

# Risk Management in Government-Private Collaboration Building Construction Projects in Iraq

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**Abstract:** The collaboration between the governmental and private industries has garnered significant consideration from governments, organizations, and study institutions globally, as it has become evident that social and economic growth relies on the mobilization and integration of all societal capabilities, encompassing the energies, assets, and knowledge of both industries. In countries that are developing, particularly Iraq, the notion of government-private collaboration is relatively novel to the government, which has traditionally borne the majority of the responsibility for delivering public services and undertaking substantial construction projects. The purpose of this research was intended to examine the influence of risk management techniques on the achievement of government-private collaboration projects in Iraq by determining the most significant and frequent risk variables affecting the performance of Iraqi construction operations, where the survey population was primarily composed of civil engineers, comprising 70% of the respondents.

Furthermore, 65% of the study population is currently engaged in government-private collaboration projects, while 35% have previously been involved in government-private collaboration projects. The study utilized questionnaires distributed to real companies and individuals at the southern provinces of Iraq from specialists working in various engineering fields to identify the most significant risk variables and propose suitable strategies for their management. Results from both quantitative and qualitative analyses show that technical, economical, and political support and credibility risk variables are significantly related to the achievement of government-private collaboration projects in Iraq. In contrast, social reliability and ecological effects did not show a statistically substantial relationship with the accomplishment of the project.

The study determined that among the four risk types affecting the achievement of government-private collaboration projects in Iraq, the component of governmental acceptance and credibility exerted the most significant influence, ranking as the primary risk factor. This was subsequently followed by the economic and financial variable, subsequently the technical variable, and lastly, the societal and ecological variable.

The research ultimately advises government-private collaboration project managers to ensure sufficient supervision of the risks encountered, which encompass risk transfer, preventive measures, mitigation, and acceptability. Additionally, it recommends conducting training sessions on risk management and offering informal education through professional development offerings to enhance understanding of risk management and its implementation in government-private collaboration projects.

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**Keywords:** Risk Management; Government-Private Collaboration; Project Management; Construction Industry; Construction Practices

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## 1. Introduction

In recent years, there has been a slight increase in the use of government-private collaboration instead of traditional procurement. Government-private collaboration is described as a partnership involving the general public and private industries to attain a shared objective. Governments worldwide have employed government-private collaboration as another option to conventional procurement techniques according to their advantages derived from private sector involvement: alternative funding, enhanced quality and



efficiency, and value for money [1].

Irrespective of its key themes, the government-private collaboration has become the subject of numerous inquiries assessing its actual benefits for citizens and other stakeholders. The government-private collaboration has been extensively analyzed across various disciplines, including political theory, legal government implementation, and accounting [2].

Over time, while the primary objectives of the majority of studies aimed to comprehend the concept of government-private collaboration and its beneficial outcomes, there are other perspectives regarding the disadvantages and shortcomings of government-private collaboration.

For instance, the overall expense of optimizing efficiency expenditures indicates that the expense of capital acquisition in the private industries is significantly greater compared to that in the public industries. The private project area is conceptualized as a commercial entity that functions as a primary advantage [3]. Public-Private Partnerships enable privately owned enterprises to enhance their influence in the public regulatory decision-making processes and policy development [4].

Several open workplaces are established in public spaces using public funds. Consequently, the possession is located in a public space. Due to the increasing demand for infrastructure, limited public resources to address current and future needs, and recognition of a more significant role for the private sector in infrastructure provision, alternative financing methods for public facilities and services have been adopted by the public sector [5].

An approach for the organization of governmental services and goods is the collaboration of governmental and private entities. Nonetheless, the government-private collaboration is widely recognized globally. It presents certain risks that both governmental and private sectors, including consumers of public services and goods, must face and manage, particularly with two obligations in the risk assessment and management of the government-private collaboration project [6].

The imperative for a perilous maneuver element in government-private collaboration strategies; the threats to be addressed must be identified, analyzed, and likely assessed. Furthermore, the government-private collaboration acquisition methods are associated with several pitfalls, weaknesses, and risks to both governments and the private sector [7].

## **2. Partnership Framework in Government-Private Collaboration**

The requirement to furnish infrastructure to the public has, in certain aspects, transitioned from the public industry to the private industry via government-private collaboration. In the government-private collaboration, the governmental sector or authority acts solely as the purchaser of services rendered by the private sector [8].

