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Examination of the Influence of Tax Incentives, Funding, And R&D Investments on Innovation Effectiveness and The Financial Performance of Firms Listed in The Iraq Stock Exchange

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ABSTRACT: Despite reforms outlined in Iraq's Investment Law No. 13 of 2006 and efforts to diversify its economy, the country's private sector remains stifled by structural barriers. For firms listed on the Iraq Stock Exchange (ISX), these challenges are compounded by limited access to tax incentives, erratic government funding, and negligible R&D infrastructure, raising critical questions about their capacity to innovate and achieve sustainable financial performance. The purpose of this study is to examine the influence of tax incentives, government funding, and R&D investment in enhancing innovation effectiveness and subsequent financial performance. The present study limits its scope to the context of firms listed on the Iraq Stock Exchange (ISX). Data was collected through the annual reports of listed firms' annual reports in ISX. This study used multivariate regression analysis to examine hypotheses that have been proposed using SPSS. The study found that tax incentives, government funding, and R&D investment have a significant positive relationship with financial performance. The study also found that innovation effectiveness has a significant relationship with financial performance. Moreover, innovation effectiveness was found to mediate significantly the relationships between tax incentives, government funding, R&D investment, and the financial performance of Iraqi firms. The study is useful as it gave further insights for Iraqi firm, especially relating to identifying the impact of tax incentives, government funding, and R&D investment on firms' innovativeness and financial performance, which is much needed in the literature.

KEYWORDS: Tax incentives, government funding, R&D investment, innovation effectiveness, financial performance.

1. INTRODUCTION

In an era where innovation and financial resilience are critical drivers of economic growth, nations worldwide leverage fiscal policies, funding mechanisms, and research and development (R&D) investments to stimulate corporate competitiveness. However, in post-conflict economies such as Iraq, systemic challenges—including political instability, bureaucratic inefficiencies, and a reliance on oil-dominated sectors—undermine the effectiveness of such strategies. Despite reforms outlined in Iraq's Investment Law No. 13 of 2006 and efforts to diversify its economy, the country's private sector remains stifled by structural barriers. For firms listed on the Iraq Stock Exchange (ISX), these challenges are compounded by limited access to tax incentives, erratic government funding, and negligible R&D infrastructure, raising critical questions about their capacity to innovate and achieve sustainable financial performance.

The Iraqi economy, still recovering from decades of conflict and mismanagement, is characterized by a paradox: while oil revenues account for over 90% of government income (World Bank, 2023), non-oil sectors struggle to attract investment or adopt innovative practices. Tax incentives, though legally enshrined, are inconsistently applied due to corruption and weak institutional oversight (Al-Mamouri & Hussein, 2023). Similarly, government funding programs for small and medium enterprises (SMEs) remain underutilized, with less than 5% of Iraqi firms reporting access to formal credit lines (UNDP, 2022). Meanwhile, R&D expenditure in Iraq is among the lowest globally, at just 0.2% of GDP (National Investment Commission, 2021), reflecting a broader neglect of innovation as a growth lever.

For ISX-listed firms, these issues are particularly acute. While the ISX has sought to modernize and attract foreign investors since its reestablishment in 2004, its performance remains volatile, with market capitalization stagnating at $4.5 billion in 2023—a fraction of regional peers (ISX Annual Report, 2023). Existing studies on corporate innovation in Iraq are sparse, often focusing narrowly on oil and gas sectors (Al-Zubaidi, 2020) or macroeconomic policy (World Bank, 2022), leaving a critical gap in understanding how fiscal and R&D policies influence firm-level outcomes. This study addresses this gap by examining the interplay

between tax incentives, funding accessibility, and R&D investments on both innovation efficacy and financial performance within Iraq's unique institutional context.

By analyzing data from ISX-listed firms, this research contributes to debates on post-conflict economic recovery, offering evidence-based insights for policymakers seeking to enhance private sector resilience. It also responds to calls for localized studies in under-researched markets, where global theories of innovation economics may not fully apply (Krammer, 2022). The findings aim to inform strategies to mitigate systemic inefficiencies, align incentives with national development goals, and foster a culture of innovation in Iraq's corporate landscape.

2. LITERATURE REVIEW

2.1. Related literature

The ability of an organisation to continuously innovate has a positive impact on financial outcomes, so innovation can be a critical component in improving financial outcomes (Dekoulou & Trivellas, 2017), because it allows an organisation to significantly differentiate its products and services from those of competitors (Xiang et al., 2019). Furthermore, it has a tendency to support sales and profit growth (Eggert et al., 2014). The unquestionable relevance of innovation for product and process improvement, as well as for generating strong competitiveness and better financial performance, is highlighted by Akter et al. (2021). As a result, innovation-based organizational has a major positive influence on all elements of performance, including customer relationships and financial outcomes (Xie et al., 2022). Zhang et al. (2014) argues that the incentives and funding received by firms will advance R&D input and thus improve financial performance. In hi-tech companies, innovation is the most important source of technical strength (Yang et al., 2020). It has the potential to boost productivity (Zhou et al., 2021) and technical advancement in the hi-tech industry (Hong et al., 2016), as well as support the industry's core competitiveness (Chen & Li, 2018). According to a growing body of evidence, innovation is critical for generating significant financial performance and long-term competitive advantages (Chen et al., 2018).

