

## Article

# Feasibility of Establishing Operational Budgeting in Iraqi Public Universities

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**Abstract:** Budgeting is allocating limited resources to unlimited needs and aims to maximise the use of resources that are usually scarce. In the face of these scarce resources, continuous attention to planning, allocating resources, and budgeting is an undeniable necessity. The importance of the budget in universities that receive their credits from the government is much greater because of their significant role in society's scientific and cultural orientation of the younger generations. It is evident that incorrect budgeting will cause mistakes in allocating resources in this critical field and will cause severe damage to the country at the national level. Hence, reforming the methods of budgeting and distribution of resources in Iraqi public universities is one of the primary necessities. Therefore, the current research has investigated the feasibility of establishing operational budgeting in Iraqi public universities based on the PESTEL model. The study period is 2022, and the research community is Iraqi public universities (35 universities), of which 15 top universities were selected as a statistical sample. The research data were collected using 198 questionnaires completed by financial managers, accounting experts in financial affairs, and experts specializing in budgeting in sample universities. The results of hypothesis testing showed that all aspects of the study, including political, economic, social, technological, environmental, and legal, affect the establishment of operational budgeting in Iraqi public universities, and all the research hypotheses are confirmed. In other words, it was found that the political, economic, social, technical, environmental, and legal factors identified in the current research are significant for establishing operational budgeting in Iraqi public universities. It is suggested that legislators and budgeting planners prioritise these factors and rely on them in making decisions since experts approved these stimuli in the field of operational budgeting in the strategic environment of universities and according to the current conditions prevailing in Iraq.

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**Keywords:** university budgeting; new budgeting; operational budgeting; Postel model

## 1. Introduction

The most crucial goal of any government is to achieve economic growth, provide public services, and achieve justice at the community level. To achieve these goals, first, the duty of the governments must be specified along with the responsibility of the society and different institutions, and the structure of the governments must be determined. Next, planning and budgeting should be performed to achieve the goals. Finally, by allocating resources, the duty of the government should be implemented (Pratolo et al. 2021). In line with the evolution of the public sector, most countries are trying to change their budget system to an activity-oriented or operational system to increase productivity and establish strategic and macro goals with operational plans. The Iraqi government allocates more than two-thirds of the national income to current expenses and spends it on various programs and activities (Yasmin and Kamal 2021). This percentage of current expenses reveals the importance and role of basic budgeting methods in guiding and directing different sectors of the society's economy, so one of the factors of progress in various sectors

of the economy is the essential planning of government operations in the form of a budget (Al-Dhubaibi 2021; Al-Atabi and Kazem 2018). The backwardness and lack of development in various economic sectors of society can also be attributed to the shortcomings of the budgeting system (Hamad and Al-Majjai 2018). In this regard, the budget system of Iraq was also moved towards operation-oriented or operational budgeting.

At the current stage, the majority of the organisations, including universities, in Iraq are using traditional budgeting systems. Traditional budgeting systems seem insufficient to achieve modern organisations' objectives regarding their wide activities and the various services they provide. Traditional budgeting systems are characterised by some deficits such as the following: (1) focusing on departmental costs and staff; (2) calculating only impacts of influential items and does not identify untapped and renovated capacities; (3) ignoring the purposes in the general budget and focusing only on control and analysis; (4) preparing based on frequent negotiating between managers; (5) concentrating only on the traditional cost behaviour such as fixed and variable costs (CĂPUȘNEANU et al. 2013). In contrast, an advanced and sophisticated budgeting system is required to meet a wide range of organisational objectives (Uzoh 2012), in which operational budgeting is one of these advanced systems.

Operational budgeting standardizes institutional activities, increases accountability, and improves operations in various institutions (Mirzamani et al. 2022; Salehi et al. 2022). Operational budgeting differs from traditional methods because operational budgeting focuses on cost results rather than spending money. The use of new budgeting methods, in addition to helping to speed up things in organisations, is also effective in promoting social and economic goals, and in this way, organisations can distribute their resources fairly and favourably among desirable goals (Johansson and Siverbo 2014; Jonker 2016; Ahrens et al. 2018). Due to the importance of operational budgeting, in this research, obstacles to establishing operational budgeting in Iraqi public universities have been investigated.

The basic issue before implementing operational budgeting is whether the organisation has the necessary foundations to implement this budgeting system. Budgeting obstacles and problems in the organisation are not limited to general issues; at the executive level, various factors can be discovered that cause legal, cultural, economic, and political obstacles (Carlitz 2013; Mahdalena et al. 2021). Identifying such factors requires a framework (Shilei and Yong 2009) that, according to the nature of the mentioned factors, in the present study, the Postel model was used to identify political, economic, social, technical, environmental, and legal aspects. Moreover, despite the importance of the role of financial management in the education system in recent years, the policymakers and planners of the education sector in Iraq believe that the market of educational services is not economical because the product of education is a public good. As a result, it is the responsibility of the government to cover its costs (Al-Fazel and Qasim 2014; Benalilesh 2020). However, due to the developments in recent years and the government's encounter with the increase in education costs, the view of managers towards economic issues in the education sector has changed, and the need to use economic sciences and experts in this field was felt (Al-Mahmudi and Hassan 2020). So, the move towards operational budgeting was emphasized in recent development programs (Benalilesh 2020). Therefore, one of the necessities of reforming the economic structure of the university education sector is to reform the methods of budgeting and distribution of resources, and one of the most critical issues that can be investigated in this regard is the feasibility of establishing operational budgeting from all aspects, which has been investigated in this research. Thus, it is essential to conduct this research for establishing operational budgeting in the Iraqi public university.