The disparity in employment was initially identified by governments seeking to settle their fiscal liabilities and expenditures, prompting them to utilize private sector funding for capital investment [9]. Moreover, the private industry is seen as proficient in efficiently providing items to provide commercial returns. Consequently, private industry retrieves capital through rental payments for the created infrastructure or outright payments through the client, including service fees [10].

Another explanation for the absence of a universally accepted definition of government-private collaboration is that it is an expansive conventional phrase encompassing a wide range of organizational strategies. These organization strategies are categorized based on the concession to chance allocation, the extent of the parties' involvement, and the responsibilities for the foundation [11]. Neither universally preferred organizational strategy is employed for every project or initiative. The implementation of organizational strategies requires the specific needs, conditions, and appropriateness of individual system changes, as each model has its unique advantages and disadvantages. An additional source of confusion is the disparate terminology used by different countries for similar contractual arrangements [12].

## **3. Specific Variation of Government-Private Collaboration**

Various publications have discussed governments' motivations for adopting government-private collaboration, irrespective of their validity. The distinctions between government-private collaboration

and conventional purchasing has been identified through theoretical analysis and empirical case studies. Nonetheless, government-private collaboration has been designed to fulfill and allocate the requirements of the public sector and the incentives for the private sector partner [13].

### **3.1 Effective Allocation of Roles, Resources, and Risk**

A primary goal of government contracting is to attain efficiency. Improved skills may result in increased compensation and favorable results. In a competitive and profit-driven landscape, in contrast to the public sector, the private sector seeks to achieve profitability [14]. Private industry organizations demonstrate enhanced innovation and creativity in project management while minimizing resource waste. Thus, fostering collaborations with the private sector improves productivity by redistributing obligations and risks to the most competent organization [15].

A foundational task or enhancement encompasses activities that entail responsibilities and risks for the parties involved. Their allocation suggests assigning them to the partner most equipped to manage them. A fundamental responsibility of the public sector in public procurement is to allocate resources for infrastructure development [16].

Regarding government-private collaboration, the choice of private funding and encouragement was generally viewed as advantageous. The private partner must investigate unexploited funding sources and resources from financial entities that the public sector cannot access. The employment of private financing allows underdeveloped nations to allocate the expenses of infrastructure development.

This will benefit the public sector by reducing public expenditure in direct reaction to public funds, as government-private collaboration projects are often large-scale and need substantial upfront investment. Regardless, such private finance may increase the overall cost of development compared to just public funding [10].

The private partner will creatively utilize available resources to ensure cost-effectiveness in the development, hence achieving revenue and profit, driven by incentives from the enterprise. The private partner is pleased to secure an ongoing income over time with a protracted agreement nearby. Public subsidies or private enterprise capital will influence development. The assemblies should select the most appropriate resolution by considering the project purpose [18].

Several studies identify four categories of risk that must be addressed in a government-private collaboration project: planning and development, finance, operations, and ownership. The magnitude of risks fluctuates across different stages of government-private collaboration development. These risks should be distributed among the collaborators. Although standard rules for risk distribution are lacking, various researchers have developed observational methodologies for risk allocation to determine which group is more capable of managing them. The identification and assessment of potential risks are essential for comprehending the financial benefits derived from the government-private collaboration projects [19].

### **3.2 Determining the risk variables**

There are several risks associated with the government-private collaboration projects. The risks evolve throughout the phases of the government-private collaboration project lifecycle, from planning to design, construction, and operation. The plan of risks associated with government-private collaboration projects can be categorized into three categories of hazard factors: major degree, medium degree, and small degree.

An essential objective of potential hazards serves as a starting point for identifying risks associated with construction projects.

Table.1 presents a catalog of risks associated with a government-private collaboration projects, where can be categorized into major degree, medium degree, and small degree risks.

Table 1 Evaluation of government-private collaboration risk elements

Degree of Risk	Description	Source
Technical degree	Design defect, project choosing, project implementation construction	[20]
	Public Hazard	[21]
	The ability of private companies, risk of private ownership, risk of private incapacity, private risk	[22]
Social and environmental	Risks associated with approvals and permits, tort liabilities, public responsibility, and employee crises	[23]
	Risks associated with approvals and permits, legal liabilities, public responsibility, and employee crises	[24]
	Increased project expenditure	[21]
Fiscal and economic	Hard currency is non-convertible; currency exchange is unavailable	[24]
	Budget excess, land procurement, residual risk assessment, project funding	[25]
	The attraction of project investment and cost of funding	[23]
	Political instability, expropriation of property, and dishonesty	[22]
Regulatory and legislation	Poor performance and feeble economies	[26]
	Consumption and interest rate variations, currency rate volatility, significant economic occurrences	[26]

### 3.3 Government-Private Collaboration at Iraq

The developments have witnessed considerable enhancements in safety and economic expansion, where the Iraqi economic policy emphasizes market liberalization and the cultivation of a conducive business climate to attract foreign direct investment and promote trade [27]. Notwithstanding substantial advancements in several sectors of infrastructure in Iraq, considerable work remains to be accomplished.

