



Asociación  
Cuadernos  
de economía



## ARTÍCULO

# The Impact of Adopting BOT on Rationalizing Investment Budget Expenditures in Light of the Legislative Challenges to Its Implementation: An Analytical Study At Tikrit University

Zeyad Mshhain Abdullah

PhD Candidate at Institute of Higher Commercial Studies in Sousse, University of Sousse, Tunisia.

ORCID iD: <https://orcid.org/0000-0001-8042-1101>

Email: [zeyad83@tu.edu.iq](mailto:zeyad83@tu.edu.iq)

\*Corresponding Author Email: [zeyad83@tu.edu.iq](mailto:zeyad83@tu.edu.iq)

### Jel Codes:

### Keywords:

BOT Method,  
Rationalization of  
Expenditures, Investment  
Budget, Legislative  
Challenges, Education  
Sector in Iraq.

**Abstract:** The principal aim of this research endeavour was to elucidate the efficacy of the build, operate, and transfer (BOT) methodology in optimizing investment budget allocations amidst legislative impediments to its implementation. Employing a comprehensive purposive sampling technique, the study focalized on the population of Tikrit University, encompassing 194 individuals comprising academics, professionals, and administrators. Methodologically, a descriptive approach was employed, complemented by statistical analysis predicated upon data garnered from a structured questionnaire. The findings evinced a discernible correlation and influence between the adoption of the BOT model and the rationalization of investment budget disbursements. However, this influence was observed to attenuate in the face of certain challenges, underscoring the imperative of embracing the study's proposition as a precursor to espousing BOT over conventional budgetary paradigms.

Author Correspondence: [zeyad83@tu.edu.iq](mailto:zeyad83@tu.edu.iq)

<https://doi.org/10.32826/cude.v47i133.1316>

0210-0266/© 2024 asociación Cuadernos de economía. Todos los derechos reservados

## Introduction

The allocation of resources within the investment budget stands as a pivotal mechanism for governmental operations, bearing the weight of societal demands amidst burgeoning populations and the imperatives of sustainable urban development (Ameyaw & PC Chan, 2016). Moreover, the imperative of adapting to global shifts has necessitated a recalibration towards free market principles, alongside a revitalization of private partnerships to mitigate deficiencies in governmental efficacy and funding shortages (Lam & Yang, 2020). The dearth of funding and inefficiencies in governmental performance underscore the necessity of embracing the BOT method, given its capacity to bridge resource disparities and furnish essential financing while concurrently fostering quality and efficiency, thereby augmenting competition within the private sector for service provision and enhancing production capabilities (Phuyal, 2020).

From this vantage point, the quest for sustainable models ensues, aimed at rationalizing expenditures and fostering development through the adoption of free market principles and extrabudgetary financing avenues (Bogovac et al., 2021). The adoption of BOT emerges as a linchpin in ameliorating funding constraints and delivering public services efficiently and effectively, thereby achieving expenditure rationalization and sustainability (Tang et al., 2021). As a conduit for funding through collaborative partnerships for the design, construction, and management of public infrastructure, followed by subsequent transfer of ownership to the government, BOT epitomizes an avenue for rationalizing investment expenditures (Greer, 2020; Uner et al., 2018).

Broadly speaking, the rationale behind embracing the BOT framework is rooted in addressing resource constraints and alleviating the burden of investment outlays (Tsukada, 2019). Its significance transcends mere extrabudgetary financing and operational efficacy, extending to the fortification of sustainability imperatives (Xiong et al., 2020). The establishment of BOT hinges upon delineating roles, harmonizing interests, and ensuring enduring sustainability, constituting foundational tenets of its implementation (Azzopardi et al., 2021).

To mitigate the strain on investment budgets amid escalating governmental obligations and concomitant resource scarcities, coupled with inefficiencies in governmental operations and the dearth of effective expenditure rationalization strategies, numerous nations have turned to adopting BOT methodologies. This trajectory aligns with the emergent global paradigm advocating for private partnership strategies and the augmentation of market forces, alongside bolstering public sector efficiency by ceding partial managerial prerogatives to private entities. This paradigm shift entails a performance-oriented management ethos predicated on outcomes rather than mere outputs, imbued with a competitive ethos (Haque, 2020).

Despite the purported benefits of the BOT model, numerous studies have evidenced outcomes falling short of expectations (Ameyaw et al., 2016). Instances of partnership failures have been documented, often attributed to inadequate execution, such as deficient bid submissions and a prevailing dearth of competition and transparency, resulting in the selection of suboptimal solutions (Liu et al., 2016). This underscores the myriad

challenges inherent in partnerships, exacerbated by their protracted duration and the attendant ramifications of future challenges (Andreas A. Pramudya, 2022). Evidently, despite the touted advantages of BOT, its implementation may encounter a host of fundamental challenges across various classifications, with legislative hurdles assuming precedence owing to their significant impact on partnership strategy execution (Al-Saadi et al., 2022).

Iraqi universities aspire to adopt BOT frameworks for reconstruction endeavours, driven by the inadequacy of traditional financing mechanisms. However, this aspiration faces formidable obstacles. The nascent nature of such endeavours within the Iraqi context has engendered regulatory lacunae, marked by bureaucratic impediments and legal ambiguities concerning implementation and conflict resolution. Consequently, interpretations favouring vested interests over public welfare have proliferated, potentially dissuading private sector participation in such partnerships (Tsukada, 2019). Consequently, legislative hurdles in BOT implementation have increasingly garnered scholarly attention over time, prompted by numerous failed ventures in partnership endeavours (Osei-Kyei & Chan, 2017).