In the same vein, a tax incentive is an aspect of a country's tax code designed to incentivize or encourage a particular economic activity by reducing tax payments for a company in the said country. Effective program design is essential for successful tax incentive interventions to support innovation effectiveness (Howlett, 2018). However, creating efficient tax incentive program is difficult (Akcigit et al., 2021). This is because, in the face of significant information asymmetry about what works for stimulating R&D and innovation and making the best use of finite public resources, policymakers must make decisions about the (maximum) value of the tax incentive, its duration, who is eligible, and whether to target specific firms (Akcigit et al., 2021). Poor design decisions can result in substantial unexpected effects, such as favouring incumbents, increasing rent-seeking, or encouraging enterprises to engage in less efficient activities (Appelt et al., 2020). In some circumstances, the unintended effects are greater than the market failure(s) that the tax incentive was designed to address. Despite the vital relevance of designing successful tax incentive programmes to firms in driving R&D and innovation effectiveness, there is little theoretical and empirical assistance for academics and policymakers in the literature (Bloom et al., 2019).

Similarly, government funding is "a governmental tool used to repair market failure, improve private R&D effort, optimise resource allocation, and stimulate innovation effectiveness" (Ghazinoory & Hashemi, 2021, p. 19). It is usually assumed that the goal of creative business activities is to create value, and that value creation is a fundamental characteristic of the contemporary economy (Goede, 2018; Viviani & Maurel, 2019). Generally, the primary goal of the financing strategy enshrined in legislation for supporting enterprises is to cover the expenses of prototyping, development, and mass production, therefore directly contributing to increased research, R&D investment, and production capacity in firms (Ghazinoory & Hashemi, 2021). According to Zhu et al. (2006), public investment increases the likelihood of patenting and the proportion of creative items. In some cases, the effect of funding on R&D investment was more than that of tax incentives, like be found by the study of (Ghazinoory & Hashemi, 2021). As a result, researching the impact of government funding on a firm's value generation through enhance innovation effectiveness might help the allocate government's resources more efficiently (Zhu et al., 2020).

2.2 Resources Based View

According to Porter (1985), a firm's ability to achieve sustainable competitive advantage is the only reliable way to achieve superior performance. The resource-based view (RBV) is regarded as one of the essential principles for the firm competitive advantage. According to RBV theory, a firm is a collection of heterogeneous resources or bundles of resources, including all inputs that allow a firm to exercise and perform its strategies (Barney, 1991). The theory attempts to describe the firm's attributes that favour a high level of competitive advantage by connecting a firm's strategy and resources (Barney, 1991). It has been suggested that a firm's possession of resources that are simultaneously valuable, rare, inimitable and non-substitutable (VRIN) can be sourced to achieve sustained superior performance (Barrales-Molina et al., 2012). Further, it is suggested that the economic performance of firms does not depend simply on strategies that have been created but also depend on the cost of implementing those strategies;

those strategies cannot create perfect competitive advantage/superior performance for a firm's product until the firm acquires the necessary resources for its implementation (Barney, 1986).

Resource-based theory (RBT) supposes that heterogeneous resources concerning assets, capabilities and endowments determine firms' above-average performance (Teece et al., 1997). Resources may develop inside the firm or acquire from the market (Olavarrieta & Ellinger, 1997). The firm can enhance its financial resources by pooling and managing capital from third parties, such as tax incentives and government funding (Colombo & Murtinu, 2017). Such resources directly can be dedicated to innovation effectiveness and achieving superior performance (Lin et al., 2015).

In the same vein, research has shown that the ability of the firm to provide related and specific resources is critical to creating innovation effectiveness (Xiao et al., 2023). According to the RBV, firms can achieve superior performance through innovation effectiveness (Porter, 1990; Rothaermel, 2008; Teece et al., 1997). Innovation effectiveness can be manifested in a new design for the product, a new process for production, a new approach to marketing or a new way of conducting training (Porter, 1996). However, the speed of technological and environmental changes may make these innovations' effectiveness offer only a temporary competitive advantage (Kim et al., 2018). Therefore, once a firm achieves competitive advantage via innovation effectiveness, it can only sustain it via continuous innovation (Wang et al., 2020). Strategy scholars thus argued that continued innovation is the fundamental way to achieve a sustained competitive advantage that maintains superior performance (Rothaermel, 2008; Teece, 2007). To accomplish this, they must continuously introduce new products or services (Rothaermel, 2008); new technologies and new ways of doing things (Porter, 1985); innovations in the manufacturing processes (e.g., lean manufacturing); and in business processes (e.g., re-engineering), which can allow them to decrease their cost structure (Rothaermel, 2008). Other innovations have also been suggested: seeking an entirely new market opportunity; or serving a market segment that others have ignored. This is because slow responses from competitors can create a competitive advantage (Porter, 1996). Therefore, firms must "recognise that competitive advantage comes from continuous innovation effectiveness," (Porter, 1996, p. 68).