In 2010, Iraq established a five-year strategy (2010-2014) aimed at achieving an annual economic growth rate of 9.4%.

This paper reveals Iraq's plan to create one million new housing units throughout 18 governorates and to initiate projects utilizing government-private collaboration methods, aiming for \$150 billion in foreign investment by 2025, alongside budgetary allocations [28]. Investment Law No. 13 (2006) was enacted to entice foreign investment in Iraq, accompanied by substantial perks, guarantees, and exemptions. Investment law possibilities in the infrastructure sector in Iraq are hindered by inherent risks and constraints. It is essential to cultivate a more precise understanding of the locations and methods for effectively implementing PPP frameworks in this context [29].

A series of annual publications from the World Bank in 2012 suggest that Iraq encounters substantial challenges in economic operations. In this context, Iraq is deemed problematic for residential property investment, often resulting in erroneous assumptions regarding the primary advantages of implementing government-private collaboration, based on the anticipated benefits of alleviating expected risks for the private sector [30].

## 4. Methodology

The study will analyze data from questionnaires directed at participants in government-private collaboration projects in Iraq to determine the principal risk factors associated with government-private collaboration construction projects. The research seeks to identify the principal risk variables in these

projects and recommend suitable remedies for them.

#### **4.1 Data Gathering**

Initial data is gathered directly from the researcher's investigation and can be acquired through surveys, interviews, and questionnaires. Secondary data originates from the research conducted by another individual. This research utilized secondary material mostly from books, journals, legislation, previous theses, periodicals, newspapers, and pertinent websites, while initial data was gathered through interviews.

Despite being touted as the predominant method of data collecting in case studies, observation is inappropriate for this investigation, as it will not facilitate the researcher's comprehension of the situation in Iraq. It is also vulnerable to the predisposition of the researcher. Nothing physical items were discerned for utilization in this study. An alternative favored type of data gathering is the questionnaire, a compilation of standardized questions disseminated to participants for information gathering. It is typically disseminated via postal mail, email, internet surveys, or telephone. Interviews are advised to obtain comprehensive data for the Iraqi government-private collaboration investigation. The researcher hence opted for a mixture of interviews and an investigation of documentation and historical documents. The advantages of integrating these two types of information lie in their complementary methodologies. [31] posited that the amalgamation of two data collection methodologies may yield inconsistencies in information. Consequently, it is imperative to authenticate and corroborate the data included in documents with current practices in Iraq, regardless of whether it aligns with or violates established policy.

The use of interviews over alternative main methods for gathering data was due to their ability to investigate actual practices in Iraq, enabling the researcher to seek clarification on ambiguous responses and gain access to sensitive material. The chosen sources of knowledge were meticulously aligned with the study topics to fulfill the study's aim. The synthesis of all collected information is anticipated to constitute fundamental components for the conceptual framework of this study. The case study will be executed in two phases: Examination of documents and conducting interviews.

#### **4.2 Interview Structure**

The article topics of this interview were derived from a compilation of pertinent literature. Through our literature evaluation and an analysis of many unsuccessful infrastructure government-private collaboration projects, we have preliminarily determined the associated risks. Subsequently, we delineated twenty risk factors prevalent in government-private collaboration initiatives, derived from expert interviews, each representing a pivotal element contributing to their failure.

The article contends that government-private collaboration "failure" include contract terminations, change of management authority, unattainable value for money, project impasses or inactivity, government buybacks, and substantial losses. These cases were chosen as representative instances of unsuccessful government-private collaboration projects, and their distinct attributes and reasons for failure align closely with the identification of critical government-private collaboration dangers. The primary consideration in selecting interviewees is the diversity of professional backgrounds. The interviewees comprise both scholars and professionals, including various roles to enhance the diversity of the interview group and so broaden the depth and breadth of the gathered information. Ultimately, numerous investigations involved technical professionals and academics who were invited to participate in the sessions.