This study is significant due to its exploration of the role of the BOT method in rationalizing investment expenditures amidst legislative challenges. It addresses gaps in understanding by investigating how BOT can mitigate government deficits, enhance efficiency and quality, and provide essential financing. Moreover, it fills a scholarly void by examining BOT within the context of contractual budgeting as an alternative to traditional approaches, particularly in the Iraqi educational landscape, which has long grappled with wealth mismanagement despite possessing requisite resources (Al-Hasnawi et al., 2021).

Given Iraq's current crises, this study elucidates the impact of BOT on investment expenditure rationalization despite legislative hurdles. Its main question probes whether BOT indeed plays a role in this rationalization process, with the hypothesis positing a significant relationship between BOT adoption and rationalization of university investment budget expenditures.

This hypothesis stems from the recognition of the BOT method as a pivotal financing mechanism beyond traditional budget constraints. Governments, faced with escalating demands and limited resources, have turned to private partnerships as alternative financing sources, driven by technological advancements and expenditure pressures (Lam et al., 2020). BOT has emerged as a preferred option for project ownership and development, offering flexibility amidst spending priorities (Sresakoolchai & Kaewunruen, 2020), while facilitating quality and efficiency enhancements across planning, control, evaluation, and performance evaluation facets (Mohammad & Omar, 2020). Its strategic planning support is underscored by a systematic negotiation approach aimed at aligning diverse stakeholder needs and motivations to mitigate risks (Yeo & Tiong, 2000). Moreover, BOT contributes to strengthening oversight and performance efficiency by transcending individual country capacities and fostering a new paradigm of global governance prioritizing public interest over private, underpinned by international cooperation and ethical responsibility (Korab-Karpowicz, 2020).

Moreover, the proliferation of governmental administrative functions through the adoption of the BOT model, alongside its intricate multi-stakeholder dynamics and procedural

bifurcations, necessitated the delegation of powers and responsibilities. Embracing a decentralization approach became imperative, prompting a compelling need for performance review and evaluation (Haque, 2020). Governmental oversight over operations and outputs serves as a pivotal mechanism for ensuring performance assessment, thereby fostering efficient and high-quality implementation and accruing experiential insights for future project endeavours, thereby bolstering investment expenditure rationalization (Sresakoolchai et al., 2020). BOT serves as a cornerstone for engendering competitive advantage through the competitive market dynamics it fosters, facilitating enhancements in performance quality and efficiency, thereby contributing to investment expenditure rationalization (Tang et al., 2021). Furthermore, it amalgamates the experiential, knowledge, and institutional landscape understanding of the private sector, thereby enhancing project completion rates and diminishing instances of incomplete projects (Saad et al., 2021). Instilling a culture of innovation through the synergistic exploitation of competitive advantage dimensions while upholding transparency principles constitutes a fundamental determinant of BOT success (Yang et al., 2017).

Moreover, the private sector's commitment to innovation, coupled with its pursuit of maximal profitability, serves to fortify the competitive dimensions of the BOT framework. This competitiveness is contingent upon project success, thereby incentivizing the private sector to prioritize efficiency and quality, consequently rationalizing investment spending (Greer, 2020).

To fulfil the study's objectives, it was structured as follows: 1. Introduction, 2. Review of previous studies and formulation of hypotheses, 3. Research methodology, 4. Identification of research population and sampling, 5. Selection of research tools and measurement of variables, 6. Demographic analysis of research sample participants, 7. Descriptive analysis, 8. Comparison of current study results with prior research findings, 9. Conclusion.

## Literature Review and Hypothesis Forming

Upon scrutinizing the literature, it has become evident that numerous studies delve into the variables pertinent to this research, namely the BOT model, expenditure rationalization, and legislative challenges. Accordingly, this study aims to synthesize insights from these prior works to inform the formulation of hypotheses and elucidate key features thereof. By leveraging existing research findings and recommendations, this study endeavours to underscore the significance of BOT as a strategy for rationalizing investment expenditures.

In this vein, the study draws upon a selection of pertinent research, notably the works of Mohammad et al. (2020) and Greer (2020), which underscore BOT as an optimal mechanism for financing and managing strategic projects and services, particularly in light of budgetary constraints and the need for diversified funding sources. Such findings corroborate the hypothesis posited by this study, asserting the efficacy of BOT in rationalizing investment expenditures through extrabudgetary financing avenues. Furthermore, studies by Natalia et al. (2021) and Endo et al. (2021) emphasize strategic planning as pivotal for BOT success, facilitated by stakeholder coordination, organizational readiness, risk mitigation, transparency, and competitive achievement. These factors contribute to enhancing quality and efficiency, thereby aligning with the hypotheses of this study.

Moreover, Xiong et al. (2020) demonstrate BOT's capacity

to rationalize investment spending by prioritizing sustainability and operational efficacy over mere financing objectives. Lam et al. (2020) Lam et al. (2020) corroborate this suitability of BOT for high-cost projects, citing its transparency, innovation agility, and technological advancement as key strengths.

