30].

Competence is often used interchangeably with technical competence. To be competent, one must possess the knowledge, skills, and experiences necessary to do a good job. Simply said, these are concrete abilities that can be honed through formal education or practical experience. A corporation may, for instance, decide to create a new position for a "digital marketing manager." To be competent, one must possess a variety of hard and soft abilities, as well as admirable character attributes like reliability, tenacity, etc. These abilities allow a person to deliver work that goes above and beyond what is expected by supervisors and the company as a whole, leading to extraordinary outcomes [31].

## **2.7. Rewarding systems**

When employees go above and above the call of duty, the company should reward them with perks beyond their base compensation. The benefit is a form of payment for the hardships that were overcome. If his work is up to par, he will receive a bonus equivalent to his wage. Extraordinary rewards will be offered if performance goes above and beyond what is expected. Salary management and the employee pay system are related topics [32], which is why discussing the system of rewarding employees is so important. If an employee goes above and above the call of duty, he or she may be eligible for a bonus or other incentive payment. The penal system stands in stark contrast to the reward system. Classical management and scientific management both use incentives and punishments to motivate workers. However, the incentive and punishment system has evolved and is used differently in modern businesses. Based on HRM concepts, an attempt was made to describe the company's compensation plans in this piece [33]. Employees should be inspired in a way that leads to the organization's efficiency and growth. Each company has its own culture and environment, thus its reward and motivation structures should reflect that. Therefore, every company has some kind of strategy in place for inspiring its staff [34]. There are four main varieties of these systems used in modern business administration [35].

First, there is profit sharing, when workers are provided with monthly monetary bonuses in an effort to increase productivity. Employees are more enthused by their work and invested in the system as a result. Employees who meet or exceed targets in both productivity and labor cost savings receive this bonus. This strategy is intricate and requires refinement. In this structure, trust between employees and management is essential. Second, In a flexible benefits system, workers can make benefit requests instead of having their bosses decide what they should receive. Employees are trusted to make their own choices about their compensation and perks. Third, time off is one of the things that keeps people going. The downside of this method is that employees who do better should get more time off than those who don't, despite the fact that their presence is more valuable than those who don't. Fourth, a system that rewards workers based on the number and depth of their job-related skills. Employees are rewarded more handsomely when they take the initiative to learn new abilities. However, labor prices rise in tandem with workers' skill levels.

Rewarding and inspiring workers has been shown to boost productivity and effectiveness in the workplace. In theory, bimonthly rather than annual bonuses boost productivity and encourage workers to put up greater effort throughout the year. Some employees report increased job satisfaction, dedication, and loyalty after receiving monetary compensation for their efforts. Both intrinsic and extrinsic rewards can be offered. The employee receives remuneration for performing some of the labor in the form of extrinsic benefits, such as money or better working circumstances. Job satisfaction, personal growth, and making a positive impact on others are all examples of intrinsic benefits. Many people who work for non-profits, for instance, get paid significantly less than they would at a for-profit business. They forego immediate monetary gain in favor of the satisfaction of doing what they feel is right for the greater good of society [36].

## **2.8. Competence of managers and performance-based budgeting**

Competence in a given task can be broken down into its constituent parts—the information, abilities, behaviors, and mindsets that reliability uses to distinguish between individuals, especially in terms of performance [12, 37]. Competition among an organization's participants, particularly between departments, limits the success of policy application. One of the crucial resources for institutionalizing performance-based budgeting strategies [38, 39, 40] is competitively acquired official instruction and long competence. They're able to run efficiently

because of the management team's wealth of experience and expertise. Management's input into setting and assessing budgetary goals is crucial, as demonstrated by the findings of a study by Pratolo and Jatmiko [41]. According to the findings [22], performance-based budgeting is more effective when managers are skilled at their jobs. This data suggests that performance-based budgeting benefits from having competent management in place.

### **2.9. Organizational commitment and performance-based budgeting**

The term "obligation" was coined by Bansal et al. [42] to describe a person's ability to bind themselves to actions that further the organization's goals. In particular, the duty of management within an organization is viewed as an integral part of the performance-based budgeting process. Management teams with a strong sense of duty to their organization are more likely to implement performance-based budgeting effectively and make decisions based on clear objectives. Sofyani and Akbar [43] claimed that duties can be repaid through work like allocating resources. Organizational commitment, according to Pratolo and Jatmiko [41], is the key to achieving goals. Strategy is valued by a dedicated management team because of the many plans they can implement. In addition, political support is provided for employees' incentive to achieve their goals, and resource constraints on innovation are removed. Therefore, organizations are strongly impacted by the duty to enact performance-enhancing policies. According to Cavalluzzo and Ittner [44], top-level management's dedication to improving the company's performance is a crucial factor in formulating new policies. Organizational commitment led to optimal and superior performance-based budgeting, according to research by Pratolo and Jatmiko [41]. Therefore, it is reasonable to assume that higher levels of organizational engagement led to more effective performance-based budgeting.