#### **4.3 Survey Overview**

In order to conduct quantitative statistical analysis on the questionnaire, SPSS was utilized. Charts and tables were used to describe the results where they are relevant. The questionnaire study was administered via a printed online format. A distinct questionnaire was sent to public sector groups involved in infrastructure projects, while 144 out of 180 questionnaires were collected from the commercial sector, distributed online through Google Docs, accounting for 80% of the overall distribution.

This investigation research involved an examination of Iraqi construction firms actively engaged in government-private collaboration derived from the Iraq database. Experience in government-private collaboration initiatives was essential for selecting a group of subject matter specialists.

The survey identified two areas for completion. In section A, four questions were asked to gather information regarding the type of work industry, the participant's position, and their professional and educational backgrounds. These inquiries aimed to identify the respondents' backgrounds and validate their responses.

Section B encompassed the principal inquiries concerning the methodologies and processes for risk identification, issues constraining the implementation of risk management, and elements influencing an organization's operational decision-making.

The questionnaire's creation relied on all previously disseminated evaluation questions and the data collected from the questionnaire about the risk identification phase in government-private collaboration projects. This section involved consulting specialists to obtain their insights regarding the identified factors that influence an organization's decision-making and implementation of risk management. Participants were requested to demonstrate the preferred instruments, tactics, and the process of risk identification inside their firms, the suitable responses were presented using a 5-point Likert scale. Furthermore, the data collected from the questionnaire was analyzed using several quantitative methods via the Statistical Package for Social Sciences (SPSS). Prior to administering the questionnaire to the participants, its validity and reliability were confirmed. Cronbach's alpha was employed to evaluate the internal uniformity and validity of the questionnaire's substance. The estimated value of Cronbach's alpha was calculated to be 0.832, indicating a satisfactory level of consistency between the questionnaire items.

The calculated Cronbach's alpha ratio exceeded 0.7, indicating that all items are correlated within their respective sections as well as that the majority of items are pertinent to the questionnaire, demonstrating high reliability. Consequently, there is no necessity to revise or discard any items, as noted by [32].

The investigator has undertaken a sequence of measures to guarantee the validity of this investigation, where the questionnaire and interview instructions questions were created based on prior peer-reviewed research. The investigator has structured the sections and assertions of the questionnaire based on prior studies pertinent to the issue of the current investigation.

#### 4.4 Evaluation of Normalization

A variety of statistics are accessible for examining normalcy, this primarily concerns the "Kolmogorov-Smirnov" measurement, alongside the significance grade of "Lilliefors and Shapiro-Wilk" measurement, as well as "Skewness and Kurtosis". Numerous statisticians have asserted that normality can be partially evaluated by the acquisition of "Skewness and Kurtosis" measurements. Consequently, this study primarily concentrated on skewness and kurtosis measurements to assess the normalcy of the data. As a result, "Skewness and Kurtosis" measurements for the research variables were calculated to assess data normalization.

Furthermore, a skewness of +1 or -1 is typically seen as a substantial divergence from the regular distribution. As a result, numbers ranging from -1 to +1 signify a normal distribution. Table 2 presents the skewness and kurtosis findings for the research's total variables, revealing that the skewness and kurtosis measurements range from -1 to +1, with the majority of values approximating zero. Therefore, a regular distribution can be inferred for this research, permitting the application of statistical tests for data analysis.

Table 2 Evaluation of normalization using "skewness and kurtosis"

Factor	Skewness	Kurtosis
Technical factors	0.370	0.197
Factors of social viability and environmental consequences	-0.486	0.896
Fiscal and economic factors	-0.419	-0.730
Regulatory acceptability and legislation factors	0.589	0.887

Furthermore, the outcomes of the "Kolmogorov-Smirnov" and "Shapiro-Wilk" assessments, detailed

in Table 3, indicate that the significance amounts of the Kolmogorov-Smirnov assess for every factors: Technical factors, Factors of social viability and environmental consequences, Fiscal and economic factors, and Regulatory acceptability and legislation factors) are 0.172, 0.103, 0.062, and 0.132, accordingly.

This indicates that all factors exhibit a regular distribution, as the importance value exceeds 0.05. The “Shapiro-Wilk” assessments scores for the corresponding factors are 0.073, 0.165, 0.073, and 0.081, all exceeding 0.05, indicating that the data conform to a regular distribution.