Lastly, Guillermo (2021) elucidates the positive correlation between competitive achievement within partnerships and the attainment of efficiency and effectiveness goals. This underscores the importance of fostering a legislative environment conducive to competition, thereby optimizing resource utilization and ultimately rationalizing investment expenditures, a premise fundamental to the hypotheses of this study.

Numerous partnership studies have revealed that the outcomes of BOT initiatives often fall below expectations due to legislative hurdles encountered (Ameyaw et al., 2016). Notably, research by Liu et al. (2016), Adjarko et al. (2018), and Al-Ghabban & Mahmoud (2016) has highlighted key legislative challenges. These include the contemporary nature of BOT contracts, resulting in a lack of clear regulatory frameworks in the Iraqi context, ambiguity regarding their legal classification as private or public law, and uncertainty regarding whether they are considered civil or commercial contracts. Moreover, the absence of protective legislation for emerging projects or industries raises concerns about the vulnerability of these partnerships to potential nationalization in the future. Additionally, regulatory changes and legal amendments can negatively impact investors' decisions to engage in such partnerships. Given these challenges and the findings of previous studies, the overarching hypothesis of this study posits that the BOT method positively influences the rationalization of investment expenses. Consequently, the main hypothesis asserts a relationship and impact between BOT and the rationalization of university investment budget expenditures in light of the legislative challenges encountered during its implementation:

(H1) Significant relationship exists between BOT, both collectively and individually, and rationalization of university investment budget expenditures, as corroborated by Greer (2020).

(H2) Significant relationship exists between BOT, both collectively and individually, and legislative challenges encountered in university implementation, as supported by Adjarko et al. (2018).

(H3) Statistically significant relationship exists between rationalization of investment budget expenditures and legislative challenges in BOT implementation at the university, as demonstrated by Ameyaw et al. (2016).

Regarding impact hypotheses:

(H4) Significant effect of BOT, both collectively and individually, in rationalizing university investment budget expenditures. This comprises three sub-hypotheses:

(H4.1) Significant effect of extrabudgetary funding dimension in rationalizing investment budget expenditures at the university, as evidenced by Mohammad et al. (2020).

(H4.2) Significant effect of efficiency and quality dimension in rationalizing university investment budget expenditures, as confirmed by Xiong et al. (2020).

(H4.3) Statistically significant effect of combined BOT method on rationalizing investment spending at the university, as validated by Mohammad et al. (2020).

## Research Methodology

In this section, both descriptive and quantitative analyses of the variables will be conducted, encompassing measures such

as means, standard deviations, and coefficients of variation for each variable. Hypotheses will be tested, and the results discussed accordingly. The study adopted a descriptive approach to elucidate the theoretical underpinnings and a statistical analysis approach to examine the practical implications. The questionnaire form was employed to gather information pertinent to the study's practical aspect, deemed the most suitable tool for this purpose.

The research focused on testing the role of the BOT method in rationalizing investment spending through extrabudgetary financing, as well as its potential to enhance quality and efficiency. The study was delimited theoretically to this scope. Regarding human and spatial boundaries, the sample comprised employees of Tikrit University, including academics and professionals, totalling 194 individuals. Finally, the temporal constraints of the research spanned from 2019 to 2023 AD.

### Research Population and Sample

The research domain pertains to the educational sector, specifically focusing on Tikrit University within the Republic of Iraq. The majority of the study's sample comprises individuals classified within the academic sphere, alongside professionals and administrators. This demographic composition signifies a robust foundation of academic knowledge and a wealth of professional expertise in accounting and administrative practices among the sample members. Such characteristics augment the level of awareness within the chosen sample, consequently enhancing the objectivity in evaluating the questionnaire variables' statements. Moreover, the substantial size and diversity of the study population mirror the extensive demands for goods and services within the university setting, indicative of the magnitude and breadth of investment expenditures required. This diversity and magnitude, in turn, contribute positively to the accurate representation of the research objectives in its outcomes.

The study population predominantly encompasses individuals specializing in accounting and finance, including professors, accountants, and auditors, as well as administrators involved in budget preparation and oversight within the university hierarchy. This encompasses personnel ranging from the university president and administrative staff to deans and administrative assistants. The sample size comprised 194 individuals, selected through a comprehensive purposive

sampling method. Of the total community, 181 questionnaires were retrieved, with only 171 deemed suitable for analysis, constituting 88.2% of the sample population.

### Research Tool and Measurement of Variables

The research instrument employed was a questionnaire meticulously devised to gauge variables, drawing insights from pertinent studies on variable measurement. The questionnaire encompassed several dimensions, with the initial axis focusing on the personal and occupational demographic information of the sampled individuals. Axis six specifically included details such as the nature of employment, educational attainment, age, job designation, years of professional experience, and field of academic specialization.

Conversely, the second axis concentrated on assessing the independent variable, namely the BOT method. This dimension was formulated based on studies by Hussein & Abdel-Wahab (2021). It comprised 13 statements distributed across two facets: the BOT method's role as an extrabudgetary financing mechanism and its efficacy in enhancing operational efficiency and quality.

The third axis was dedicated to evaluating the dependent variable, rationalization of investment budget expenditures, inspired by a prior research. This dimension featured eight statements elucidating various aspects of investment budget rationalization.