## 2. Literature Review and Hypothesis Development

### 2.1. Literature Review

Budget refers to plans and long-term and short-term goals that include all aspects of the business unit's operations in a specified period (Srithongrung et al. 2021; Salehi et al. 2023). A budget is a tool that determines the goal and direction of the organisation and will control the changes in the environment. The budget helps the organisation's managers to identify their unit's financial aspects and solve problems before they occur (Libby and Lindsay 2010; Bergmann et al. 2020). Operational budgeting is an annual plan in which the relationship between the allocated financial resources and the implementation results of each program is shown with quantifiable indicators (Bourmistrov and Kaarbøe 2017; Benalilesh 2020; Mirzamani et al. 2022). Diamond (2002) believes that operational budgeting seeks to establish a link between performance indicators and resource allocation; although such links are often weak, they can facilitate budget policymaking and increase monitoring and legislation on outcomes and achievements related to public spending. The main goal of operational budgeting is to increase the efficiency of allocation and production in government payments (Al-Dhubaibi 2021; Yusuf 2020). Operational budgeting, in addition to separating credits into tasks, programs, activities, and plans, the volume of operations and implementation costs of each operation of the executive body is measured according to practical methods such as cost accounting, workload measurement method, and activity-based costing. These costs will be the basis for concluding a contract with the executive body for approval and credit allocation (Lorensius et al. 2021). In summary, operational budgeting is the process of relating costs and results.

In previous studies, including Diamond (2002), Libby and Lindsay (2010), Bergmann et al. (2020), Srithongrung et al. (2021), Yusuf (2020), Lorensius et al. (2021), the advantages of using operational budgeting have been mentioned, which include the following: 1. Adding efficiency and effectiveness to other traditional budget functions; 2. focusing on "outputs and results" instead of "inputs and resources"; 3. establishing a clear connection between resources and the goods and services provided (the amount of consumption of resources in each of the outputs); 4. making it possible to analyse the cost of activities and outputs (goods and services) to reduce the cost of activities; 5. converting budget documents into the necessary tools of economic planning and management; 6. management of organisational performance and promotion of management accounting tools; 7. calculation, identification, and comparison of services according to the actual cost of each service with similar items; 8. increasing the motivation of managers and employees to provide services at a lower cost and higher quantity and quality by distributing part of the benefits from the savings made; 9. proportioning the authority and responsibilities of managers; 10. standardising services by identifying the best methods for providing services, promoting and generalising them, etc.

The complex history of budgeting in Iraq under the Ottoman, British, Hashemite, and Ba'athist regimes can be summarised as "historical layers of institutions" that occurred as a result of "significant external shocks" such as world wars, invasions, etc. (Al-Mahmudi and Hassan 2020; Elmaci and Tutkavul 2020). The first public budget for expenditures and revenues in Iraq was compiled in 1921, at the same time as the formation of the first Iraqi government (Ayeshe 2020). This budget program was compiled in compliance with the basic principles of budget formulation and based on the Ottoman accounting principles law approved in 1911 and the guidelines of the British Transitional Council and the Iraqi Provisional Government, which includes the law of the country according to the right of the parliament to review and approve the budget. According to Article 100 of the Constitution, according to the General Budget Approval Bill, preparing the budget goes through several stages before being referred to the House of Representatives. After discussion with the ministries and departments not related to that ministry, the Ministry of Finance prepares the details of the country's current budget and submits it to the Cabinet in a final form with an explanatory note attached. It will be discussed until October of the year at

the latest then it will be raised in the House of Representatives (Al-Dhubaibi 2021). In budgeting in Iraq, the finance minister must first present all the legal bills of the budget program and all the bills related to the units that the government pays to the parliament (Cokins 1999). Ministries and departments are required to prepare their expenses and income forecasts and deliver them to the Ministry of Finance before August. After auditing the expenses and incomes and implementing the reforms he deems appropriate, according to the status of the National Reserve Fund, the minister of finance must approve it, compile the general budget of the government, and submit it to the Cabinet so that the budget formulation process can be completed. A.M., 1940).

In the global stages, the previous literature suggests that factors, including creating vertical and horizontal alliances between beneficiaries, the preparation of legitimate data, legal approval, and international funding, are among the mainstream (Carlitz 2013). Joyce (2008) also believes that international monetary funds and advanced standards such as public availability of budget information, the openness of budget operation and reporting are among the influential items that may improve the budgeting system through transparency and political connections. The findings of Jordan and Hackbart (2005) recommends that program efficiency as an objective, rather than budget dedication, leads to a better foundation to determine performance-based budget accomplishment. Hedayati et al. (2020) proposes several factors affecting operational budgeting as follows: (1) causal factors (factors related to predicting performance, economic factors, factors related to social responsibility and structural factors); (2) action strategies (human resource strategies, budget strengthening strategies, substrate strategies, budgetary justice strategy, and regulatory strategies); (3) outcomes (empowerment outcomes, structural outcomes, performance outcomes, and infrastructural outcomes).

Furthermore, it is argued that the competitive environment and uncertain situations may influence the employment of predictions (Sandegaard 2012). Moreover, Fischer (1993) shows that improvement is negatively incorporated with large budget deficits, inflation, and fluctuating exchange markets. His further evidence argues that the underlying reasons for growth come from the macroeconomic policy. The framework he proposed increases the possibility of recognising the reasons for these effects as follows: inflation may preclude growth through lower productivity rate and investment; budget deficits also posit barriers to the incremental rate of both productivity and capitalisation. Niels and Lensink (2001) also discusses that budget deficits, government consumption, tax payments and the inflation rate significantly influence capital flight. Radović and Radojević (2014) believes that profitable firms prepare accountable and proper financial reports. Financial reports are a proper basis for preparing different sections of the budget. Particularly in the hospitality industry, it seems the budget is a planning system to improve control efficiency. The prepared budget allows the management to compare actual results and planned objectives of enterprises in a fiscal year and examine the outcome of their operations. Raghunandan et al. (2012) demonstrates that the impact of individuals' behaviour is not deniable on the success of general management control systems and, particularly, the budgeting process. Forrester and Adams (1997) argues that reforming the budgeting system needs attention to the organisational environment, particularly human behavioural dynamics. Moreover, they argue that planned organisational change must be considered in this regard, which consists of organisational culture and behavioural varies. Goddard's (1997) results suggest that organisational culture is a critical influence, professional culture is an unremarkable influence, and national culture seems to have low or no impact on the budgeting processes. Schaeffer et al. (2008) suggests that community-based schemes for enhancing local government accountability need to combine legal, political, and administrative mechanisms with proactive community involvement. Of particular importance are the legal and budgetary instruments that require input from local community members on certain local government decisions and instruments that increase accessibility for the press or the general public at large to information on government activities.