### **2.10. Rewarding systems and performance-based budgeting**

The availability of incentives, such as remuneration for the acceptance of innovation, is also related to organizational responses to change, claim Julnes and Holzer [14]. In exchange for this payment, new regulations will be put into effect. Organizational members may judge that innovation does not always have a positive effect if the new ideas given within the organization are not adequately realized. Simons [45] explains that there are two main ways to get workers to get what the company needs done. The first step is to ensure they that the goals are reasonable. This motivates people to work toward their goals. The second is through providing monetary or other material rewards to deserving employees in the hopes of boosting morale and productivity. Lunenburg [46] argued that if workers know they would be compensated for their efforts, they will exert greater effort toward a common goal. According to the expectation theory, this makes sense. The following information regarding compensation for the stakeholder groups was provided by [47]:

Recruiting highly skilled workers, inspiring them to strive for excellence in their profession, and making it mandatory for workers to remain with the same company are all ways to build a competitive advantage. Pratolo and Jatmiko [41] suggested that performance budgeting in contemporary public administration relies heavily on good and effective rewarding systems because of these benefits. Thus, it may be claimed that reward systems in businesses result in more effective and efficient performance-based budgeting.

### **2.11. Performance-based budgeting and quality of the higher education's system**

Effective budgeting is a crucial part of the planning process and serves as a useful guide [22]. Good budgeting can also be used as a management performance measurement control method [48,49]. The availability of clear outcome objectives resulting from performance-based budgeting is thought to aid businesses in achieving greater performance from the standpoint of the target-setting concept [50]. Employees in the higher education sector are better able to stick to a timetable if their goals are well-defined and well-organized. According to Kaplan et al. [51], managers are better able to coordinate the efforts of their employees toward achieving organizational goals when those goals are made transparent through the use of key performance indicators (KPIs) derived from performance-based budgeting. Employees under you will be able to conduct their jobs effectively and efficiently in accordance with your plans and strategies if you set clear performance goals and communicate them to them. [52, 53]. It is assumed that strong performance-based budgeting has a beneficial effect on the value of higher education because the performance of higher education is one indicator of the quality of higher education.

### **2.12. Performance-based budgeting, the competence of managers, and quality of higher education**

A company's success depends heavily on the quality and competence of its human resources (its employees). But budgeting systems can affect behavior in organizations to bring about objective alignment. Joshi et al. [54]

argue that a budget system serves as much more than a means by which to plan and control management. It's a huge spectrum, and researchers are still trying to understand how it works [55]. Budgeting can help with things like better communication, regulating and assessing employee performance, and coordinating different parts of a company, as stated by Fisher et al. [56]. The scholars, staff, materials, and funding that make up an institution of higher learning. Budgeting mechanisms, though only a small part of the larger financial system, are essential to preserving the excellence of the various components that make up the higher education system. Because the success of the budgeting system is dependent on the competence of the management, performance-based budgeting is a process through which the quality of human resources affects his performance. This control mechanism also demonstrates a secondary relationship between managerial competency and the qualities of higher education.

### 2.13. Performance-based budgeting, organizational commitment, and quality of higher education

Organizational duty has been identified in numerous research as a key factor in achieving successful outcomes [57, 58]. Furthermore, employee dedication is not a sufficient metric of organizational performance if the system employed within the organization is poorly structured and has definite support policies. By using performance-based budgeting as a mechanism of control, it is possible to harmonize individual and organizational goals [54]. In order to help you reach your goals, performance-based budgeting has been developed. This process defines and aids in the accomplishment of corporate goals [59]. Based on this line of reasoning, we may infer that the quality of higher education will increase after performance-based budgeting is adopted by institutions of higher learning.

### 2.14. Performance-based budgeting, rewarding systems, and quality of higher education

Staff need incentive schemes to improve the quality and efficiency of their work [60]. Employee performance is a key factor in determining the quality of higher education, thus these systems do have an effect. However, the expectation theory argues that pay should be linked to how well-articulated an organization's objectives are [61]. Therefore, this concept is linked to performance-based budgeting, which lays out a hierarchy of achievable goals and results, as well as desirable objectives, strategies, and actions [4, 59]. When all of these details are integrated to the reward system, it is possible to gauge how motivated employees are to accomplish performance targets in light of the anticipated advantages. Employees are encouraged to work toward the predetermined performance goals as a result of the knowledge that their efforts will be rewarded in some way. This is evidence of the impact that performance-based budgeting, a feature of incentive structures, has on the standard of higher education. The current study aimed to examine the following hypothesis in light of the aforementioned.