Lastly, the fourth axis introduced an interactive variable: the legislative challenges associated with implementing the BOT method. This aspect was assessed through six statements. A five-point Likert scale was utilized to capture the attitudes of Tikrit University sample participants, with scores ranging from 5 (indicating strong agreement) to 1 (reflecting strong disagreement). The collected data underwent analysis using the SPSS.

### Demographic Analysis of the Research Sample Members

In reference to the categorization of sample participants based on demographic variables, Table 1 illustrates the detailed breakdown of sample members according to demographic characteristics.

**Table 1:** Distribution of Sample Items According to Demographic Variables.

Target Group		NO	Ratio%	Target Group		NO	Ratio%
Kind of work	Academic	141	82.5	Career Title	Auditor	9	5.3
	Occupational	30	17.5		Accountant	25	14.6
	Diploma	1	0.6		Teaching	102	59.6
Qualification	Higher Diploma	0	0		Director of the Department	11	6.4
	Bachelor's	22	12.9		Assistant Dean of Administration	11	6.4
	Master's	84	49.1		Dean	12	7.0
	Ph.D	64	37.4		Manager Assistant	1	0.6
	20-25	2	1.2		University President	0	0
Age	26-30	10	5.8		1-5 years	18	10.5
	31-35	19	11.1		6-10 years	22	12.9
	36-40	52	30.4	11-15 years	54	31.6	
	41-45	41	24.0	16-20 years	47	27.5	
	46 years and over	47	27.5	21-25 years	9	5.3	
		Accounting	41	24.0	26 years and over	21	12.3
		Finance	12	7.0			
Scientific Specialization	Administration	41	24.0				
	Economy	28	16.4				
	Other	49	28.7				

Table 1 clearly illustrates that the majority of the study's sample is affiliated with the academic sector, comprising

82.5% of the total sample size (N=172). This distribution is deemed typical, considering the inherent academic focus of university environments compared to organizations engaged in alternative activities. Among participants holding a master's degree, 84 individuals represent the largest percentage within the sample at 49.1%, followed by doctoral degree holders at 37.4%.

Evidently, the vast majority of the sample possesses an academic knowledge foundation, with a significant proportion aged over 35 years, constituting approximately 81.9% of respondents. This demographic composition enriches the perceptual aspect within the selected sample, thereby enhancing the objectivity in evaluating the questionnaire variables. Moreover, 59.6% of surveyed sample members are university professors, constituting the largest percentage among other categories.

Following closely is the category of accountants, comprising 14.6% of the sample, indicating a substantial knowledge base in the theoretical intricacies of budget preparation and its associated challenges. Regarding experience, 18 individuals, representing 10.5% of the total sample size, reported five years of experience or less, while 154 individuals (89.5%) reported more than five years of experience. This underscores the considerable experience and accumulated professional knowledge of accounting and administrative

practices among sample members.

Notably, 28.7% of respondents hail from specializations outside the purview of commercial disciplines within the College of Management and Economics. However, the majority, accounting for 71.3%, belong to commercial specializations. Within commercial specializations, accounting and administrative fields boast the highest percentage, each comprising 24%. Although non-commercial specializations are present in the sample, this is deemed acceptable as most individuals in these fields occupy administrative roles within the university, exerting direct influence on operational budget preparation and strategic planning processes.

### Descriptive Analysis

The researcher undertook a descriptive analysis of the dataset utilizing the statistical software (SPSS Ver. 22). The objective was to ascertain the arithmetic means, standard deviations, as well as the maximum and minimum values, which elucidate the attributes of the research variables based on respondents' opinions. The outcomes are depicted in Table 2.

**Table 2:** Descriptive Statistics of Variables Related to BOT Implementation and Budget Management in Universities.

Variables	Dimensions	Arithmetic Mean	Standard Deviation	Lowest Value	Highest Value	Relative importance%	Coefficient of variation	Intensity of approval
(BOT) at the university	First: financing outside the budget	3.847	0.607	1.000	5.000	76.9%	15.8%	High
	Second: Achieving efficiency and quality	4.061	0.461	1.000	4.880	81.2%	11.4%	High
	Totat	3.978	0.458	1.000	4.920	79.6%	11.5%	High
Rationalizing the university's budget expenditures	Investment budget	3.805	0.548	1.000	5.000	76.1%	14.4%	High
BOT Implementation Challenges	Legislative	3.765	0.595	1.000	5.000	75.3%	15.8%	High

From Table 2, it's evident that respondents exhibit a high level of awareness regarding the implementation of (BOT), with a relative importance rate of 79.6% and an arithmetic mean of 3.978. They particularly emphasize the dimension of achieving efficiency and quality resulting from (BOT) application, slightly more than its role as an extra-budget funding source at Tikrit University. This is supported by the low standard deviation and coefficient of variation, indicating consistency among responses.

Regarding spending rationalization at the university, respondents underscore the importance of rationalization

aspects within the Investment budget, with an arithmetic mean surpassing the standard mean of 3 and a relative importance of 76.1%. Consistency is further confirmed by the low standard deviation and coefficient of variation.

Respondents also acknowledge the presence of Legislative challenges potentially hindering (BOT) implementation success, as evidenced by an arithmetic mean of 3.765 and a relative importance of 75.3%. This underscores individuals' awareness of these challenges' role in impeding effective (BOT) application, supported by low standard deviation and coefficient of variation.