2.3 Innovation Effectiveness

Today, the major source of competitive advantage and superior performance for enterprises has shifted from efficiency and quality to innovation effectiveness; as a result, innovation effectiveness is the key to industries' success (Wang, 2020). The ability to innovate is the foundation of technological strength (Yang et al., 2020). Innovation effectiveness has the potential to boost productivity (Zhou et al., 2021), as well as support the industry's core competitiveness (Chen & Li, 2018). To answer the fundamental issue, "What might increase innovation effectiveness in firms?" several research have been conducted. Many factors including (i) tax incentives interventions that can stimulate increases in firm R&D and patenting, thus improving innovation effectiveness (Dai & Chapman, 2021), (ii) government funding that can correct market failure, increase private R&D effort, optimize resource allocation, and facilitate innovation effectiveness in hi-tech firms, and (iii) R&D investment which can positively affect R&D intensity and in turn enhance innovation effectiveness (Yang et al., 2019), all these factors were found to be important in a review of relevant studies (Ghazinoory & Hashemi, 2021).

Innovation is significant to the success of firms (Yu et al., 2021). In general, innovation is defined as "a process of improving a firm's capability and performance by generating and putting new ideas into action" (Xiao et al., 2023, p. 7). Meanwhile, innovation effectiveness refers to "the use of scientific and technological knowledge to create new technologies that form the basis of new products or processes within the firm" (Li, 2022, p. 1289). Scholars have viewed that innovation effectiveness can depart from current technological or market competencies because it focuses on processes and routines related to search, experimentation, discovery and implementation, which are more likely to create significant changes (Arshi et al., 2021). Innovation capabilities are described as large-scale radical changes (Farooq et al., 2021), by developing new knowledge or changing the existing skills (Yang et al., 2019). Innovation effectiveness stems from both cognition of new technological developments, and the ability to adapt and apply these new technologies to create opportunities that are consistent with customer needs (Xie et al., 2022). Thus, scholars have suggested that innovation effectiveness is related to superior performance (Xiao et al., 2023).

2.4 Financial Performance

Financial performance is the performance of business that is expressed using financial indicators such as profitability, for example, or represents the main basis for the various activities that organizations carry out (Akter et al., 2021). Financial performance is a thorough assessment of a firm's status across various areas, including assets, liabilities, equity, costs, revenue, and overall profitability. It is measured using a number of business-related formulas that enable users to compute precise information regarding the prospective effectiveness of a company (Xie et al., 2022). Under this logic, financial performance evaluation is a measurement of the achieved or expected results in light of predetermined criteria and a judgment on the management of the available natural and financial resources (Wang, 2020).

The importance of the financial performance in general lies in the fact that it aims to crown the firm's performance from several angles and in a way that serves stakeholders who have financial interests in firms to determine the strengths and weaknesses of the firm and take advantage of the data provided by the financial performance to rationalize the financial decisions of firm (Xiang et

al., 2019). Financial performance is used, in particular, in the process of following up on the firm's business, examining its behavior, monitoring its conditions, evaluating its performance levels, identifying obstacles and stating their causes, and then directing performance and proposing the necessary corrective measures in accordance with the general objectives of the firm and contributing to making peaceful decisions to preserve the investment and survival of the firm (Dekoulou & Trivellas, 2017). The financial performance assessment process for firms is of great importance to the firm's ability to achieve the goals set in advance, by comparing what has been achieved with the target results, identifying deviations and setting the necessary treatments for them, which enhances the firm's performance in terms of survival and continuity of work (Chen et al., 2018).

The evaluation of financial performance helps in measuring the development achieved by the firm during a specific period, by following up the actual results of performance, and comparing them with other periods or compared to other firms (Xie et al., 2022). Further, it's helps to show the strategic position of the firm within the sector in which it operates, and then defines the strategic plans required to improve its strategic position (Lu & Chesbrough, 2021), helps in revealing the degree of compatibility between the approved objectives and strategies and their relationship to the competitive environment of the bank (Akter et al., 2021).

2.5 Hypothesis development

2.5.1 The Direct between Tax Incentives and Innovation effectiveness

Since 2006, the government of Iraq has provided income tax deductions for income paid by businesses in the research and development (R&D) of innovative products, technology, and processes. Such reforms are outlined in Iraq's Investment Law No. 13 of 2006 in efforts to diversify Iraq economy. When the tax rate is reduced, employee wages will rise significantly, attracting more R&D personnel to work in firms. This will help businesses cope with product market competition by developing new technologies or products and increasing market share (Wan et al., 2022). Furthermore, the results on sales imply that tax incentives can be immediately transformed into new product development and commercialisation (Walter et al., 2022). Tax incentives for R&D help enterprises increase their capacity to spend more on innovation and increase their R&D intensity for new goods, resulting in a better likelihood of developing new products (Tian et al., 2020).

The relationship between tax incentives and innovation effectiveness has been presented in previous studies. For example, Walter et al. (2022) found tax incentives play an important influence to enhance innovation in term of new product sales. Similarly, Labeaga et al. (2021) found that the number of product innovations positively depends on tax credit persistence only for SMEs. In China, Dai and Chapman (2021) found that tax incentive interventions stimulate increases in firm R&D and products' patenting. The study of Tian et al. (2020) found that the firms that received tax incentives were more spending on R&D related activities, sales of new product, and long-term patenting. Song et al. (2020) found that R&D tax incentives play a significant role in enhancing product innovation in ICT industry. Similarly, the study of Wan et al. (2022) found that preferential tax policy has an obvious effect on innovation effectiveness. Therefore, this research hypothesizes that:

H1: There is a significant positive relationship between tax incentives and innovation effectiveness of Iraqi firms.