### 2.15. Hypothesis

The quality of Iraq's universities was improved by the organizations that oversee them and the factors that affect them, such as allocation of funds based on performance. The adoption of performance-based budgeting at Iraq's universities is facilitated by competent management. Performance-based budgeting in Iraq's higher education sector benefits from institutional dedication to the practice. Performance-based budgeting is improved by incentive pay in Iraqi universities. There is a favorable effect on educational quality as a result of using performance-based budgeting in Iraq's universities. Performance-based budgeting in Iraqi universities moderates the effect of administrators' skills on their schools' quality. The relationship between institutional dedication and quality in Iraqi universities is mediated by performance-based budgeting. The effect of rewards systems on the quality of Iraq's universities is moderated by the use of performance-based funding. The research's conceptual model, based on its hypotheses, is as follows:

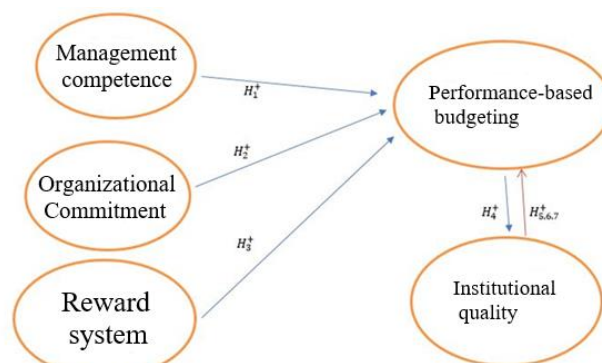


Figure 1. Conceptual model of research

### 3. Method

The primary goal of this research was to suggest a model for how performance-based budgeting might affect tertiary education standards in Iraq. The goals, the nature of the research subject, and the capabilities of the researcher all play a role in deciding which research method to employ in order to attain the research objectives faster, easier, and less expensively. These findings are from an applied development study. Human, cultural, and social knowledge, as well as the ingenuity and design of new applications based on this information, are all part of the scientific reserve that can be produced through development research. The present study is an example of an applied development research approach since it builds on a previously proposed model and then adjusts that model based on the results. This research falls under the category of descriptive studies, which employ a specific methodology to provide a comprehensive account of the conditions or phenomena under investigation. One can conduct a descriptive study for purely informational or decision-making purposes. Surveys, correlation studies, action research, case studies, and ex post facto analyses are all types of descriptive studies. The current study fits within the category of correlational studies.

#### 3.1. Population and statistical sample

The positivist method and a survey were used to compile the data for this investigation. This study makes use of descriptive research that proposes looking at the impact one variable has on others [62, 63, 64]. Since most private universities and colleges have a "C" (weak) accrediting statement, indicating that they provide a subpar education, they were chosen as the focus of this study. But, in an effort to improve quality, they have started using performance-based budgeting. Therefore, the purpose of this research was to examine whether or not such policies are adequate to address the issue of lower-quality knowledge produced by private higher-education institutions in Iraq. In this analysis, the company serves as a unit of analysis. Due to equal access to participation, samples were drawn at random from all private universities in Iraq. However, we ignored specialized universities because of evaluation discrepancies. Krejcie and Morgan [65] also provide a sample size indicator, which is used to determine the appropriate sample size. The minimum sample size consistent with Morgan's table is  $n=246$  if it is to represent the non-professional population of special higher educational institutions in Iraq (which is 3519). The study population included the dean, the vice dean, the head of the accounting department, and the finance and accounting staff at a sample of universities that use performance-based budgeting.

#### 3.2. Analysis

The primary information for this study came from questionnaires given to the participants themselves. Five hundred surveys were distributed. Although Alach (2017) only received a 12% response rate for his survey research of performance evaluation systems at New Zealand universities, this was higher than the normal response rate of 10-20% [66]. Bobe and Kober [67] found a 28.3% response rate with only 56 valid items. Directors, vice-presidents, department heads, and finance staff from universities are the target respondents for this study on performance-based budgeting. Three exogenous variables were used in this investigation: management skill, incentive systems, and institutional duty, with the internal variable being the quality of the educational institution. Performance-based budgeting was treated as both an endogenous and an exogenous variable because of its role as an intervening variable. We ranked people's opinions on a 5-point Likert scale, where 1 was the most disapproving and 5 the most supportive.