### Hypothesis Testing

**Table 3:** Torsion Coefficients for Dimensions of BOT Implementation and University Budget Management.

Dimensions	Torsion Coefficient
BOT method at the university	-.979-
First: Financing outside the budget	-.874-
Second: Achieving efficiency and quality	-.751-
Rationalizing the university's Investment budget expenditures	-.964-
Investment challenges of implementing (BOT)	-.582-

To validate the assumption of normal distribution for the research sample, the skewness coefficient was calculated for all variables. A skewness coefficient between -1 and 1 indicates approximate normal distribution. Table 3 demonstrates that all skewness coefficients for the research variables and dimensions fall within this range,

affirming normal distribution of the data. Consequently, parametric statistical analysis tools can be employed. This section also encompassed testing two hypotheses. The first aimed to examine relationship hypotheses using the Pearson correlation coefficient. The primary hypothesis posited a significant relationship between

(BOT) and rationalization of Investment budget expenditures at Tikrit University. Table 4 presents the

coefficients for (BOT) and rationalizing Investment budget expenditures across all dimensions.

**Table 4:** Matrix of Relationships Between the BOT Method and Rationalization of Investment Budget Expenditures.

Variables		BOT	Out-Budget Finance	Efficiency and Quality
Rationalizing Investment Budget Expenditure	Person Sig(	0.616** 0.000	0.603** 0.000	0.553** 0.000

\*\*It means that the correlation is significantly significant at (1%), Table 4 indicates a strong positive relationship, signifying a direct correlation between all variables and dimensions of the research, whether independent or dependent. This suggests that any change in the independent variable will result in a corresponding change in the dependent variable in the same direction. The significance value recorded as 0.000 is smaller than the significance level of 5%, affirming the acceptance of the hypothesis positing a significant

relationship between (BOT) and the rationalization of Investment budget expenditures at the university. The second main hypothesis examines the significant relationship between (BOT), both combined and individually, and the Legislative challenges in its application at the university. Table 5 presents the coefficients for the (BOT) Method and legislative challenges for its application at Tikrit University.

**Table 5:** Matrix of the Relationship Between the BOT Method and the Legislative Challenges of its Application.

Variables		BOT	Out-Budget Finance	Efficiency and Quality
Legislative Challenges to Apply BOT	Person Sig	-.576-** 0.000	-.552-** 0.000	-.551-** 0.000

Table 5 illustrates a substantial negative relationship, indicating an inverse correlation across all variables and dimensions of the study, encompassing both independent and interactive factors. This is evidenced by the significance value of 000.0, which is smaller than the significance level of 5%, confirming the acceptance of the main hypothesis. Regarding the third main hypothesis, it

posits a significant relationship between rationalizing Investment budget expenses at the university and the legislative challenges of implementing (BOT) at the university. Table 6 displays the coefficients for rationalizing Investment budget expenses at the university and the legislative challenges of implementing (BOT) at Tikrit University.

**Table 6:** Matrix of Relationships between Rationalization of Investment Budget Expenditures and the Legislative Challenges of Implementing (BOT).

Variables		Investment Budget
Legislative Side	Person Sig	-.352-** 0.000

Table 6 reveals a notable negative association, indicating an inverse correlation among all variables and dimensions within the study, encompassing both dependent and interactive elements. This is supported by the significance value of 000.0, which is below the 5% significance threshold, affirming the acceptance of the main hypothesis, third.

As for the second type of analysis, it involved examining the impact hypotheses concerning the interplay between variables. The primary hypothesis posited a significant impact of the (BOT) method on rationalizing the university's Investment budget expenditures, yielding three sub-hypotheses. The first sub-hypothesis suggested a notable impact of the dimension of external funding sources on rationalizing the university's Investment budget expenditures.

As for the second type of analysis, it involved examining the impact hypotheses concerning the interplay between variables. The primary hypothesis posited a significant impact of the (BOT) method on rationalizing the

To evaluate this hypothesis, a simple linear regression equation was devised to estimate the dimension of Investment budget within the rationalization of public budget expenditures variable. Table 7 showcases the outcomes of this effect assessment.

**Table 7:** Results of Regression Analysis of the Effect of Dimension as a Source of Extra-Budget Financing in Rationalizing Investment Expenditures.

Independent	Dependent	(β)	t	F	R2	AdjustedR2
Out-Budget Finance	Investment Budget	0.559	8.764 )0.000(	76.807 )0.000(	0.312	0.308

Table 7 demonstrates the robustness of the regression equation model, with the significance of the (F) value at the 5% level, indicating the potential for rationalizing the university's Investment budget expenditures concerning the first dimension of the (BOT) method, pertaining to its role as an external financing source. This underscores the reliability of the regression equation model, alongside the consistent significance of regression coefficients for the external financing dimension and the intercept, with (T) being significant at the 5% level.

regression coefficient (β) reaching 0.559 for both dimensions of the dependent variable. The positive effect is evident through the regression coefficient (β). Lastly, the coefficient of determination (R2) stands at 0.312 for both dimensions of the dependent variable, indicating that the external financing dimension explains 31.2% of the changes observed in the Investment budget dimension, thus validating the acceptance of the first sub-hypothesis.