Further findings pertaining to the technology show that this feature is important to discuss because one of the essential elements in implementing the education process is the existence of funds. Fund budgets need to be managed and used appropriately to produce quality education. Educational providers are required to carry out education properly; moreover, they are demanded by the advancement of the times to be competitive. This triggers the emergence of technological determinism and its application in the management of education funding; that is, with e-budgeting. The results of the Nugraha and Wibowo's (2020) study dispute the merits of applying e-budgeting in fund management in educational entities, in which the improved accountability and transparency compared to traditional fund management systems, proposes efficient advantages, such as the use of resources and transparent supervision and timelier reporting. Kunnathuvalappil Hariharan (2019), by assessing the theoretical tie between financial performance and budgeting, report five ways by which effective budgeting results in improved financial performance. These ways include (a) coordination and communication; (b) drivers; (c) estimation and monitoring the performance; (d) objective orientation; (e) cost management. Taking all into consideration, it might be expected that using the latest IT is willing to determine successful budgeting through cost-effectiveness and timely and accurate preparation of the budgets.

Furthermore, Hood et al. (2008) investigates the impact of bureaucracy at the civil-service-wide level and the departments taken separately and severally. Their evidence indicates that, while the budget/utility approach cannot be dismissed entirely, the link between budgetary increases and bureaucratic utility is neither clearly demonstrable nor universally applicable. Steffen et al. (2019) demonstrate how a budget crisis can exert significant reform by business bureaucracies and by their member states. However, lacking synchronised and joint action by both practitioners leads to limited or deficit of reform. Their findings propose an actor-centred and dynamic hypothesis of business reform emphasising the need for joint crisis realisation and cooperative efforts of both bureaucracies and states as the key factors for success in reform. Therefore, reforming the bureaucracy is willing to determine the budgeting success in organisations. Utz (2010) proposes that the type of function in a section as a previous variable and the recognised liberty of a public CEO may allocate the understood outcome of reform. Other elements, including legislature's behaviour, the manager of the project and the previous occupation of managers, may play a less critical role. Lannai and Amin (2020), studying the impact of budget absorption, financial regulations, bureaucratic environment, apparatus competence and organisational commitment to the absorption of budget, find that community rulings always control all potential action and activity as the essence in the planning stage and practicing procedure of budgeting. The analysis of Sara et al. (2021) demonstrates that a deficit of integrated values and aims and communication between a predictive analysis of possibilities and actors may limit the building of causalities, thus threatening the victorious establishment of the performance-based budgeting system.

## 2.2. Budgeting Issues and Challenges in Iraq

The fiscal policy in Iraq was based on the traditional budget (budget items), and some countries in the world have abandoned this type of budget because this type of budget only focuses on the amount of public spending, which causes many economic crises, especially the accumulated deficit in the budget of the country (Elmacı and Tutkavul 2020). The general budget in Iraq is the same as the previous fiscal year, which is adjusted by the increase or decrease in the world price of oil. In the combination of the results of moving from the bottom to the top due to the country's budget, it faces problems and obstacles in its preparation and implementation, especially when there is a financial or economic crisis or a drop in oil prices. The budgets drawn up after 2003 show the dominance of oil revenues over public revenues and the low share of non-oil activities, which indicates the nature of the large and permanent imbalance that Iraq's budget suffered after 2003, and in turn, shows the fragility of the Iraqi economy and its increasing dependence to oil (Yasmin

and Kamal 2021). Since the financing of the budget is dependent on oil revenues, which constitute more than (90%) of the total revenues, this causes the public budget to be affected by fluctuations in international oil prices. Therefore, any drop in oil prices will cast a shadow on the economic reality of the country, which will negatively affect the well-being of citizens and their living facilities.

What distinguishes the budget situation in Iraq after 2003 is that a high percentage of the budget is allocated to operational costs, and considering the country's needs, which are in the construction and reconstruction phase, a small percentage of investment costs are allocated to this issue. Since salaries and wages are a large part of public expenditures, firstly due to the size of the public sector and secondly due to administrative laxity as well as the existence of cases of administrative corruption and a large number of security costs, this percentage specified in the budget prevents the achievement of the assumed goals of reconstruction or combating unemployment. (Al-Dhubaibi 2021; Hamad and Al-Majjai 2018). One of the characteristics of the public budget is the low tax burden in Iraq, which indicates weak tax performance and, as a result, weak tax revenues in Iraq. Most non-oil revenues, such as taxes and customs duties, are mainly related to oil revenues. Taxes are levied on revenues from oil revenues and customs duties. Moreover, it is imposed on imported goods provided from Iraq's oil revenues, so oil is the focus of providing Iraq's public budgets (Al-Atabi and Kazem 2018).

### 2.3. The PESTEL Model and Hypothesis Development

PESTEL analysis is a tool used to identify and analyse the main drivers of change in the strategic and business environment. This tool evaluates the current environment and possible changes (Wisetsri et al. 2021). PESTEL is an analytical tool for business, strategy, marketing, product development, and organisational planning (Shilei and Yong 2009; Yüksel 2012). PESTEL stands for political, economic, social, technological, environmental, and legal factors (Wajid and Zafar 2021). The PESTEL model has the following two primary functions for the organisation: 1—identifying the organisation's internal environment and 2—providing data and information that enables the organisation to predict the situations and conditions it will face in the future (Martinez-Contreras et al. 2022). PESTEL analysis is a prerequisite analysis that should be used in strategic management and includes collecting and depicting information about internal and external factors. PESTEL analysis aims to find common influencing factors and changes in the external environment and to defend against these changes better than competitors. PESTEL analysis results in understanding the overall picture surrounding the organisation (Yüksel 2012).