In this analysis, "management competence" refers to a leader's practical skill set. Academic background, physical fitness, duty comprehension, a sense of obligation to succeed, and the capacity for coordinated action were all factors in this variable's evaluation. construction progress alludes to Sand berg (1996) and Liu et al. Promotion, rewards, monetary incentives, praise, and warning (negative reward) are some of the policies used to quantify the efficacy of various reward systems. Agwu [68, 69] is cited to support this criterion. Moreover, the continuous commitment, normative commitment, and emotional commitment variables are used to diagnose the variable of organizational commitment. Camilleri and Van Der Heijden [70] are credited with creating this framework. Additionally, performance-based budgeting is a novel budgeting method that aims to increase the efficiency and effectiveness of public sector spending through a methodical approach to budgeting based on performance and measurable outcomes. Sofyani's [71] surveys were used to estimate this variable. There were five parts to the performance-based budgeting framework: establishing the strategy plan, incorporating the strategic plan into the work plan, establishing performance indicators, employing a standard cost analysis in budgeting, and assessing results. Indicators of accreditation established by the Iraqi state were used to determine the quality of higher education institutions. When questionnaires were used to collect data in the past, two

accountants were brought in to approve the process. The respondents were asked how easy or hard they found the questionnaires to complete.

#### 4. Results and discussion

Table 1 shows that master's degrees account for almost 55% of all college degrees awarded in descriptive and demographic statistics. Despite the fact that roughly 29% of the authors hold a doctorate. In addition, the most common sex is male, and the most common age range is 16–20.

Table 1. Frequency distribution of research participants

measure	No.	F (%)	
degree of education	B.A	32	16
	M.A	108	55
	Phd	58	29
total	198	100	
Work experience	Below 5	38	19
	5-10	28	14
	11-15	53	27
	16-20	79	40
total	198	100	
gender	male	142	72
	female	56	28
total	198	100	

Table 2 shows descriptive statistics for research variables. It should be noted that in order to more accurately describe the opinions of the respondents to the items (research questions), the descriptive statistics of the items of each variable are reported based on the 5-point Likert scale.

Table 2. Descriptive statistics of research variables

variable	question	mean	median	SD	skewness	min	max
Management competence	Q <sub>1</sub>	4.177	4	0.662	-1.370	1	5
	Q <sub>2</sub>	4.273	4	0.608	-1.310	1	5
	Q <sub>3</sub>	4.399	5	0.750	-1.891	1	5
	Q <sub>4</sub>	4.273	4	0.743	-1.085	2	5
	Q <sub>5</sub>	4.364	4	0.619	-0.821	2	5
	Q <sub>6</sub>	4.010	4	0.816	-1.365	1	5
Organizational commitment	Q <sub>7</sub>	3.621	4	0.939	-0.798	1	5
	Q <sub>8</sub>	4.212	4	0.832	-0.946	2	5
	Q <sub>9</sub>	4.364	4	0.619	-0.821	2	5
Rewarding systems	Q <sub>10</sub>	3.616	4	0.997	-0.617	1	5
	Q <sub>11</sub>	3.591	4	1.137	-0.684	1	5
	Q <sub>12</sub>	3.424	4	1.190	-0.507	1	5
	Q <sub>13</sub>	3.354	4	0.993	-0.664	1	5
performance-based budgeting	Q <sub>14</sub>	3.672	4	0.887	-0.837	1	5
	Q <sub>15</sub>	3.687	4	0.895	-1.171	1	5
	Q <sub>16</sub>	3.813	4	0.905	-0.652	2	5
	Q <sub>17</sub>	3.697	4	0.904	-1.057	1	5
	Q <sub>18</sub>	3.404	3	0.864	-0.127	1	5
	Q <sub>19</sub>	3.631	4	0.841	-0.497	1	5
	Q <sub>20</sub>	4.318	4	0.700	-0.890	2	5
	Q <sub>21</sub>	4.056	4	0.773	-0.757	2	5
quality of higher educational institutions (universities)	Q <sub>22</sub>	3.758	4	0.944	-0.841	1	5
	Q <sub>23</sub>	3.449	4	0.918	-0.382	1	5
	Q <sub>24</sub>	3.965	4	1.084	-1.079	1	5
	Q <sub>25</sub>	3.520	4	0.957	-0.859	1	5



Convergent validity, Cronbach's alpha coefficient, and composite reliability (CR) were utilized to ascertain the validity and reliability of the questionnaire. The results of the correctness and fidelity checks are shown in Table 3. If the value of Cronbach's alpha is larger than 0.7, we can conclude that the reliability is adequate. A CR value in Table 3 above 0.7 indicates enough internal constancy for the measurement models, and the CR of the constructs is a more representative and correct metric than their Cronbach's alpha. Average variance extracted (AVE) was developed by Fornell and Larcker [72] to assess convergent validity, and they concluded that the value of AVE above 0.5 indicates satisfactory convergent validity. All of the variables in this study have AVEs more than 0.5, as shown in Table 3, showing satisfactory convergent validity.