This further affirms the established significance of the external funding dimension's impact on rationalizing the university's Investment budget expenditures, with the

Regarding the second sub-hypothesis, it posited a significant effect of achieving efficiency and quality dimension on rationalizing the university's Investment budget expenditures. To examine this hypothesis, a simple linear regression equation was formulated to estimate the

Investment budget dimension based on the second dimension of the (BOT) method, pertaining to achieving

efficiency and quality. Table 8 presents the outcomes of this effect assessment.

**Table 8:** Results of the Regression Analysis of the Effect of the Dimension of Achieving Efficiency and Quality in Rationalizing the University's Investment Budget Expenditures.

Independent	Dependent	( $\beta$ )	T	F	R2	AdjustedR2
Efficiency and Quality	Investment Budget	0.553	8.618 )0.000(	74.272) 0.000(	0.305	0.301

Table 8 confirms the stability of the regression equation model, with significant (F) value at the 5% level, indicating the potential for rationalizing the university's investment budget expenditures through the second dimension of the (BOT) method, which focuses on achieving efficiency and quality. The validity of the regression equation model is reaffirmed, along with the consistent significance of regression coefficients for the achieving efficiency and quality dimension. The regression coefficient ( $\beta$ ) reached 0.553 for both dimensions of the dependent variable, indicating a positive effect. Furthermore, the coefficient of determination (R2) stood at 0.305 for the dependent

variable dimension, signifying that achieving efficiency and quality explains 30.5% of the changes in the investment budget dimension, leading to the acceptance of the second sub-hypothesis.

Finally, the third sub-hypothesis, which posits a significant effect of the combined (BOT) method in rationalizing investment budget expenditures at the university, was tested. To examine this hypothesis, a simple linear regression equation was formulated to estimate the investment budget dimension in terms of (BOT), and Table 9 presents the results of this effect assessment.

**Table 9:** Results of Regression Analysis of the Effect of the BOT Method in Rationalizing Investment Budget Expenditures at the University.

Independent	Dependent	( $\beta$ )	t	F	R2	AdjustedR2
BOT	Investment Budget	0.628	10.483) 0.000(	109.889 )0.000(	0.394	0.390

Table 9 indicates the stability of the regression equation model, with a significant (F) value at the 5% level, suggesting the potential for rationalizing the university's investment budget expenditures through the (BOT) method and affirming the validity of the regression equation model. The consistent significance of regression coefficients for the (BOT) method and the constant term, with (T) being significant at the 5% level, confirms the stability of the (BOT) method's effect in rationalizing the university's investment budget expenditures.

Furthermore, the regression coefficient ( $\beta$ ) reached 0.628 for both dimensions of the dependent variable, signifying a positive effect. Lastly, the coefficient of determination (R2) stood at 0.394 for the dependent variable dimensions, indicating that the (BOT) method explains 39.4% of the changes in the investment budget dimension. Consequently, the third sub-hypothesis is accepted, leading to the acceptance of the fifth main hypothesis.

## Compare the Results of the Current Study with Previous Studies

Given the societal significance of investment expenditures and the increasing strain on government budgets due to expanding responsibilities amidst population growth and urbanization demands, governments are turning to the BOT method as an alternative mechanism for partnerships. This approach not only facilitates facility establishment, development, and management but also enables off-budget financing to alleviate financial burdens, thus streamlining expenditure (Phuyal, 2020).

Moreover, the partnership strategy reshapes the government-public sector relationship by introducing competition in service provision tenders, fostering a competitive market dynamic. This competitive landscape encourages revenue generation surpassing government funding, potentially enabling self-sufficiency for the public sector, thereby mitigating budgetary pressures (Phuyal, 2020).

Furthermore, addressing the divergence in evaluation criteria

for BOT projects, which stems from conflicting national and private interests, involves rigorous scientific studies across legal, marketing, environmental, financial, and economic domains. This comprehensive approach enhances project understanding, fosters clarity regarding costs, and aligns economic returns with estimated expenditures, thus optimizing spending (Natalia et al., 2021).

The partnership strategy, unlike traditional budgeting approaches, emphasizes outcome-oriented spending, focusing on the economic benefits derived from allocations rather than the mere allocation of funds. This shift enhances oversight through adherence to laws, regulations, and accounting standards, promoting performance evaluation within the university's responsibility accounting system to ensure economic, efficient, and effective spending (Hussein et al., 2021).

Furthermore, the current study aligns with previous research, including (Mohammad et al., 2020) and (Greer, 2020), in affirming that BOT serves as an optimal strategy for spending rationalization by providing necessary financing and management to address budget constraints. It also concurs with studies like (Natalia et al., 2021) and (Endo et al., 2021), supporting BOT's potential to enhance quality and efficiency through strategic planning, stakeholder coordination, risk management, transparency, and suitable legal frameworks. Additionally, it agrees with findings from (Xiong et al., 2020) regarding BOT's ability to streamline investment spending sustainably, emphasizing efficiency and effectiveness over traditional financing-centric approaches.

The current research concurs with Takano (2021) in highlighting the positive correlation between competitive achievement, a key factor for partnership success, and its facilitation of efficiency and effectiveness. Additionally, it aligns with several studies, including Adjarko et al. (2018) and Liu et al. (2016), in acknowledging the significant challenges that may impede the success of BOT partnerships. These challenges encompass deficiencies in the legislative framework surrounding BOT implementation, particularly in addressing associated economic instabilities and political uncertainties in the

Iraqi context, which deter private sector involvement due to apprehensions about potential expropriation without adequate compensation.