Therefore, it is expected that it is possible to establish operational budgeting in Iraqi public universities, so the main hypothesis of the research is formulated as follows:

Being on the international stage increases the sensitivity of any institution, including the university, to changes in the political environments of different countries. In the political context, the key to success in a dynamic international environment is the diversification of systematic risks (Wildavsky 2018). The political environment of a country includes several factors, the most important of which are political stability, policy changes, and protection of intellectual property (Wildavsky and Horowitz 2018). The political stability of an academic environment provides its growth and excellence. Decreasing political stability undermines university administrators' performance and damages society's trust. Frequent changes in government policies lead to uncertainty in the implementation of the budget and harm the performance of for-profit and non-profit institutions (Birskyte 2019). Therefore, policy changes can also change the implementation of operational budgeting in universities (Holmen and Pramborg 2009; Yüksel 2012). So, the first sub-hypothesis was developed as follows:

**Hypothesis 1.** *From a political point of view, it is possible to establish operational budgeting in Iraqi public universities.*

Economic factors refer to variables such as interest rate, tax changes, economic growth, inflation rate, domestic and foreign economic situation, unemployment percentage, economic stability, and the budget deficit (Sureka et al. 2021). Determining the overall economic setting of the country, such as the exchange rate, interest rate, labour market conditions, and inflation rate, is essential for capital budgeting (Kengatharan 2018; Sureka et al. 2021). The economic development of a country directly affects the economic performance of universities (Klofsten et al. 2019). To the extent that the government has spent on developing basic infrastructure, including universities, developed infrastructure facilitates the business environment and will increase the growth potential in the respective country. Therefore, such costs should be spent and controlled through a logical channel and with proper planning, such as operational budgeting, for creating broad growth opportunities. Thus, it is clear that the establishment of operational budgeting should also be analysed from the economic channel. Therefore, the second sub-hypothesis was developed as follows:

**Hypothesis 2.** *From an economic point of view, it is possible to establish operational budgeting in Iraqi public universities.*

Social and cultural factors refer to the change in demand for products, employment status, social security, social classes, attitude to business, cultural aspects, and professional attitude (Safdarian 2009). Norms, values, and social trends strongly influence the organisational culture of universities. Understanding social trends, power structures, consumer spending patterns, and shared beliefs can help operational budgeting (Marjani and Javidan 2012; Mohammadi and Mahmudi 2015; Ismanov and Axmadaliev 2021). PESTEL analysis can use the information obtained from the analysis of social and environmental factors in operational budgeting to target service-recipient groups and increase the attractiveness of the service offered to the university community (Vázquez et al. 2018). Hence, the third sub-hypothesis was developed as follows:

**Hypothesis 3.** *From the social point of view, it is possible to establish operational budgeting in Iraqi public universities.*

Technology is the fourth factor of PESTEL's analysis. The rapid development of technology and the diffusion of technology throughout the world have increased the importance of understanding technological factors during strategic decision-making. A detailed analysis of the technology environment can significantly help capital budgeting (Gholizadeh and Kohanrooz 2015). The development of information and communication technology in line with the implementation of operational budgeting in universities has led to the adoption of more efficient techniques (Iurieva et al. 2022). Moreover, using social media in the university environment has strengthened control in budgeting. Capital budgeting can take advantage of the opportunities presented by social media marketing to improve performance (Hu et al. 2020). Technology trends can be used to initiate creative social media campaigns for university development. So, the fourth sub-hypothesis was developed as follows:

**Hypothesis 4.** *From a technological point of view, it is possible to establish operational budgeting in Iraqi public universities.*

Increasing environmental awareness and changing weather conditions have made "environmental analysis" an essential part of the PESTEL analysis. Environmental standards, laws, and regulations are different in different markets. Operational budgeting requires the organisation to carefully consider these differences to avoid unfavourable situations (Iurieva et al. 2022). Before deciding to provide any service in the university, a detailed analysis of its environment is necessary. Environmental factors such as recycling

and waste management, climate and weather conditions, attitude towards environmentally friendly products, and environmental regulations are considered in operational budgeting to prevent the reduction of resources (Aithal 2017). So, the fifth sub-hypothesis was formulated as follows:

**Hypothesis 5.** *From an environmental point of view, it is possible to establish operational budgeting in Iraqi public universities.*

The sixth factor of the PESTEL analysis is the importance of legal factors. Operational budgeting cannot be successful without a detailed study of the university's legal environment and regulatory structure (Dehghanzadeh et al. 2021). Therefore, in order to avoid serious problems, a careful evaluation of legal aspects is necessary (ter Bogt and van Helden 2011; Najafi and Ahmadkhani 2012). Lack of sufficient information in this field can create unfavourable conditions for operational budgeting, including damage to competitive advantage due to a violation of intellectual property rights and damage to the organisational image due to a violation of service consumer protection standards. Therefore, when establishing operational budgeting, legal factors should be considered (Issa et al. 2010). So, the sixth sub-hypothesis was developed as follows:

**Hypothesis 6.** *Establishing operational budgeting in Iraqi public universities is legally possible.*

### 3. Material and Methods

Considering that the purpose of this paper is to investigate the feasibility of establishing operational budgeting in Iraqi public universities, this paper is practical in terms of objective. Since the methods of library study and review of texts as well as field methods, such as questionnaires, have been used, the purpose is to know the traits, preferences, characteristics, and behaviours of people in the society by referring to them, it can be said that the current research is a descriptive survey, based on the nature and research method. The data required was collected through a researcher-made questionnaire. Since the structure and wording of the questionnaire questions can have a great effect on the validity of the questionnaire and the subjects, a preliminary test of the questionnaire was conducted. Hence, before multiplying and distributing the questionnaire among the people of the statistical community, the questionnaire was distributed among several experienced people. They were asked to give their opinion regarding the content of the question while answering the questions of the questionnaire so that any problems and ambiguities in how the questions are expressed, are resolved, and the final revision of the questionnaire questions is performed. The research questionnaire with 40 questions with a 5-point Likert scale (very little to very much) was finally approved. In this paper, to check the standard of the research questionnaire, its validity and reliability were examined. Face validity was used to check the validity of the questionnaire. The questionnaire was presented to 3 accounting experts who played a significant role in implementing the new financial system at the provincial and national levels to measure its validity. After several modifications in compliance with laws and regulations and the relevance of the questions to the subject under investigation, the validity of the questionnaire was finally approved formally. Moreover, to evaluate the reliability of the questionnaire, Cronbach's alpha method was used. The value of Cronbach's alpha was estimated to be 0.949, indicating the research questionnaire's acceptable reliability.