2.5.2 The Direct Relationship between Government Funding and Innovation Effectiveness

Government money may be available to assist high-tech companies in turning technology into lucrative goods and patents (Zhu et al., 2020). This is because increasing government assistance through funding, particularly for smaller businesses, would boost the production and manufacturing level of high-tech firms by introducing high-quality items, hence increasing product sales (Lü & Zhang, 2022). Greater R&D staff skills, increased patenting likelihood, and improved product innovation outputs in the form of number of new goods and sales of new products may all be attributed to government direct funding for enterprises (Ghazinoory & Hashemi, 2021).

Past studies provide some insights and empirical validation about the relationship between government funding and innovation effectiveness. For example, the study of Ghazinoory and Hashemi (2021) found that government funding has a significant effect on R&D investment, R&D employees, and new products in Iranian SMEs. The study of Kao (2018) pointed out that subsidies for R&D activities has had a positive influence on the innovation effectiveness regarding to the composition of R&D spending in terms of new and improved products. In the same vein, Lin et al. (2022) found that the implementation of Agricultural Leading Firms Program (ALFP) program for credit support, tax incentives and subsidies enhance R&D expenditures, and the productivity of processes in agriculture firms. Similarly, the study of Mina et al. (2021) found that public funding is strong predictor that affect positively on SMEs innovation in form of patenting processes. Yu et al. (2021) found that incentives in form of government grant and loan allowance for high-tech companies have positive impact on high-tech parks by accelerating R&D processes, improving the innovation effectiveness, and helping firms acquire competitive advantages. Therefore, this research hypothesizes that:

H2: There is a significant positive relationship between government funding and innovation effectiveness of Iraqi firms.

2.5.3 The Direct Relationship between R&D investment and Innovation Effectiveness

R&D investment is important to firms' innovation effectiveness (Liu & Dong, 2022). Firms invest in R&D to improve their innovation capabilities (Zhou et al., 2017). R&D investment can be used to acquire equipment or patent licencing (Huang et al., 2015). Furthermore, according to the resources-based view, knowledge and its application contribute to innovation (Zhang et al., 2018). Enterprises operate in a context of high dysfunctional competition; hence, high-tech firms should invest in R&D, which

enhances firms' innovative effectiveness (Zhang et al., 2022). Firms may acquire, utilise, and use knowledge in new goods and services by investing in R&D (Kim et al., 2018). Companies with a high R&D investment can build both formal (contract research, licensed-in patents, graduate employment, collaborative R&D, etc.) and informal (meetings, cooperative participation in forums or conferences, etc.) partnerships (Oltra et al., 2018).

The relationship between R&D investment and innovation effectiveness has been discussed in previous studies. For example, For example, Liu and Dong (2022) found that R&D investment positively impacts firms' innovation in Chinese high-tech firms in Beijing's Zhongguancun Science Park (ZSP). Zhang et al. (2022) found that R&D investment significantly impacts a firm's innovation directly and indirectly through the mediating role of absorptive capacity between 262 manufacturers in three areas of China. Pan et al. (2021) found that supply chain efficiency can significantly motivate enterprises to increase R&D investment, and R&D investment, in turn, significantly motivates innovation effectiveness. Wang et al. (2020) found that internal R&D and external knowledge acquisition enhance innovation effectiveness. Similarly, Yang et al. (2019) found that innovation effectiveness is positively affected by R&D investment and R&D intensity. Therefore, this research hypothesizes that:

H3: There is a significant positive relationship between R&D investment and innovation effectiveness of Iraqi firms.

2.5.4 The Direct Relationship between Innovation effectiveness and Financial Performance

According to Zhang and Lee (2021), financial performance may be accomplished by continuing to introduce innovative products while concentrating resources selectively. Innovation effectiveness, which includes the invention of new goods and services, the use of new opportunities within a new market, and the development of new distribution channels, is positively related to financial performance in enterprises (Wan et al., 2022). In the same vein, profits earned from enhancing innovation effectiveness are also the ultimate goal of innovation efforts (Yu et al., 2021). According to Walter et al. (2022), innovation effectiveness, which includes the availability of resources, collaborative structures, and problem-solving procedures, may lower the cost of innovation and increase revenues for businesses. Companies that use innovation to efficiently decrease waste and optimise R&D operations have a better chance of achieving improved financial performance (Xie et al., 2022).

Wang (2020) showed that innovation effectiveness positively impacts on firm performance in SMEs. Veronica et al. (2017) found that innovation generating new products, and in turn affect financial performance. The study of Arshi et al. (2021) found that innovation effectiveness impact positively on financial and nonfinancial performance outcomes. Similarly, Kim et al. (2018) found that that the concentration on efforts toward innovation is an essential factor for the creation of corporate performance. Xie et al. (2022) found that innovation has a U-shaped impact on firms' financial performance, such that the impact is initially negative but then becomes more positive as the level of innovation effectiveness increases. The study of Zhang and Lee (2021) found that companies with a high degree of government funding, have high level of innovation effectiveness in terms of a high R&D ratio, high director compensation, a low price-earnings ratio, a low quick ratio, moderate capital intensity, and a high ROA, which affect positively of financial performance. Therefore, this research hypothesizes that:

H4: There is a significant positive relationship between innovation effectiveness and financial performance of Iraqi firms.