Table 3 Evaluation of normalization using “Kolmogorov-Smirnov” and “Shapiro-Wilk”

Factor	Kolmogorov-Smirnov		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
Technical factors	0.164	0.172	0.961	0.073
Factors of social viability and environmental consequences	0.123	0.103	0.972	0.165
Fiscal and economic factors	0.125	0.062	0.938	0.073
Regulatory acceptability and legislation factors	0.171	0.132	0.920	0.081

## 5. Results and Analysis

### 5.1 Overall description of participants

The allocation of participants by sector indicates that 64% originated from the public sector, being the largest proportion, while 36% were form the private sector. Additionally, Figure 1 illustrates the percentages of each sectors within the research sample.

The survey population was primarily composed of civil engineers, as illustrated in Figure 2, comprising 70% of the respondents. Furthermore, 65% of the study population is currently engaged in government-private collaboration projects, while 35% have previously been involved in government-private collaboration projects. The predominant number of research participants possesses 10-15 years of professional expertise, as illustrated in figure 3, comprising 43% of the research population. This is followed by 20% with over 20 years of professional expertise, 18 % with 15-20 years of professional expertise, 12% of participants with 5-10 years of professional expertise, and finally 7% with less than 5 year of professional expertise, representing the smallest classification.

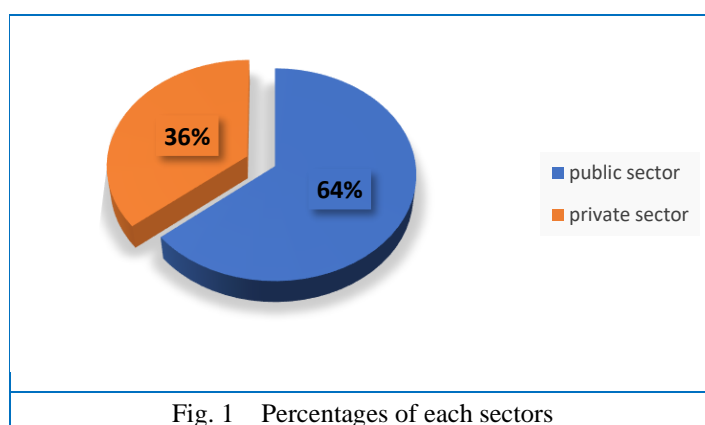


Fig. 1 Percentages of each sectors

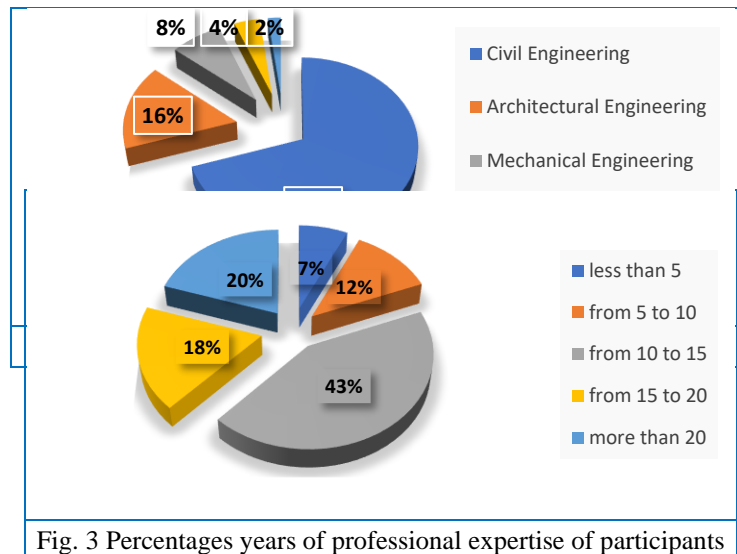


Fig. 3 Percentages years of professional expertise of participants

## 5.2 Risk determinants and preferences for risk distribution

To assess the risk factors in government-private collaboration projects from the participants' perspective, the risk factors were categorized into four classifications: technical, fiscal and economic, regulatory acceptability and legislation, and social viability and environmental consequences.

### 5.2.1 Technical factors

The questionnaire's respondents were inquired about their views on the technical elements that pose threats to government-private collaboration projects. Respondents were instructed to evaluate the aspects they considered essential indications of a government-private collaboration projects. Participants were instructed to prioritize the indicators, and the results are depicted in Figure 4.