#### *Statistical Population*

The statistical population under investigation is the public universities of Iraq (35 universities) according to the ranking system of the Scientific Evaluation and Monitoring Department of the Ministry of Higher Education and Scientific Research in 2022. Due to the geographical dispersion of public universities in Iraq and the lack of necessary sub-structures to access their managers and experts to collect the required data, the first 15



universities in the mentioned list were referred. These universities are Baghdad, Al-Mustansariyyah, Basra, Babol, Kufa, Tehsil, Diyala, Nahrin, Al-Fran Al-Awsat Technical University, Wasit, Karbala, Al-Muthani, Tikrit, Qadisiyah, and Al-Iraqiyya. For this purpose, all financial managers, accounting experts working in financial affairs, and budgeting experts in these universities, 250 people according to the initial estimate, were used as a statistical sample. Of a total of 250 distributed questionnaires, 202 were received, of which four were distorted, so 198 were analysed. Based on this, the return rate of the questionnaires from the 250 distributed questionnaires is about 79%.

As seen in Table 1, 56% of the education level is related to a master's degree. At the same time, about 29 percent of the participants have a doctorate. Moreover, regarding gender and years of service, the highest frequency is related to the male gender and experience of 15 years and above. In total, 38% of participants are 40 years old and above. In total, 16% of participants were budget experts, and 92% worked in administrative and financial occupations.

**Table 1.** The distribution of the number of research participants.

Criteria		No.	Frequency Percentage
Gender	Male	135	68
	Female	63	32
Education	Associate degree	2	1
	Bachelors	28	14
	Masters	110	56
	P.H. D	58	29
Work experience	Less than 5 years	13	7
	Between 5 and 10 years	25	13
	Between 10 and 15 years	78	39
	15 years and above	82	41
Age	Less than 30 years	11	6
	Between 30 and 35 years	41	21
	Between 35 and 40 years	70	35
	40 years and above	76	38
Organisational position	Senior accountant	39	19
	Head of Finance	3	2
	Senior budget expert	5	3
	Master of Accounting	14	7
	Budget expert	33	16
	Accountant	38	19
	Expert in charge of the budget	22	11
	Accounting expert	17	9
	Accounting manager	15	8
	Financial assistant	12	6
Job level	Administrative and Financial	183	92
	Supervisor	3	2
	Management/administrative-educational	3	2
	Management/administrative and financial	9	4

The results of the descriptive statistics of the data collected from the questionnaire with a 5-point Likert scale (1 = very little to 5 = very much) for each variable as described in Table 2. As it is known, the average of most questions is more than two, which shows that most of the items were crucial from the participant's point of view. The results of the Kolmogorov–Smirnov test on the variables (items) are specified in Table 2. Considering the calculated significance level, which is less than 0.05, it can be said that the distribution

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of research variables is abnormal, there is no prerequisite for using parametric tests, and non-parametric tests should be used.

**Table 2.** The Descriptive statistics of research variables and hypothesis testing results.

Variable	Item No.	Item	Mean	Variance	Standard Deviation	Minimum	Maximum	Normality Statistic (Z)	Significance Level	Sign Test Statistics	Significance Level	Result	Freidman Statistic	Rank
Political	Q1	The political entrenchment of management (macro-political conditions governing universities)	4.354	0.747	0.865	1	5	0.318	0.000	−12.177	0.000	Significant	22.41	9
	Q2	Increasing the transparency of information provided for the benefit of stakeholders	4.490	0.444	0.666	2	5	0.359	0.000	−13.268	0.000	Significant	24.37	5
	Q3	The stability of senior university presidents	4.253	0.880	0.938	1	5	0.302	0.000	−11.209	0.000	Significant	21.44	17
	Q4	Strategic plans of the university	4.106	0.765	0.875	1	5	0.270	0.000	−11.296	0.000	Significant	19.00	29
Economic	Q5	Increasing economic savings at the university level	4.005	1.005	1.003	1	5	0.225	0.000	−9.834	0.000	Significant	18.32	31
	Q6	Changes in macroeconomic indicators (such as inflation rate, currency, unemployment, gross domestic product, etc.) to plan accurately and with a high-reliability factor	4.530	0.433	0.658	3	5	0.384	0.000	−13.342	0.000	Significant	24.71	2
	Q7	Income and expenses in subordinate units	4.490	0.556	0.745	1	5	0.364	0.000	−13.044	0.000	Significant	24.41	4
Social	Q8	The culture that governs the university (including cooperative and working group	4.389	0.625	0.790	2	5	0.331	0.000	−12.367	0.000	Significant	23.06	7

	culture and trust between members)													
Q9	Clear explanation of the position and responsibility of operational budgeting	3.702	1.500	1.225	1	5	0.207	0.000	−6.805	0.000	Significant	16.16	39	
Q10	Controlling the biases affected by the inherent personality of the relevant officials in the implementation of the operational budgeting system	4.091	1.048	1.023	1	5	0.242	0.000	−10.615	0.000	Significant	20.31	22	
Q11	Alignment of operational budgeting with the goals of the organisation	4.147	0.881	0.939	1	5	0.260	0.000	−10.724	0.000	Significant	20.28	23	
Q12	Education related to accounting in the public sector of university employees	4.260	0.768	0.876	1	5	0.280	0.000	−11.708	0.000	Significant	21.15	20	
Q13	Resistance (preventing) employees from accepting the establishment of an operational budgeting system	4.174	0.852	0.923	1	5	0.254	0.000	−11.231	0.000	Significant	20.32	21	
Q14	The sense and thinking of creating innovation and the high speed of evolution and experience	3.874	0.984	0.992	1	5	0.243	0.000	−9.041	0.000	Significant	16.59	36	
Q15	Management support	3.913	1.187	1.090	1	5	0.236	0.000	−8.984	0.000	Significant	17.79	34	