Table 3. Cronbach's alpha coefficient, CR and AVE

title	Cronbach's alpha coefficients (Alpha > 0.7)	CR (Alpha > 0.7)	AVE (AVE > 0.5)
Management competence	0.734	0.709	0.541
Organizational commitment	0.775	0.746	0.576
Rewarding systems	0.735	0.763	0.564
performance-based budgeting	0.846	0.863	0.551
quality of higher educational institutions (universities)	0.553	0.751	0.533

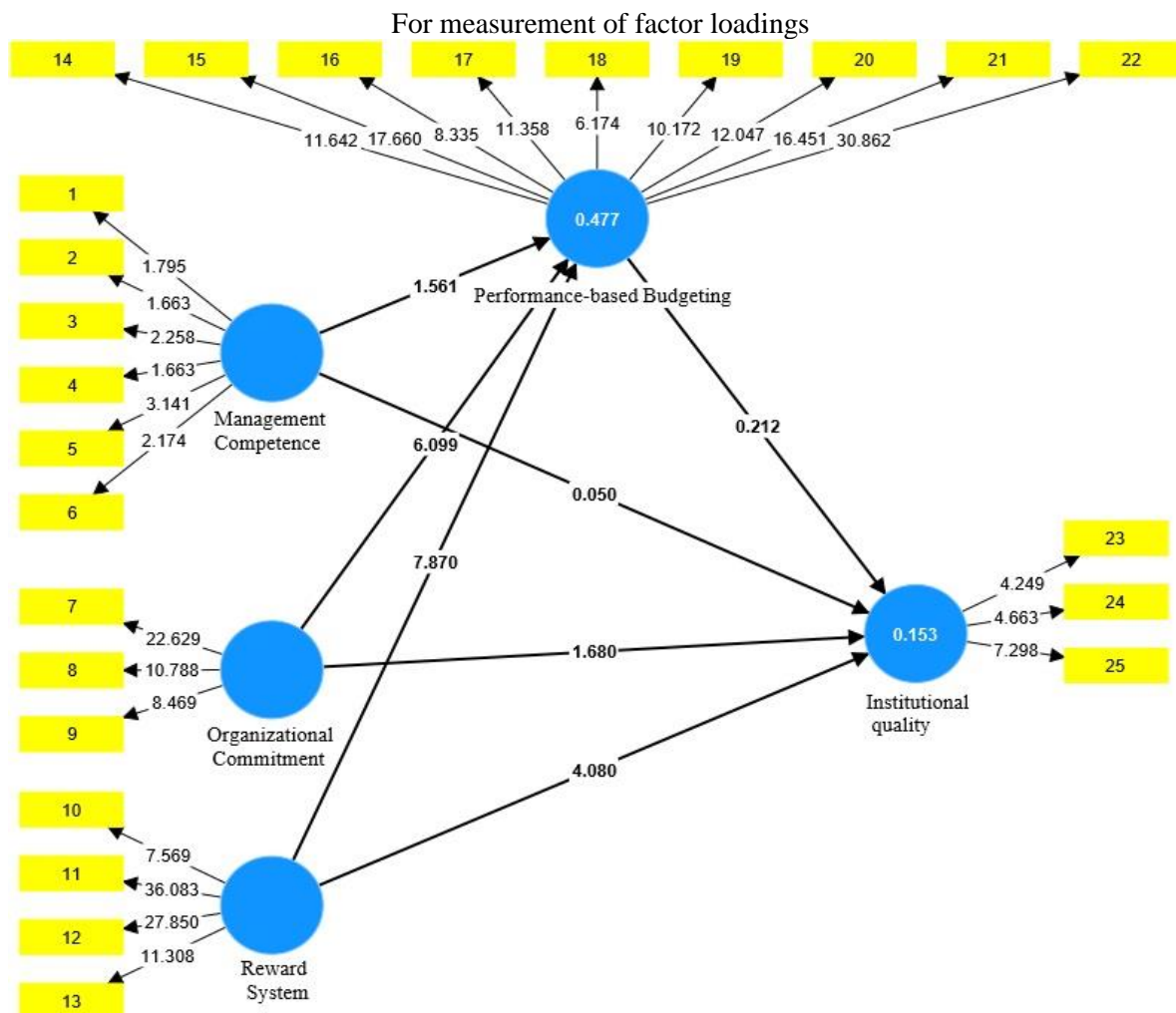


Figure 1. Results of factor loading and path coefficients of the model's research

If the correlation value of a structure's indicators is equal to or greater than 0.4, we know that the variance between the structure and its indicators is greater than the variance of the measurement error of that structure, and that the reliability of the measurement model is tolerable, which is the case if factor loadings are considered. The cutoff value of factor loadings has been suggested to be 0.5 by some authors, including Rivard and Huff [72]. When computing the factor loadings of the structure and its indicators, if the results are less than 0.4, the indicators must be revised or deleted from the research model. The factor loadings for the variables in this investigation are displayed in Figure 1. If the variation between the idea and its indicators is larger than the variance of the measurement error of that hypothesis, and the factor loadings of these variables are greater than 0.4, then the reliability of the measurement model can be considered adequate. Table 4 summarizes the findings from the testing of the hypotheses in Figure 2.