2.5.5 Innovation Effectiveness as A Mediator

Although, the mediating role of innovation between tax incentives, government funding and financial performance has yet to addressed in the current literature. Past studies provide some insights regarding this relationship. Tax incentives are an essential driver of innovation effectiveness, and innovation effectiveness may be an influencing component in the growth function since innovation effectiveness is measured by the introduction of new goods and the rise in profits of the company (Yu et al., 2021). Tax incentives can help hi-tech companies enhance their financial performance by improving R&D and technical innovation, which can include everything from product improvement to process productivity improvements to new market development for new goods (Zhang & Lee, 2021). Tax incentives, according to Zhu et al. (2020), has a significant impact on financial performance and competitive advantage, particularly in high-technology-based enterprises, by enhancing R&D capability and knowledge accumulation, as well as the formation of intangible assets, all of which allow businesses to benefit from the excess profits brought by differentiated products. Firms that have received R&D tax credits are more likely to develop product improvements as a means of improving financial performance and maintaining market competitiveness (Labeaga et al., 2021).

Similarly, financial funding from the government is an important instrument for increasing the cash flow of hi-tech businesses and so improving their solvency (Zhang & Lee, 2021). Government support may assist hi-tech companies in focusing not just on the resources required for innovation process, but also enhancing innovation effectiveness by reducing waste, reducing inefficiencies in processes, and successfully exploiting activities in product development (Mina et al., 2021). Government funding, as part of a company's financial performance, can give financial assistance for innovation effectiveness, particularly for new product development and new technology research, lowering the company's research and development expenses and reducing the risk of future earnings (Zhu et al., 2020).

In the same vein, R&D investment is an essential driver of innovation effectiveness and subsequent financial performance (Zhang et al., 2022). For example, Liu and Dong (2022) found that R&D investment positively impacts innovation in Chinese high-tech firms in Beijing. They also noted that high-tech firms with higher innovation levels show better financial performance. Zhang

et al. (2022) argued that R&D investment could enhance the absorptive capacity of manufacturing firms in china which positively impact performance. Pan et al. (2021) also argued that R&D investment could improve supply chain efficiency and firms' performance. Wang et al. (2020) noted that internal R&D investment positively influences external knowledge acquisition and interacts with it to affect performance.

According to the RBV, tax incentives, government funding, and R&D investment reflect resources; such resources can directly be dedicated to innovation effectiveness, which is an essential driver for superior financial performance (Xiao et al., 2023). This is because innovation effectiveness supports the firm's ability to leverage resources to enhance its sustainable strategic change and financial performance (Yang & Cao, 2019). Innovation effectiveness thus enhances a firm's agility and consistency to renew its R&D processes in continuous form (Song et al., 2020) by reconfiguring financial capabilities to exploit opportunities (Wang, 2020). Yang et al. (2019) noted that the value of innovation effectiveness for financial performance is not in the resources themselves but in the resource configurations that they create in terms of new products and patents that enhance the firm's financial position. Therefore, this research hypothesizes that:

H5: Innovation effectiveness mediates the relationship between tax incentives and financial performance of Iraqi firms.
H6: Innovation effectiveness mediates the relationship between government funding and financial performance of Iraqi firms.
H7: Innovation effectiveness mediates the relationship between R&D investment and financial performance of Iraqi firms.

The Conceptual Framework

Based on the literature review and hypothesis development, the conceptual framework of this study is presented in Figure

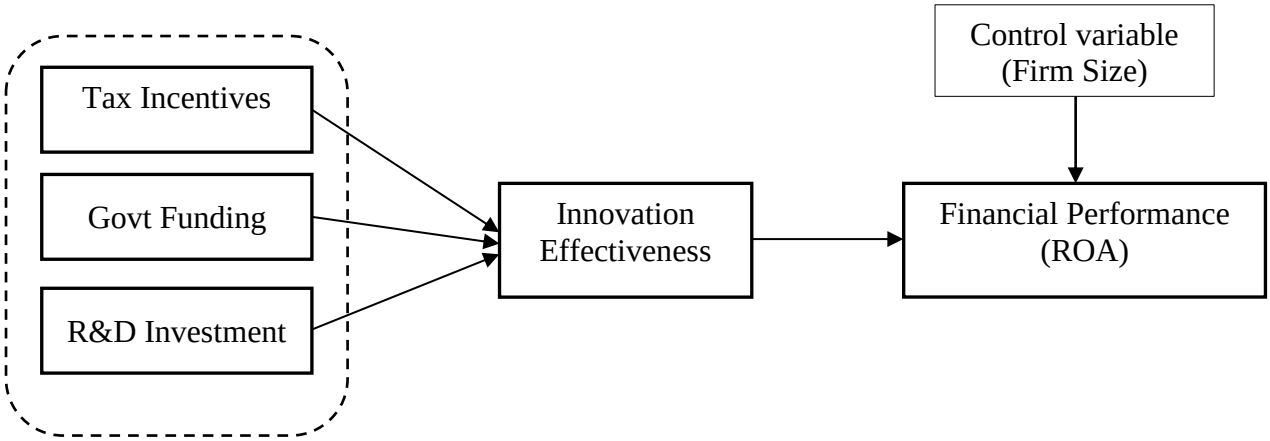

Figure 1: The Conceptual Framework

3. POPULATION, SAMPLING AND DATA COLLECTION PROCEDURES

The sampling frame of Iraqi firms in was drawn from the ISX database. According to the market statistics newsletter released on the Iraq Stock Exchange website, there are 102 companies listed on the Iraq Stock Exchange. The Iraq stock exchange includes full information for the firms, such as financial reports, phone, e-mail, contact numbers, etc.