Technology	Q16	Employees' understanding of value creation and improvement of university activities	3.955	1.191	1.091	1	5	0.230	0.000	−8.771	0.000	Significant	18.02	32
	Q17	Creating inter-university budgeting specialized organisations and associations	4.121	0.940	0.969	1	5	0.247	0.000	−10.492	0.000	Significant	19.90	26
	Q18	Creating technology infrastructure, strong communication network, and advanced equipment	4.318	0.634	0.796	2	5	0.289	0.000	−12.190	0.000	Significant	22.06	12
	Q19	Existence of appropriate and high-quality practical guidelines	4.248	0.685	0.827	1	5	0.263	0.000	−11.985	0.000	Significant	21.45	16
	Q20	Making changes in accounting systems	4.025	1.081	1.040	1	5	0.235	0.000	−9.869	0.000	Significant	19.38	28
	Q21	Localisation of university administrative systems	4.313	0.825	0.908	1	5	0.306	0.000	−11.532	0.000	Significant	22.37	10
	Q22	Expertise, skill, and capability of relevant officials in implementing operational budgeting system	4.141	1.218	1.104	1	5	0.272	0.000	−10.497	0.000	Significant	21.16	19
	Q23	To what extent are the accounting department's existing capacities effective in establishing an operational budgeting system in the university?	3.786	1.513	1.230	1	5	0.217	0.000	−6.950	0.000	Significant	16.31	38
	Q24	Available capacities in the Ministry of Finance	3.894	1.263	1.124	1	5	0.221	0.000	−8.199	0.000	Significant	17.98	33

Environ- mental	Q25	Using the experiences of other countries and interacting with the international community	4.051	1.287	1.134	1	5	0.279	0.000	−8.769	0.000	Significant	19.71	27
	Q26	The amount of bureaucracy in the administrative affairs of the university	4.434	0.734	0.857	1	5	0.362	0.000	−12.149	0.000	Significant	24.80	1
	Q27	Formation of commissions and specialized groups related to the budget, including the budget consolidation commission headed by the university president	3.760	1.476	1.215	1	5	0.209	0.000	−6.921	0.000	Significant	17.21	35
	Q28	The size of the university (it means the size the number of employees, faculty members, students, achievements, and area of the university)	4.219	0.982	0.991	1	5	0.295	0.000	−10.689	0.000	Significant	21.60	15
	Q29	Determining the limits of the responsibility of relevant officials in the implementation of the operational budgeting system	4.076	1.187	1.090	1	5	0.272	0.000	−9.222	0.000	Significant	20.02	24
	Q30	Strong participation of experts	4.327	0.724	0.851	1	5	0.291	0.000	−11.975	0.000	Significant	22.37	11
	Q31	Using the experiences of domestic executive bodies that have suc-	3.485	1.774	1.332	1	5	0.231	0.000	−4.982	0.000	Significant	14.13	40

Legal		ceeded in implementing operational budgeting												
	Q32	The need for universities to be accountable to society	3.657	1.607	1.268	1	5	0.223	0.000	−5.506	0.000	Significant	16.41	37
	Q33	Using the consulting services of financial experts to determine the performance index to adjust the operating budget	4.056	1.222	1.106	1	5	0.255	0.000	−9.676	0.000	Significant	19.97	25
	Q34	To what extent is the coordination between the organisation and the employees?	4.162	1.192	1.092	1	5	0.309	0.000	−10.339	0.000	Significant	21.26	18
	Q35	Government support through the creation of legal requirements	4.265	1.027	1.013	1	5	0.317	0.000	−10.885	0.000	Significant	22.75	8
	Q36	Existence of a proper salary and benefits system	4.182	1.084	1.041	1	5	0.289	0.000	−10.599	0.000	Significant	21.69	14
	Q37	To what extent is there a guarantee about the compliance of operational budgeting with its standards	4.268	0.684	0.827	2	5	0.272	0.000	−11.851	0.000	Significant	21.85	13
	Q38	To what extent are the rulings and instructions of the board of directors	3.889	1.246	1.116	1	5	0.219	0.000	−8.567	0.000	Significant	18.65	30
	Q39	Laws and circulars issued by relevant ministries, including finance and science	4.404	0.841	0.917	1	5	0.170	0.000	−11.618	0.000	Significant	24.09	6

Q40	Revision of financial and transaction regulations of the university and granting the necessary legal powers and requirements to establish new budgeting and accounting systems and programs.	4.444	0.705	0.840	2	5	0.184	0.000	−12.000	0.000	Significant	24.56	3
	Political								−12.643	0.000	Significant	3.801	3
	Economical								−13.357	0.000	Significant	4.058	1
	Social								−11.458	0.000	Significant	2.992	5
	Technology								−12.034	0.000	Significant	3.381	4
	environmental								−11.028	0.000	Significant	2.894	6
	Legal								−13.139	0.000	Significant	3.874	2



#### 4. The Results

The intensity of respondents' agreement was assessed using the one-sample sign test. Since the points considered to measure the level of the agreement are in the range of 1–5, to ensure the intensity of agreement, a score of three and above (the average of the spectrum) was chosen as the evaluation criterion. In this test, if the calculated  $z$  value is more than 1.96, the level of agreement is strong, and there is a significant difference with the score of 3 as the point of indifference. If the calculated  $z$  is smaller than the mentioned number, the level of agreement is not strong, and there is no significant difference with the score of 3. The findings in Table 2 in relation to the sign test indicate that the  $z$ -statistics of all the items are more than 1.96, indicating the respondents' strong agreement with these factors mentioned. In other words, the analysis of the research subjects also demonstrates that all research variables are significant influencing factors in establishing an operational budgeting system.

Moreover, to examine the sub-hypotheses regarding the influence of the dimensions of the variables (political, economic, social, technological, environmental, and legal) on the possibility of establishing operational budgeting in Iraqi public universities, first, the average answers of the respondents to the considered dimensions were obtained. Then they were checked using the sign test. For example, since the political dimension includes 4 questions, the total number of answers of 198 respondents to the first to fourth questions are calculated separately. Then it is divided by 4 (the number of questions) to calculate the average of each question. A score of 3 and above (average of the spectrum) was chosen as the evaluation criterion to ensure the intensity of agreement. As can be seen, the statistics obtained from the political, economic, social, technological, environmental, and legal dimensions are respectively  $-12.643$ ,  $-13.357$ ,  $-11.458$ ,  $-12.034$ ,  $-11.028$ , and  $-13.139$ , all of which have a significance level of less than 0.000, indicating the confirmation of all six hypotheses.