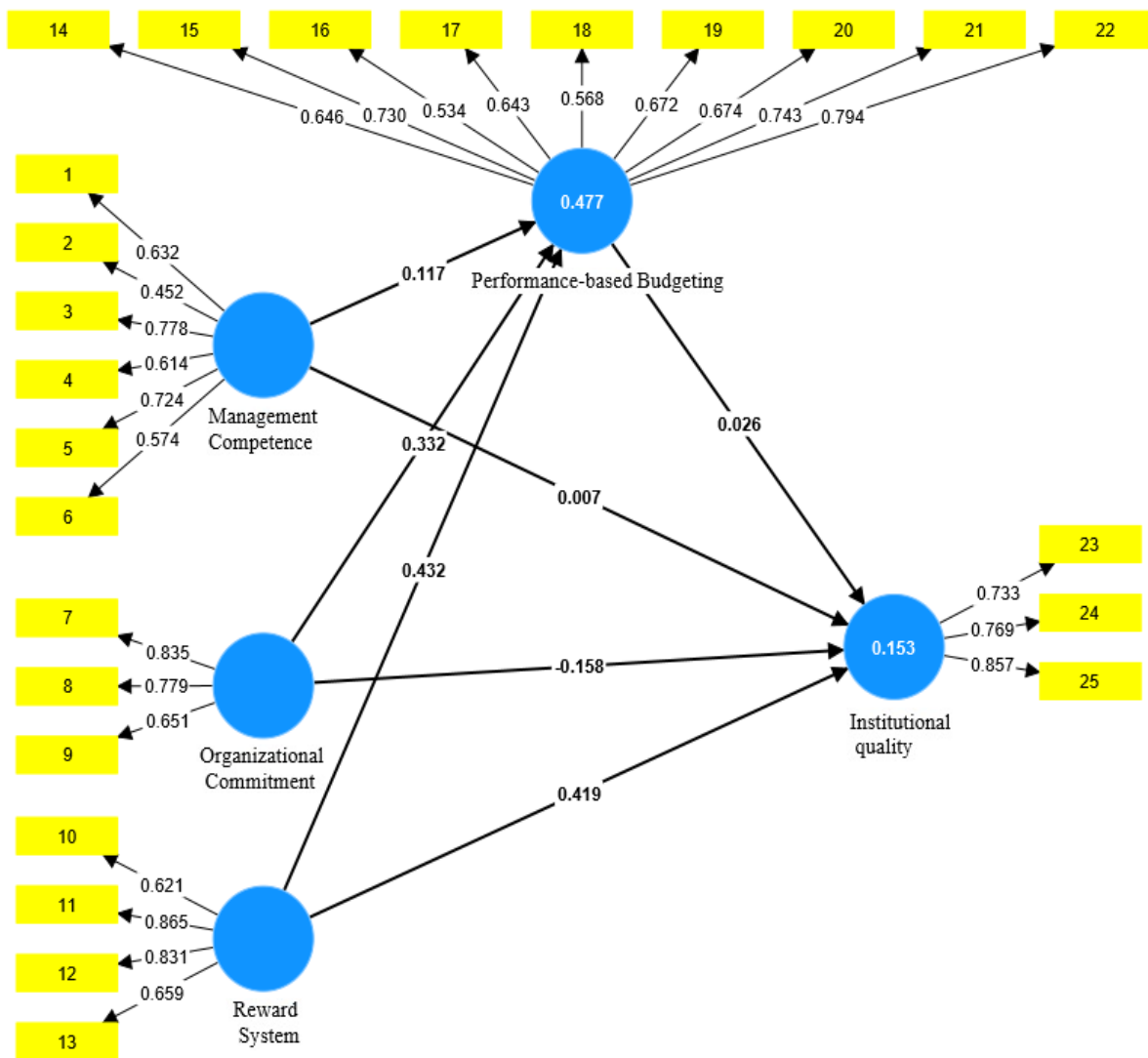


Figure 2. Significant results of research model variables

Table 4 shows the summary of the results of H1-H4. According to the path coefficients and t-statistics in H2 and H3, and the significance level is less than 5%, it was determined that H2 and H3 of the research about the effect of organizational commitment and rewarding systems on performance-based budgets was confirmed. But according to the significance level of more than 5% for H1 and H4, it is obvious that H1 and H4 regarding the effect of management competence on performance-based budget and performance-based budgeting on the qualities of higher educational institutions were not confirmed. The cross-validated redundancy (CV-Red) and CV-Com statistics and the positive values in each path represent the suitable quality of the conceptual model for the present study paths as revealed in Table 4. Also, the R<sup>2</sup> value of the dependent variables of this research in Table 4 displays that about 15% of the variations in a quality variable of higher educational institutions can be predicted by the independent variables. Also, about 48% of the changes in the variable of performance-based budgeting can be predicted by independent variables.