Furthermore, a major hindrance to BOT adoption stems from the underdeveloped financial management practices resulting from the absence of legislation in this domain, compounded by outdated financial mechanisms prevalent in the Iraqi context. Moreover, embracing BOT and modern budgeting methods, such as contractual budgeting, necessitates advanced financial management tools and sophisticated information systems to establish a cohesive information infrastructure across all organizational levels.

Consequently, the research demonstrates that BOT emerges as the optimal solution for universities seeking to reallocate expenditures based on strategic priorities post-partnership implementation. By embracing the partnership strategy, BOT facilitates substantial coverage of investment expenditures alongside current spending, effectively shouldering the responsibility for developing and managing public infrastructure, supported by private financing throughout the concession period. Beyond this period, BOT continues to contribute positively by enhancing quality and efficiency across critical dimensions such as planning, control, performance evaluation, and competitive achievement.

This comprehensive approach not only benefits the university's investment rationalization efforts but also extends to the government partner, as the adoption of the BOT-based partnership model fosters the creation of standardized project databases and fosters a competitive environment conducive to overall governmental performance enhancement.

## Conclusion

The study underscores that the BOT method serves as a tailored solution, contingent upon the economic context and challenges at hand. It emerges as an optimal strategy for sourcing financing outside the budget while concurrently enhancing quality and efficiency, thereby rationalizing investment spending in universities. Although the study establishes a significant positive relationship between BOT and investment budget rationalization, it emphasizes that the method's support for quality and efficiency predominantly drives this spending rationalization, despite facing legislative hurdles. Drawing from these findings, key recommendations urge universities to embrace BOT for project implementation, fostering a societal culture supportive of its adoption. Further, the study advocates for deeper scientific inquiry into international and local experiences to discern success factors and challenges. Efforts to cultivate an environment conducive to private sector engagement, without marginalizing the public sector's role, are deemed crucial for achieving spending rationalization and sustainable development. Moreover, the study's contribution lies in both scientific and practical realms. Scientifically, it lays the groundwork for future research by elucidating the role of private partnership strategies in budget preparation and investment spending rationalization in universities. Practically, it offers actionable insights for the study sample, advocating for the adoption of BOT as a superior alternative to address financing shortfalls in university investment spending, thereby maximizing economic returns over traditional budgeting approaches.

## References

- Adjarko, H., Ayerakwah, H., & Fynn, J. (2018). Barriers to the Adoption of BOT Contracts System for Infrastructural Development of Technical Universities in Ghana. *Journal of Building Construction and Planning Research*, 6(3), 103-111. doi: <https://doi.org/10.4236/jbcpr.2018.63007>
- Al-Ghabban, & Mahmoud, T. S. (2016). The possibility of modernizing the general budget by adopting the construction method. Employment. Transfer of ownership (BOT) to rationalize public spending between preparation and implementation. *Al-Muhasib Journal for Accounting and Auditing Sciences*, 23(45).
- Al-Hasnawi, Hamza, A., & Radi, L. M. (2021). The impact of the contractual budgeting method on the financial performance of universities/case study / University of Kufa. *Journal of the Kufa Studies Center*, 1(63), 329-378. Retrieved from <https://search.emarefa.net/detail/BIM-1303315>
- Al-Saadi, Al-Mardouf, H. b. T., Al-Mahrouqiya, Nasser, B. b. H. b., Al-Haddabi, & Yahya, D. A.-M. b. (2022). Challenges of partnership between the public and private sectors in school education and mechanisms for overcoming them in the Sultanate of Oman. *International Journal of Educational and Psychological Studies*, 11(1).
- Ameyaw, E. E., & PC Chan, A. (2016). Critical success factors for public-private partnership in water supply projects. *Facilities*, 34(3/4), 124-160. doi: <https://doi.org/10.1108/F-04-2014-0034>
- Andreas A. Pramudya, A. W. (2022). Ranking risks of BOT toll road investment projects in Indonesia using fuzzy interpretive structural modelling. *Construction Economics and Building*, 22(4), 59-80. doi: <https://doi.org/10.5130/AJCEB.v22i4.8091>
- Azzopardi, P. S., Hennegan, J., Prabhu, S. M., Dagva, B., Balibago, M. M., Htin, P. P. W., et al. (2021). Key recommendations to strengthen public-private partnership for adolescent health in resource constrained settings: Formative qualitative inquiry in Mongolia, Myanmar and the Philippines. *The Lancet Regional Health-Western Pacific*, 15, 1-9. doi: <https://doi.org/10.1016/j.lanwpc.2021.100242>
- Bogovac, J., Dodig, D., & Lugarić, T. R. (2021). Public-private partnership and circular economy—what Croatian students learn at university. *Energies*, 14(11), 3261. doi: <https://doi.org/10.3390/en14113261>
- Endo, K., Gianoli, A., & Edelenbos, J. (2021). Coming to financial close in PPPs: Identifying critical factors in the case of toll road projects in Indonesia. *Public Works Management & Policy*, 26(2), 115-143. doi: <https://doi.org/10.1177/1087724X20914627>
- Greer, R. A. (2020). A review of public water infrastructure financing in the United States. *Wiley Interdisciplinary Reviews: Water*, 7(5), e1472. doi: <https://doi.org/10.1002/wat2.1472>
- Guillermo, T. (2021). The competitive performance of public-private partnership markets. The case of unsolicited proposals in Peru. *Utilities policy*, 72, 101274. doi: <https://doi.org/10.1016/j.jup.2021.101274>
- Haque, M. S. (2020). Entrepreneurship-driven public management reforms in Southeast Asia: Critical implications for public accountability. *Public Administration and Development*, 40(4), 220-231. doi: <https://doi.org/10.1002/pad.1889>
- Hussein, S. S., & Abdel-Wahab, M. T. (2021). The economic effects of activating the policies of transition to program budgeting and performance in Iraq (an