This research study involved the collection and analysis of secondary data, defined as data that have already been collected in the past using primary sources and are currently made available in the form of a database for anyone to use in their own research. The data collection process involved the collection of one criterion variable namely financial performance, i.e., return on assets (ROA), and the collection of three predictor variables (tax incentives, government funding and R&D investment). ISX offers data on the financial statements of Iraqi listed companies. Public corporations, investors, people, and academics can access the yearly financial reporting for businesses. Financial reports from ISX are available for free download, printing, and electronic access for individuals, academics, and researchers with Internet access in addition to investors. Financial data and secondary data comprise all the annual financials filed in compliance with governance regulations, good enough to accomplish this study.

To determine the accurate number of participants for this study, G*Power is used to assess the sample size. G*Power is an inferential statistics software that calculates statistical power using a range of statistical tests such as t-tests, F-tests and chi-square tests as well as one-way versus multi-way ANOVA (Faul et al., 2009). The alpha (with a standard value of .05), power (with a standard value of 0.95), and effect size hypotheses are determined in this study (small, moderate, or large). Based on G*Power, the sample size required for this study is 89. After excluding the firms that did not receive tax incentives or government funding, the final sample that participated in this study was 63 firms.

4. DATA ANALYSIS AND RESULTS

Multicollinearity

A multicollinearity problem is defined as having more than two strongly correlated independent variables, whereas a collinearity problem is defined as having merely two highly correlated independent variables (Henseler et al., 2015). In order to assess multicollinearity and ascertain whether there was a significant connection between the independent variables, VIF was utilized in this study. VIF values more than 5 indicate collinearity between the predictor variables, so as a general rule, the VIF value shouldn't be greater than 5. Table 1 displays the inner VIF values for the structural model. Table 1, which shows the highest VIF value of 1.95 and the lowest VIF value of 1.01, indicates that there was no multicollinearity across the independent constructs in the model.

Table 1: Test of Multicollinearity

Variable	VIF	1/VIF
Innovation effectiveness	1.95	0.51282
Number of ln R&D personnel	1.60	0.62500
Research and development investment in ln	1.57	0.63694
Tax incentives	1.42	0.70422
The largest shareholder's shareholding ratio	1.41	0.70922
Asset liability ratio	1.39	0.71942
Total assets of ln	1.28	0.78125
Foreign investment ratio	1.20	0.83333
Government subsidies for ln	1.12	0.89286
Total number of employees in ln	1.03	0.97087
Nature of Property Rights	1.01	0.99009

Multivariate Regression Analysis (Hypotheses Testing)

Direct relationships

The regression analysis (Table 2) reveals that tax incentives exhibit a statistically significant positive relationship with innovation effectiveness. When control variables are excluded, the regression coefficient for tax incentives is 2.84166, significant at the 1% level ($p < 0.01$). Even after incorporating control variables, the coefficient remains largely unchanged at 2.82972, retaining its high significance ($p < 0.01$). This consistency underscores that tax incentives robustly enhance innovation outcomes, thereby confirming Hypothesis 1.

Table 2: OLS regression results (H1)

	(1) model 1	(2) model 2
Tax incentives	2.84166***	2.82972***
	(47.94)	(47.55)
The largest shareholder's shareholding ratio		0.00257
		(0.02)
Asset liability ratio		0.02595
		(0.47)
Total assets of ln		0.03132***
		(3.08)
Foreign investment ratio		0.54968***
		(4.05)
Nature of Property Rights		0.07413**
		(2.57)
Total number of employees in ln		0.05327**
		(2.13)
_cons	1.18146***	0.08135
	(58.52)	(0.29)
N	8112	8112

r2	0.221	0.225
r2_a	0.22	0.22

Note: * p<0.1, ** p<0.05,***p<0.01

The regression analysis (Table 3) reveals that tax incentives exhibit a statistically significant positive relationship with innovation effectiveness. When control variables are excluded, the regression coefficient for tax incentives is 0.48066, significant at the 1% level ($p < 0.01$). Even after incorporating control variables, the coefficient remains largely unchanged at 0.47954, retaining its high significance ($p < 0.01$). This consistency underscores that tax incentives robustly enhance innovation outcomes, thereby confirming Hypothesis 2.

Table 3: OLS regression results (H2)

	(1) model 1	(2) model 2
Government subsidies for ln	0.48066***	0.47954***
	(59.75)	(59.24)
The largest shareholder's shareholding ratio		0.04944
		(0.48)
Asset liability ratio		0.02785
		(0.54)
Total assets of ln		0.02718***
		(2.83)
Foreign investment ratio		0.32707**
		(2.54)
Nature of Property Rights		0.09056***
		(3.32)
Total number of employees in ln		-0.00073
		(-0.03)
_cons	-6.02995***	-6.67849***
	(-45.28)	(-22.58)
N	8112	8112
r2	0.306	0.308
r2_a	0.31	0.31

Note: * p<0.1, ** p<0.05,***p<0.01

The regression analysis (Table 4) reveals that tax incentives exhibit a statistically significant positive relationship with innovation effectiveness. When control variables are excluded, the regression coefficient for tax incentives is 0.13262, significant at the 1% level ($p < 0.01$). Even after incorporating control variables, the coefficient remains largely unchanged at 0.13075, retaining its high significance ($p < 0.01$). This consistency underscores that tax incentives robustly enhance innovation outcomes, thereby confirming Hypothesis 3.