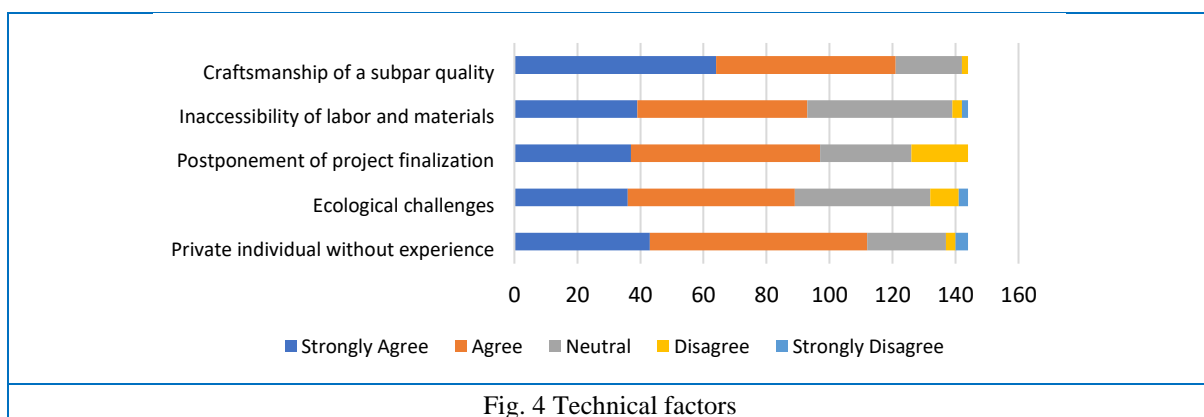


Fig. 4 Technical factors

### 5.2.2 Factors of social viability and environmental consequences

The participants were additionally requested to evaluate six variables contributing to a successful government-private collaboration projects including social acceptability and environmental considerations. Participants were requested to evaluate each element based on their agreement or disagreement regarding

its contribution to hazards associated with the government-private collaboration projects. Figure 5

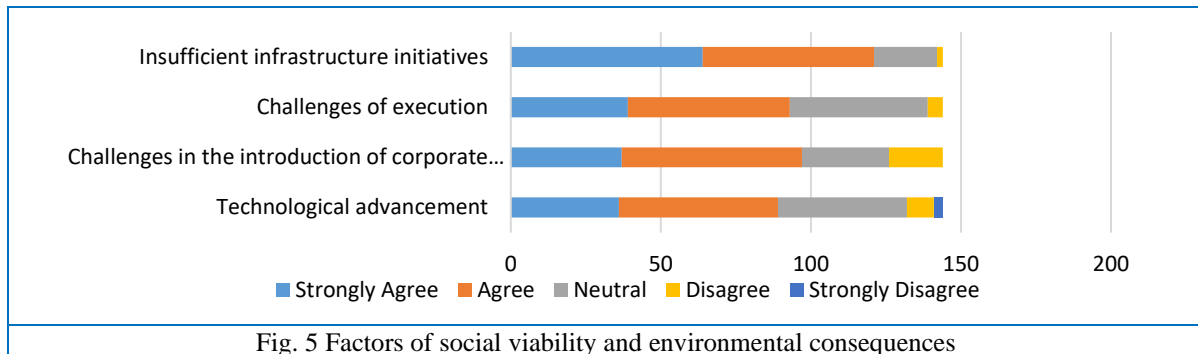


Fig. 5 Factors of social viability and environmental consequences

illustrates the ratings with elevated reactions.

### 5.2.3 Fiscal and economic factors

The government-private collaboration projects risk elements on fiscal and economic bases, and the replies to this question are represented in Figure 6. The respondents were questioned if they were aware of this.