Table 4. Results of research hypothesis test

hypothesis	variable	Path coefficients	t-statistic	significance level	result
1	Management competence → performance-based budgeting	0.117	1.561	0.12	rejected
	Cv – Red: 0.263		Cv – Com :0.113		
2	Organizational commitment → performance-based budgeting	0.332	6.099	0.00	confirmed
	Cv – Red: 0.471		Cv – Com : 0.359		
3	Rewarding systems → performance-based budgeting	0.432	7.870	0.00	confirmed
	Cv – Red: 0.311		Cv – Com :0.252		
4	Performance-based budget → quality of higher educational institutions	0.026	0.212	0.83	rejected
	Cv – Red :0.321		Cv – Com :0.263		
Performance-based budget ( $R^2 = 0.477$ ) Quality of higher educational institutions ( $R^2 = 0.153$ )					

The common approach used to test mediation effects is the Sobel test. Because this test does not need to consider multiple regression equations, and it is more useful and efficient than multiple regression equations, especially for cases where the objective is to test the variable mediator. Also, this test tests the relationship between the independent variable and the dependent variable in comparison to the relationship between the independent, dependent and mediating variables. The Sobel test assumes that the indirect effects of the independent variable are normally distributed [73]. Table 5 shows relevant information in this field.

Table 5. Results of Sobel test and VAF

hypothesis	path	t-statistic	significance level	result
7	Management competence → performance-based budget → quality of higher educational institutions	0.210	0.834	rejected
8	Organizational commitment → performance-based budget → quality of higher educational institutions	0.212	0.832	rejected
9	Rewarding systems → performance-based budget → quality of higher educational institutions	0.213	0.833	rejected

For the research variables serving as mediators, the Sobel test yielded t-statistic values of 0.210, 0.212, and 0.213, all significantly lower than the critical value of 1.96. We conclude that the performance-based budget acts as an insignificant mediator between the other three variables (administrative rivalry, organizational obligation, and quality awarding systems) in Iraq's higher education sector.

The study set out to examine the impact of performance-based budgeting on the standard of higher education in Iraq, as well as its constituent parts (management rivalry, organizational obligation, and rewarding system). The findings of the study indicated that performance-based budgeting is positively influenced solely by organizational commitment and reward systems. The level of competitiveness among an organization's employees across all divisions is a reliable indicator of how well its policies are implemented. Competence gained via formal education and extensive experiences, according to Ahyaruddin and Akbar [38], is one of the important resources for institutionalizing performance-based budgeting systems. However, the current study's findings in the economic context of Iraq do not lend credence to this claim. For the simple reason that the findings disprove the hypothesis that better management will improve performance-based budgeting in universities. There is a discrepancy between these findings and those of Partolo et al. [22]. Because they provided evidence that increased confidence in performance-based budgeting was associated with increased managerial skill. The findings of this study cast doubt on the abilities of those in charge of Iraq's universities and colleges. Management competence in Iraqi universities has not been consistent with the institution's strategic goals, if this means that managers have failed to identify and cultivate the employees' key skills necessary for them to achieve the target performance in their specific role, as defined by the organization's

business strategy. Competence should be applied in a variety of contexts inside the organization, and it can be used to help improve the status quo. However, the H1 results indicated that the managerial competence in Iraqi universities was insufficient to result in performance-based budgeting. As a result, it is fair to conclude that performance-based budgeting was not helpful to Iraq's universities because their managers lacked the necessary expertise of added value. The findings highlighted the prominence of higher education in developing countries.

However, the hypothesized effect of organizational commitment on performance-based budgeting holds up under testing (H2). According to Bansal et al. [42], the concept of obligation refers to the psychological force that compels an individual to take actions that further the goals of an organization. The results of H2's testing shed light on and lend credence to the importance of organizational duty in Iraq's universities. In Iraq's universities, managers are more likely to take action that contributes to the organization's success since employees are committed to its mission. As evidenced by the findings, management at Iraq's higher education institutions feel a deep sense of responsibility to their institution and have taken decisive, outcome-oriented steps to implement performance-based budgeting. Sofyani and Akbar's [43] result is consistent with this one. Because their findings suggested that tasks like resource allocation provided an opportunity to repay managers for the time and effort they had invested in the business. The findings of the current investigation also corroborate those of Pratolo and Jatmiko [22]. A study found that total buy-in from upper management was the key to successful performance-based budgeting. Managers of Iraq's universities are dedicated to their institutions and have introduced crucial initiatives including performance-based budgeting, according to the study's findings.