Table 4: OLS regression results (H3)

	(1) model 1	(2) model 2
Research and development investment in ln	0.13262***	0.13075***
	(26.06)	(25.71)
The largest shareholder's shareholding ratio		0.02675
		(0.23)
Asset liability ratio		0.03915
		(0.65)
Total assets of ln		0.02430**
		(2.20)
Foreign investment ratio		0.96534***

		(6.55)
Nature of Property Rights		0.03902
		(1.24)
Total number of employees in ln		0.01828
		(0.67)
_cons	-0.51159***	-1.19874***
	(-5.48)	(-3.77)
N	8112	8112
r2	0.077	0.083
r2_a	0.08	0.08

Note: * p<0.1, ** p<0.05,***p<0.01

The regression analysis (Table 5) reveals that tax incentives exhibit a statistically significant positive relationship with innovation effectiveness. When control variables are excluded, the regression coefficient for tax incentives is 0.02049, significant at the 1% level ($p < 0.01$). Even after incorporating control variables, the coefficient remains largely unchanged at 0.02030, retaining its high significance ($p < 0.01$). This consistency underscores that tax incentives robustly enhance innovation outcomes, thereby confirming Hypothesis 4.

Table 5: OLS regression results (H4)

	(1) model 1	(2) model 2
Innovation effectiveness	0.02049***	0.02030***
	(27.50)	(27.18)
The largest shareholder's shareholding ratio		-0.02128**
		(-2.57)
Asset liability ratio		-0.00693*
		(-1.66)
Total assets of ln		-0.00019
		(-0.24)
Foreign investment ratio		0.03420***
		(3.31)
Nature of Property Rights		-0.00779***
		(-3.55)
Total number of employees in ln		0.00294
		(1.55)
_cons	-0.01074***	-0.01382
	(-6.12)	(-0.65)
N	8112	8112
r2	0.085	0.089
r2_a	0.09	0.09

Note: * p<0.1, ** p<0.05,***p<0.01

Mediating Relationships

The analysis of mediation effects (Table 6) proceeds in three stages. First, tax incentives demonstrate a significant direct effect on financial performance (coefficient c=0.15592, p<0.01). Second, tax incentives significantly and positively influence innovation effectiveness (coefficient a=2.82972, p<0.01). Third, when testing the mediating role of innovation, tax incentives retain a significant direct effect on ROA (return on assets) (i.e. coefficient c') (coefficient c '=0.12597, p<0.01), while innovation effectiveness exhibits a significant negative association with ROA (coefficient b=-0.01059, p<0.01). Together, these results indicate that innovation has a mediating effect between tax incentives and ROA. This supports the validity of Hypothesis 5.

Table 6: OLS regression results (H5)

	(1) ROA	(2) Innovation Effectiveness	(3) ROA

Tax incentives	0.15592***	2.82972***	0.12597***
	(35.45)	(47.55)	(25.59)
The largest shareholder's shareholding ratio	-0.02038**	0.00257	-0.02041**
	(-2.53)	(0.02)	(-2.56)
Asset liability ratio	-0.00729*	0.02595	-0.00756*
	(-1.79)	(0.47)	(-1.88)
Total assets of ln	0.00066	0.03132***	0.00033
	(0.88)	(3.08)	(0.45)
Foreign investment ratio	0.02350**	0.54968***	0.01768*
	(2.34)	(4.05)	(1.78)
Nature of Property Rights	-0.00458**	0.07413**	-0.00537**
	(-2.15)	(2.57)	(-2.54)
Total number of employees in ln	0.00461**	0.05327**	0.00405**
	(2.50)	(2.13)	(2.22)
Innovation effectiveness			0.01059***
			(13.03)
_cons	-0.04555**	0.08135	-0.04641**
	(-2.19)	(0.29)	(-2.25)
N	8112	8112	8112
r2	0.139	0.225	0.157
r2_a	0.14	0.22	0.16

Note: * p<0.1, ** p<0.05,***p<0.01

The analysis of mediation effects (Table 7) proceeds in three stages. First, tax incentives demonstrate a significant direct effect on financial performance (coefficient c=0.02473, p<0.01). Second, tax incentives significantly and positively influence innovation effectiveness (coefficient a=0.47954, p<0.01). Third, when testing the mediating role of innovation, tax incentives retain a significant direct effect on ROA (return on assets) (coefficient c '=0.47954, p<0.01), while innovation effectiveness exhibits a significant negative association with ROA (coefficient b b=0.00675, p<0.01). Together, these results indicate that innovation has a mediating effect between tax incentives and ROA. This supports the validity of Hypothesis 6.