Finally, since none of the hypotheses was rejected, it can be claimed that there is a great possibility to establish operational budgeting in Iraqi public universities.

Moreover, based on the results of the Friedman test in Table 2, it can be seen that the most critical and effective variables of the study are as follows: (1) the amount of bureaucracy in the administrative affairs of the university; (2) changes in macroeconomic indicators (such as inflation rate, currency, unemployment, gross domestic product, etc.) to plan accurately and with a high reliability factor; (3) revision of the financial and transaction regulations of the university and granting the necessary legal powers and requirements to establish new budgeting and accounting systems and programs; (4) income and expenses in subordinate units; (5) increasing the transparency of the information provided for the benefit of the beneficiaries; (6) laws and circulars issued by the respective ministries, including finance and science; (7) the culture that governs the university (including the culture of collaborative and working groups and trust between members); (8) government support through creating legal requirements; (9) the political entrenchment of management (macro-political conditions are governing universities); (10) localisation of university administrative systems to have more priority for establishing operational budgeting in Iraqi public universities. Additionally, it is clear that, respectively, (1) using the experiences of executive bodies in the country that was successful in the implementation of operational budgeting; (2) a clear explanation of the position and responsibility of operational budgeting; (3) the capacities available in the Court of Accounts; (4) the need for universities to be accountable to the society was less critical from the point of view of the respondents.

Moreover, ranking the dimensions indicates that economic, legal, political, technological, social, and environmental dimensions are more critical from the respondents' point of view.

As it is reported in Table 2, the most influential item of the political dimension might be "Increasing the transparency of information provided for the benefit of stakeholders",

suggesting that informativeness and making the potential stakeholders aware of the services and financial operation of organisations may assist them to improve their planning and budgeting system. In this regard, factors including creating vertical and horizontal alliances between beneficiaries, the preparation of legitimate data, legal approval and international funding are among the mainstreams (Carlitz 2013). Joyce (2008) also believes that international monetary funds and advanced standards such as public availability of budget information, the openness of budget operation and reporting are among the influential items that may improve the budgeting system through transparency and political connections.

Furthermore, the results of sub-dimensions of the economic aspect show that Q6 indicates that “Changes in macroeconomic indicators (such as inflation rate, currency, unemployment, gross domestic product, etc.) in order to plan accurately and with a high-reliability factor” is perceived as the most effective item on the successful budgeting system. Supportively, it is argued that the competitive environment and uncertain situations may influence the employment of predictions (Sandalgaard 2012). Moreover, Fischer (1993) shows that improvement is negatively incorporated with great budget deficits, inflation, and fluctuating exchange markets. His further evidence argues that the underlying reasons for growth come from the macroeconomic policy. The framework he proposed increases the possibility of recognising the reasons for these effects as follows: inflation may preclude growth through lower productivity rate and investment; budget deficits also posit barriers to the incremental rate of both productivity and capitalisation. Niels and Lensink (2001) also discuss that budget deficits, government consumption, tax payments and the inflation rate significantly influence capital flight. Collectively, it is expected that lacking economic resources and uncertainty has a negative impact on effective budgeting systems, which in turn may reduce the operational and financial outcome of universities.

Alternatively, the social dimension, consisting of 10 questions, reveals that the “Culture that governs the university (including cooperative and working group culture and trust between members)” has the most important impact on the respondents’ views. Meaning not only external factors such as political and economic issues are likely to determine successful budgeting, but also internal elements, consisting of the establishment of an efficient interaction among the organisational members and improvement of organisational culture, are willing to determine a successful budgeting system. Raghunandan et al. (2012) demonstrate that the impact of individuals’ behaviour is not deniable on the success of management control systems, particularly the budgeting process. Forrester and Adams (1997) Forrester and Adams (1997) argue that reforming the budgeting system needs attention to the organisational environment, particularly the dynamics of human behaviour. Moreover, they argue that planned organisational change must be considered in this regard, which consists of organisational culture and behavioural varies. Goddard’s (1997) results suggest that organisational culture is a critical influence, professional culture is an unremarkable influence, and national culture seems to have low or no impact on the budgeting processes.

Further findings about the technology show that Q18, which is “Creating technology infra-structure, strong communication network, and advanced equipment”, is the most effective feature. Accordingly, it is argued that this is important to discuss because one of the essential elements in implementing the education process is the existence of funds. Fund budgets need to be managed and used appropriately to produce quality education. Educational providers are required to carry out education properly; they are also demanded by the advancement of the times to be competitive. This triggers the emergence of technological determinism and its application in the management of education funding; that is, with e-budgeting. The results of the Nugraha and Wibowo’s (2020) study dispute the merits of applying e-budgeting in fund management in educational entities, in which the improved accountability and transparency, compared to traditional fund management systems, proposes efficient advantages such as the use of resources and transparent

supervision and timelier reporting. Kunnathuvalappil Hariharan (2019), by assessing the theoretical tie between financial performance and budgeting, report five ways by which effective budgeting results in improved financial performance. These ways include (a) co-ordination and communication; (b) drivers; (c) estimation and monitoring the performance; (d) objective orientation; (e) cost management. Taking all into consideration, it might be expected that using the latest IT is willing to determine successful budgeting through cost-effectiveness and timely and accurate preparation of the budgets.

Furthermore, “The amount of bureaucracy in the administrative affairs of the university” is the most critical and effective item among environmental issues. It denotes that the greater amount of bureaucracy is likely to impact budgeting efficiency. Supportively, Hood et al. (2008) investigated the impact of bureaucracy both at the civil-service-wide level and at the level of departments taken separately and severally. Their evidence indicates that, while the budget/utility approach cannot be dismissed entirely, the link between budgetary increases and bureaucratic utility is neither clearly demonstrable nor universally applicable. Steffen et al. (2019) demonstrate how a budget crisis can exert significant reform by business bureaucracies and by their member states. However, lacking synchronised and joint action by both practitioners leads to limited or deficit of reform. Their findings propose an actor-centred and dynamic hypothesis of business reform, emphasising the need for joint crisis realisation and cooperative efforts of both bureaucracies and states as the key factors for success in reform. Therefore, reforming the bureaucracy is willing to determine the budgeting success in organisations.