- applied study). *Journal of Kirkuk University for Administrative & Economic Sciences*, 11(1), 201-229. Retrieved from <https://search.emarefa.net/detail/BIM-1306496>
- Korab-Karpowicz, W. J. (2020). The United Citizens Organization: Public-private partnerships in global governance. *Research in Globalization*, 2, 100012. doi: <https://doi.org/10.1016/j.resglo.2020.100012>
- Lam, P. T., & Yang, W. (2020). Factors influencing the consideration of Public-Private Partnerships (PPP) for smart city projects: Evidence from Hong Kong. *Cities*, 99, 102606. doi: <https://doi.org/10.1016/j.cities.2020.102606>
- Liu, T., Wang, Y., & Wilkinson, S. (2016). Identifying critical factors affecting the effectiveness and efficiency of tendering processes in Public-Private Partnerships (PPPs): A comparative analysis of Australia and China. *International Journal of project management*, 34(4), 701-716. doi: <https://doi.org/10.1016/j.ijproman.2016.01.004>
- Mohammad, & Omar, O. I. (2020). Build-Operate-Transfer Model and Its Role in Developing Railways Transport Section in Sudan. *American Journal of Transportation and Logistics*.
- Natalia, L., Tanzil, N. D., & Sari, P. Y. (2021). Critical success factors of public-private partnership from 2000 to 2019: A literature review. *Jurnal Perspektif Pembiayaan dan Pembangunan Daerah*, 8(6), 531-540. doi: <https://doi.org/10.22437/ppd.v8i6.10742>
- Osei-Kyei, R., & Chan, A. P. (2017). Implementation constraints in public-private partnership: Empirical comparison between developing and developed economies/countries. *Journal of Facilities Management*, 15(1), 90-106. doi: <https://doi.org/10.1108/JFM-07-2016-0032>
- Phuyal, M. (2020). Legal Analysis of Build Operate and Transfer (BOT) Projects in Indian Public Infrastructure. Phuyal, M. (2020). *Legal Analysis of Build Operate and Transfer (BOT) Projects in Indian Public Infrastructure*. *International Journal of Engineering Research & Technology (IJERT)*, 9(6), 1320-1330. doi: <https://doi.org/10.17577/IJERTV9IS060754>.
- Saad, S. K., Elshaer, I. A., & Ghanem, M. (2021). Relational risk and public-private partnership performance: An institutional perspective. *Journal of Destination Marketing & Management*, 20, 100614. doi: <https://doi.org/10.1016/j.jdmm.2021.100614>
- Sresakoolchai, J., & Kaewunruen, S. (2020). Comparative studies into public private partnership and traditional investment approaches on the high-speed rail project linking 3 airports in Thailand. *Transportation Research Interdisciplinary Perspectives*, 5, 100116. doi: <https://doi.org/10.1016/j.trip.2020.100116>
- Takano, G. (2021). The competitive performance of public-private partnership markets. The case of unsolicited proposals in Peru. *Utilities policy*, 72, 101274. doi: <https://doi.org/10.1016/j.jup.2021.101274>
- Tang, Y., Liu, M., & Zhang, B. (2021). Can public-private partnerships (PPPs) improve the environmental performance of urban sewage treatment? *Journal of Environmental Management*, 291, 112660. doi: <https://doi.org/10.1016/j.jenvman.2021.112660>
- Tsukada, S. (2019). Vulnerabilities of BOT scheme and ways to overcome them under PPP: cross-country comparison of PPP systems among selected countries. *Public works management & policy*, 24(3), 284-300. doi: <https://doi.org/10.1177/1087724X18799762>
- Uner, M. M., Çavuşgil, E., & Çavuşgil, S. T. (2018). Build-operate-transfer projects as a hybrid mode of market entry: The case of Yavuz Sultan Selim Bridge in Istanbul. *International Business Review*, 27(4), 797-802. doi: <https://doi.org/10.1016/j.ibusrev.2018.01.003>
- Xiong, W., Chen, B., Wang, H., & Zhu, D. (2020). Public-private partnerships as a governance response to sustainable urbanization: Lessons from China. *Habitat International*, 95, 102095. doi: <https://doi.org/10.1016/j.habitatint.2019.102095>
- Yang, J., Nisar, T. M., & Prabhakar, G. P. (2017). Critical success factors for build-operate-transfer (BOT) projects in China. *The Irish journal of management*, 36(3), 147-161. doi: <https://doi.org/10.1515/ijm-2017-0016>
- Yeo, K., & Tiong, R. L. (2000). Positive management of differences for risk reduction in BOT projects. *International Journal of Project Management*, 18(4), 257-265. doi: [https://doi.org/10.1016/S0263-7863\(99\)00018-6](https://doi.org/10.1016/S0263-7863(99)00018-6)