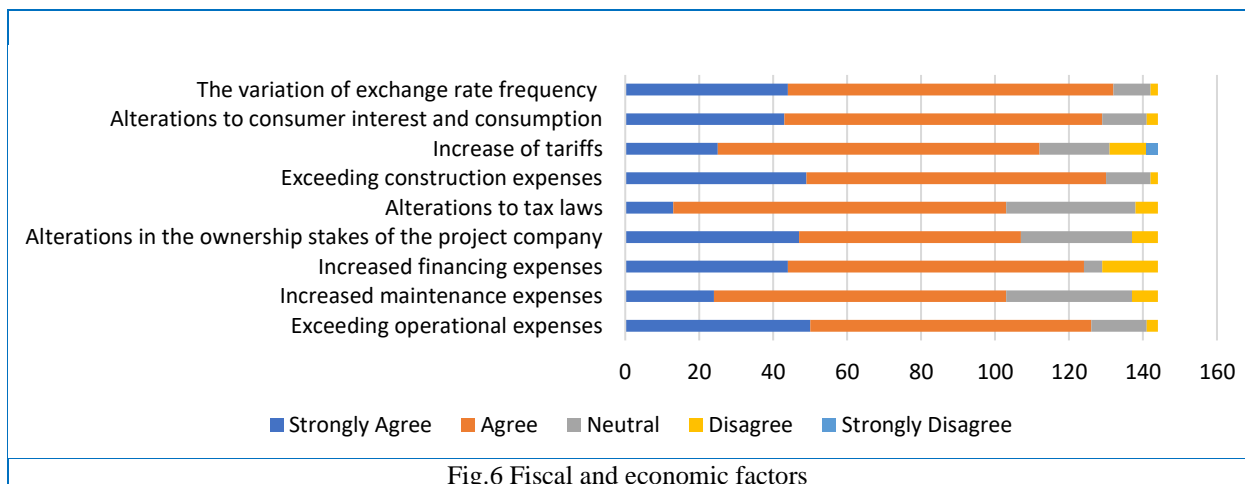


Fig.6 Fiscal and economic factors

### 5.2.4 Regulatory acceptability and legislation factors

Respondents were inquired about their views on the influence of political and legal decisions on government-private collaboration projects initiatives. Participants were inquired about their perspectives regarding the influence of political acceptability on public and private engagement for government-private collaboration projects. The majority of respondents strongly concurred that political acceptability and public decision-making are highly effective. That factor is a primary danger to the achievement of government-private collaboration projects. Figure 7 depicts the received replies.

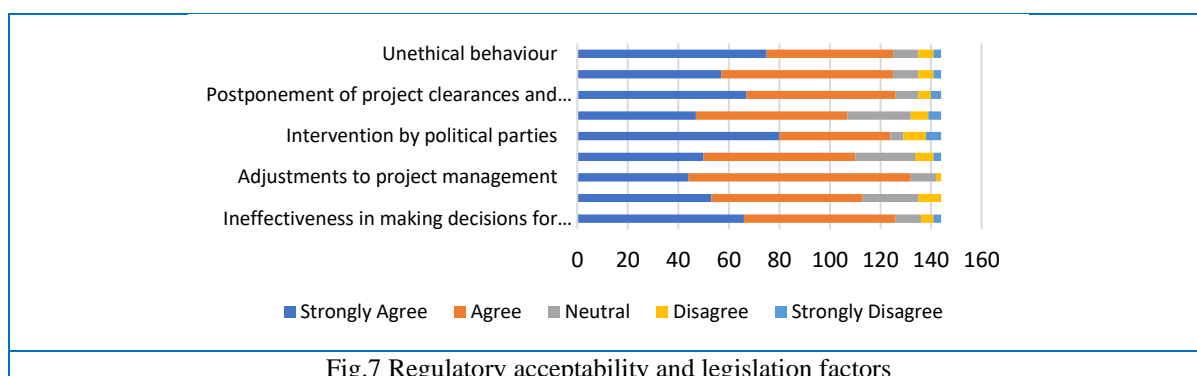


Fig.7 Regulatory acceptability and legislation factors

### 5.3 Factor assessment

The answers provided from research participants about each risk category were analyzed to identify the most significant influences on the government-private collaboration projects. The test can utilize the survey questions to ascertain the average replies for each risk factor.

Table 4 demonstrates that the technical factors, fiscal and economic factors, and regulatory acceptability and legislation factors risk variables significantly influence the performance of the government-private collaboration projects, with P-values of 0.0072, 0.0008, and 0.0004, respectively. The factors of social viability and environmental consequences effect exhibits no significant statistical correlation with the supply of the government-private collaboration projects, evidenced by a P-value of 0.1.

Table 4 Results of factor assessment

Factor	SS	df	MS	F-value	P-value
Technical factors	1554.283	4	389.253	28.01964	0.0072
Factors of social viability and environmental consequences	2312.234	4	576.774	28.54734	0.1211
Fiscal and economic factors	3573.021	4	893.261	95.42471	0.0004
Regulatory acceptability and legislation factors	3987.265	4	996.732	121.7276	0.0008

Table 4 indicates significant statistical relationships among the three risk factor categories (technical factors, fiscal and economic factors, and regulatory acceptability and legislation factors) and the achievement of the government-private collaboration projects initiatives in Iraq. To determine which risk factors exert the most significant influence on the success of the government-private collaboration projects, F-values were employed to assess that effect.

Table 4 presents the F values corresponding to each variable in the framework. The F-values for the three factors technical factors, fiscal and economic factors, and regulatory acceptability and legislation factors were statistically significant at the  $\beta < 0.05$  scale, with comparatively high values of 28.01964, 121.7276, and 95.42471, correspondingly. Nonetheless, the factors of social viability and environmental consequences exhibited no significant statistical correlation with the source of the government-private collaboration projects, as indicated by a P-value of 0.1, which exceeds 0.05.