Finally, we find that the legal system is mostly formed by question number 40, stating that “legal powers and requirements to establish new budgeting and accounting systems and programs” impact the system. Lannai and Amin (2020), studying the impact of budget absorption, financial regulations, bureaucratic environment, apparatus competence and organisational commitment to the absorption of budget, find that community rulings always control all potential action and activity as the essence in the planning stage and practicing procedure of budgeting. The analysis of Sara et al. (2021) reveals that a failed harmonised communication, worth and objectives between an illusionary and actor analysis of factual capabilities limit the creation of causalities, therefore threatening the appropriate exerting of the reform of performance-based budgeting. Additionally, the auditors, as the legal agencies, are expected to react differently to implementing operational budgeting to rectify agency conflict between various stakeholders (Salehi et al. 2019; Dae-migah 2020a). Previous findings support our results in several channels, as discussed separately.

## 5. Discussion and Conclusions

Operational budgeting in universities plays a significant role in planning, management control, and value creation. In Iraq, one of the necessities of reforming the structure of essential parts of the society, including universities, is to reform the methods of budgeting and distribution of resources. Therefore, the current research seeks to answer whether it is possible to establish operational budgeting in the Iraqi public university based on the PESTEL model. The results of hypothesis testing showed that all the items and aspects affect the establishment of operational budgeting in Iraqi public universities, and the research hypotheses were confirmed. In other words, it was found that the political, economic, social, technical, environmental, and legal factors identified in the current study are very important for the establishment of operational budgeting in Iraqi public universities, and it is better than the legislators, and budget planners prioritise these factors and rely on them in making decisions; because these drivers have been identified and investigated in the strategic environment of universities and based on the current conditions in Iraq. The findings supplement the results of Mohammadi and Mahmudi (2015); Aithal (2017); Wildavsky (2018); Birskyte (2019); Marjani and Javidan (2012); Ismanov and Axmadaliev (2021); Dehghanzadeh et al. (2021).

With the investigations carried out in this article, we finally realise that those in charge of operational budgeting in the university should reduce the amount of bureaucracy in the administrative affairs of the university and pay attention to the changes in macroeconomic indicators (such as inflation rate, currency, unemployment, gross domestic product, etc.) to plan accurately and with a high confidence factor in budgeting. Moreover, the university's financial and transaction regulations, the granting of powers, and necessary legal requirements to establish new budgeting and accounting systems and programs should be reviewed. The income and expenses in the subsidiary units should be clearly defined, and the transparency of the information provided should be increased for the benefit of the beneficiaries. Laws and directives issued by relevant ministries, including finance and science, should be analysed, and the culture governing the university should be strengthened (including cooperative and working group culture and trust between members). It was also found that the government's support through the creation of legal requirements and the political entrenchment of the management (macro-political conditions governing the universities) are significant for establishing operational budgeting in Iraqi public universities. Finally, it was found that the correct establishment of operational budgeting requires the localisation of the university's administrative systems.

Based on the study's findings, it is suggested that an independent organisation outside the university be selected with experts who are also familiar with the internal operations of the university and can adjust the executive budget in that organisation with the cooperation of some personnel inside the university. It should be noted that this independent institution should have enough power to eliminate administrative bureaucracies. University administrators should try to establish two-way communication with officials and higher officials so that they can have sufficient support from the government. As mentioned, the financial and transaction regulations of the university should be revised to design operational budgeting, so it is suggested to use the expertise and experience of other countries where this plan has been implemented in their universities.

Organisational culture is the foundation of any change in the organisation. To create a change in the employees' view considering the effectiveness of the budgeting method in reaching the organisation's main goals and also to attract their cooperation to implement this change, it is recommended that this change be administrative and mandatory in the university at first. Then the organisational culture should be modified and institutionalised. The operational budgeting technique requires that the executive departments be adjusted according to their working methods. With the introduction of this plan to the university, it is possible to add the necessary departments, remove and liquidate them, or hand them over to the private sector. Therefore, for the university to be more responsive and efficient, restructuring at the university level will be an inevitable necessity. In general, it was found that for the implementation of operational budgeting in Iraqi public universities, the cooperation and accompaniment of university administrators with higher institution managers, revision of regulations, as well as the removal of solid and bureaucratic rules within the organisation, and more flexibility are greatly needed. The following hypotheses and related findings are reported in Table 3.

**Table 3.** The hypotheses and obtained results.

Hypothesis Number	Definition	Result
Hypothesis 1	From a political point of view, it is possible to establish operational budgeting in Iraqi public universities.	Accepted
Hypothesis 2	From an economic point of view, it is possible to establish operational budgeting in Iraqi public universities.	Accepted
Hypothesis 3	from the social point of view, it is possible to establish operational budgeting in Iraqi public universities.	Accepted

Hypothesis 4	From a technological point of view, it is possible to establish operational budgeting in Iraqi public universities.	Accepted
Hypothesis 5	From an environmental point of view, it is possible to establish operational budgeting in Iraqi public universities.	Accepted
Hypothesis 6	Establishing operational budgeting in Iraqi public universities is legally possible.	Accepted

One of the limitations of this research is the inherent limitation of the questionnaire; in this way, the views of the respondents are not accurately reflected. Since the research using questionnaires examines the phenomenon under study in a specific context, the possibility of generalising the research findings is limited to a particular context, and it is necessary to be careful. Moreover, the lack of access to all managers and experts of all 35 public universities was another limitation of the research.

Respecting the outcome of this paper, several channels might be proposed for future researchers. As one of the most important influential aspects of budgeting is behavioural and cultural sub-dimensions, future researchers may evaluate several psychological characteristics such as narcissism, overconfidence, and myopia of universities' authorities on the level of accuracy and practicability of prepared budgets. Furthermore, the casual association between economic and environmental issues with operational budgeting might be in the interest of macroeconomists and environmentalists. As it is documented in the literature that microeconomic indicators predict power in macroeconomic indices such as GDP growth dispersion (Daemigah 2020b) and unemployment rate (Salehi et al. 2021).

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