The findings also highlighted the significance of reward systems within performance-based budgeting. For a long time now, we have known that rewarding and inspiring workers leads to greater productivity and output. The current study's findings suggested that incentive programs at Iraq's universities were aligned with the institution's goals. As a result of these plans, managers now have an incentive to employ performance-based budgeting, which is crucial to the achievement of the organization's goals. The findings agree with those found in [22]. In light of their findings, they contended that rewarding systems in contemporary public administration are among the most crucial aspects of performance-based budgeting. This is also true of Iraq's universities, and it can be claimed that incentive programs within these institutions have improved the effectiveness of performance-based funding.

The H4, H5, H6, and H7 tests revealed the ineffectiveness of implementing performance-based budgeting. Here, the null hypothesis 4 (H4) was rejected, indicating that performance-based budgeting did not affect university standards in any appreciable way. Good budgeting, according to Pratolo and Jatmiko [22], is crucial to planning and serves as a guide for it. Conclusions from this study indicate that the quality of universities may suffer because of inadequate preparation for performance-based budgeting. There is agreement between these findings and those of Jongbloed and Vossensteyn [74]. For the simple reason that they insisted that PBB is an effective strategic instrument for enhancing and monitoring activity outcomes. Furthermore, Pratolo and Jatemiko's [22] findings contradict those of this hypothesis. For the reason that they found proof that Iraq's universities saw an improvement in quality after instituting performance-based budgeting.

In addition, the results of the H5 test demonstrated that respondents did not believe performance-based budgeting could play a role in disrupting the connections between managerial skill and university excellence. According to the findings, respondents did not think that the managers of Iraq's higher educational institutions had made use of the performance-based budgeting technique to better the quality of education offered there. There is a discrepancy between our findings and those of Fisher et al. [56]. Budgeting, they reasoned, is an instrument that can be used to coordinate various parts of a company, to regulate and measure employee performance, to motivate people, and to enhance communication. The data, however, contradict this claim. The H1 test also revealed that the competency of managers in Iraqi universities was not commensurate with the quality of education offered there, so it's important to keep that in mind while evaluating the budgeting approach.

The hypotheses H6 and H7 tests confirmed also demonstrated that performance-based budgeting did not interfere with the connections between organizational duty and incentive systems and the worth of higher education. Based on the findings, it is clear that performance-based budgeting has not been employed as a control mechanism within the business. Therefore, it may be concluded that performance-based budgeting has not been successful in elevating the standard of higher education in Iraq. The findings contradict those of Pratolo and Jatmiko [22], another study. As a result of their findings, it is clear that incentive programs in universities lead to better results in terms of performance-based budgeting, managerial skill, and institutional loyalty.

The findings of the current investigation add to the body of both theoretical and applied understanding. Putting performance-based budgeting into action is crucial for bettering the standard of higher learning. As suggested by the aforementioned evaluation of relevant literature, this is one of the factors that could assist address Iraq's persistent issue of subpar university instruction. However, the study found that performance-based budgeting has not been employed as a strategy tool to improve the quality of higher education in Iraq's economic context. Since other countries have found success with performance-based budgeting, it is recommended that Iraq's universities successfully implement the instrument, raising the bar for higher education in Iraq. Furthermore, in the economic context of Iraq, the attributes of higher education should take into account the competency of managers, as well as organizational commitment and rewarding systems at all stages, for the successful implementation of performance-based budgeting. In addition, it is proposed to teach the managers of higher education institutions to improve their qualifications, as the presentation of performance-based budgeting requires special awareness, particularly in regard to financial accounting and administration. In addition, a performance-based budgeting plan cannot succeed without reward structures in place. There are various caveats to the present study that are shared by another research. The limited number of colleges and universities represented in the sample limits the breadth of these findings.

## 5. Conclusion

According to the findings, it is possible to draw the conclusion that in order for performance-based budgeting to be successful in the economic environment of Iraq, the attributes of higher education should take into consideration the competency of managers in addition to organizational commitment and reward systems at all levels. The current study makes a contribution to the development of both theoretical and practical knowledge. In this way, the application of performance-based budgeting is extremely important in the process of improving the standards of higher education. Since, according to the examination of the relevant literature, it is one of the probable elements that can assist to develop the quality of higher education and, as a result, minimize the problem of poor quality higher education in Iraq, it is one of the factors that can help.

## Declaration of competing interest

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

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