The impact of the four elements on the success of Iraqi the government-private collaboration projects is determined by the F-value; a greater F-value indicates a greater effect on project success. The regulatory acceptability and legislation factors exerts the most significant influence, followed by fiscal and economic factors considerations, then the technical factors aspect, and lastly, the factors of social viability and environmental consequences factor.

Thus, this demonstrated the influence of the three aforementioned factors on the achievement of government-private collaboration projects in Iraq, necessitating that construction government-private collaboration projects managers focus on these factors and enhance them to strengthen their performance and increase their likelihood of success.

## 6. Conclusion

In developing nations like Iraq, the government-private collaboration projects are a fresh notion to the government, which has traditionally prioritized public services and big construction projects. There are few Iraqi the government-private collaboration projects. Growth is occurring. Since the 2006 investment law, government-private partnerships have been attempted in several industries in Iraq.

Numerous benefits are envisaged from the government-private collaboration projects:

- the potential to aid the private industry in funding projects which government agencies are temporarily unable to support,
- an enhancement in the quality and efficiency of services rendered,
- a degree of risk sharing and leverage of proprietary business expertise,
- revenue maximization and deficit mitigation,
- and expedited market delivery.

The research identified the most prominent and significant risk variables on the achievement of the government-private collaboration of construction projects in Iraq utilizing the perspective specialists involved in these projects to determine how risk management techniques affect them.

Where the research indicates an important connection between technical, fiscal and economic factors and regulatory acceptability and legislation factors to achievement of the government-private collaboration projects in Iraq, while the factors of social viability and environmental consequences did not appear to be significant as well.

In conclusion, the addressed risk factors (technical, fiscal and economic factors and regulatory acceptability and legislation, and factors of social viability and environmental consequences) had an effect on the achievement of the government-private collaboration projects in Iraq. As a result, construction the government-private collaboration projects managers should give consideration to these components and use the risk management processes including recognizing, assessment, monitoring, and responding to improve the outcome and achievement chances of their projects.

Factors influencing conditions that could disrupt the government-private collaboration projects in Iraq, both internal and external, are as follows:

- The government's institutional perspective on formulating organizational recommendations for an entrepreneurial mindset.
  - Absence of robust political support.
  - Suboptimal evaluation of compensation duration.
  - Issues with corruption in public-private partnership projects.
  - The amount of time spent on negotiations.
  - Modifications to rules and regulations.
  - Opportunity for public ownership and operation at a late stage.
  - Excessively complicated and long-term contracts.
  - An increase in improvement volume.
  - Problems with local banks' finances, especially when dealing with foreign currency.
  - Concerns about the exchange rate and currency inflexibility.
  - Mistakes in data gathering.
  - Uncertainty in politics.
  - Financial unstable.
  - Rising costs associated with charges.
  - The reluctance of financial institutions to back government-private collaboration projects.
  - The upfront costs associated with creation and procurement are high.

## 7. Recommendations

The research concluded with the following recommendations, which are based on the preceding talks and findings: A preventive method, rather than a reactive one, should be taken when developing the risk management method, and must be managers in charge should be familiar with the risks that the government-private collaboration projects encounter, and upper management should take charge when it comes to communicating and managing risks among the staff members.

The research also suggests that project managers should be cautious when dealing with certain risks, such as those that can be avoided, mitigated, transferred, or accepted. To further raise understanding of risk management and its use in the government-private collaboration projects, the study suggests that project managers should attend training courses on the topic and offer informal instruction through professional growth initiatives and training workshops, like risk management awareness workshops.

Additionally, the research suggested that governments set aside funds specifically for managing risk and assign project risks to entities that are competent in handling them. Any government-private collaboration projects plan for a building project should incorporate a risk management document along with other quantitative and qualitative assessments. This will ensure that risk management is done at a higher level, which is important to the project, and that everyone involved uses the same instrument.

The research is encouraged to allocate adequate time for the consultant to develop the necessary project designs, plans, specifications, and bidding documents, given the significant risks connected with the government-private collaboration of construction projects in Iraq. Throughout the design and construction stages, meticulous and strategic planning is essential to prevent, transfer, or manage risks.

To mitigate mistakes in design, it is advisable to utilize the most current design techniques, and there is a necessity to augment the efficacy of construction and contractual management via academic programs and training to strengthen the managerial competencies of managers, enabling them to identify possible risks at an earlier stage.

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