Table 7: OLS regression results (H6)

	(1) model 1 (ROA)	(2) model 2	(3) model 3 (ROA)
Government subsidies	0.02473***	0.47954***	0.02149***
	(39.72)	(59.24)	(28.95)
The largest shareholder's shareholding ratio	-0.01805**	0.04944	-0.01838**
	(-2.28)	(0.48)	(-2.33)
Asset liability ratio	-0.00710*	0.02785	-0.00729*
	(-1.78)	(0.54)	(-1.83)
Total assets of ln	0.00043	0.02718***	0.00025
	(0.58)	(2.83)	(0.33)
Foreign investment ratio	0.01424	0.32707**	0.01203
	(1.44)	(2.54)	(1.22)
Nature of Property Rights	-0.00391*	0.09056***	-0.00452**
	(-1.86)	(3.32)	(-2.16)
Total number of employees in ln	0.00177	-0.00073	0.00177
	(0.97)	(-0.03)	(0.98)
Innovation effectiveness			0.00675***
			(7.93)
_cons	-0.39079***	-6.67849***	-0.34569***

	(-17.18)	(-22.58)	(-14.80)
N	8112	8112	8112
r2	0.168	0.308	0.174
r2_a	0.17	0.31	0.17

Note: * p<0.1, ** p<0.05,***p<0.01

The analysis of mediation effects (Table 8) proceeds in three stages. First, tax incentives demonstrate a significant direct effect on financial performance (coefficient c=0.02473, p<0.01). Second, tax incentives significantly and positively influence innovation effectiveness (coefficient a=0.47954, p<0.01). Third, when testing the mediating role of innovation, tax incentives retain a significant direct effect on ROA (return on assets) (coefficient c '=0.47954, p<0.01), while innovation effectiveness exhibits a significant negative association with ROA (coefficient b b=0.01754, p<0.01). Together, these results indicate that innovation has a mediating effect between tax incentives and ROA. This supports the validity of Hypothesis 7.

Table 8: OLS regression results (H7)

	(1) model 1 (ROA)	(2) model 2	(3) model 3 (ROA)
Research and development investment	0.00707***	0.13075***	0.00478***
	(19.47)	(25.71)	(13.05)
The largest shareholder's shareholding ratio	-0.01910**	0.02675	-0.01957**
	(-2.26)	(0.23)	(-2.38)
Asset liability ratio	-0.00655	0.03915	-0.00723*
	(-1.53)	(0.65)	(-1.75)
Total assets of ln	0.00028	0.02430**	-0.00015
	(0.35)	(2.20)	(-0.19)
Foreign investment ratio	0.04662***	0.96534***	0.02969***
	(4.43)	(6.55)	(2.90)
Nature of Property Rights	-0.00653***	0.03902	-0.00721***
	(-2.92)	(1.24)	(-3.32)
Total number of employees in ln	0.00270	0.01828	0.00238
	(1.39)	(0.67)	(1.27)
Innovation effectiveness			0.01754***
			(22.82)
_cons	-0.11378***	-1.19874***	-0.09275***
	(-5.02)	(-3.77)	(-4.21)
N	8112	8112	8112
r2	0.050	0.083	0.108
r2_a	0.05	0.08	0.11

Note: * p<0.1, ** p<0.05,***p<0.01

5. DISCUSSION

The empirical data analysis result shows a significant and positive association at a level of 0.01 significance between tax incentives and innovation effectiveness, between government funding and innovation effectiveness, and between R&D investment and innovation effectiveness. This result is consistent with the arguments of the resources-based theory and dynamic capabilities that the firm can enhance its financial performance by pooling and managing capital from third parties, such as tax incentives (Colombo & Murtinu, 2017). The results are also consistent with expectations of resources-based theory that "a firm's abilities to use its competencies or managerial capacity to improve the innovation effectiveness of the organisation continuously" (Teece, 2007, p. 1322). The theory argues that the firm can enhance its financial resources by pooling and managing capital from third parties, such as government funding (Colombo & Murtinu, 2017). Such resources can directly be dedicated to innovation effectiveness and achieving superior performance (Lin et al., 2015). This finding is also consistent with the resource-based theory, arguing that a firm can be financed by external financing sources (i.e., government funding) and internal financing sources (i.e., R&D investment) (Olavarrieta & Ellinger, 1997). Such resources can directly be dedicated to the pursuit of innovation effectiveness (Liu & Dong,

2022; Zhang et al., 2022). The result strongly supports the findings of previous studies (e.g., Walter et al., 2022a; Labeaga et al., 2021; Ghazinoory and Hashemi, 2021; Kao, 2018; Zhang et al., 2022; Liu and Dong, 2022).

The empirical data analysis result shows a significant and positive association at a level of 0.01 significance between innovation effectiveness and the financial performance of Iraqi firms. The results are consistent with expectations of the resource-based theory that asserts that firms may attain superior performance through innovation effectiveness (Porter, 1990; Rothaermel, 2008; Teece et al., 1997). For example, innovation effectiveness can be shown in a new product design, a new production process, a new marketing strategy, or a new training method (Porter, 1990). According to strategy specialists, continuous innovation is the key to achieving a long-term competitive advantage that sustains superior performance (Porter, 1990; Rothaermel, 2008; Teece et al., 1997). To do this, they must continually introduce fresh products or services, as well as new technologies and methods of operation (Porter, 1985), as well as improvements to their manufacturing and business processes (Rothaermel, 2008). This result is parallel to the findings of Wang (2020) who found that innovation effectiveness positively impacts firm performance in SMEs. Similarly, The result is also in line with Chen et al. (2016) who found a positive relationship between innovation effectiveness and firms' performance in China.

This study argues that innovation effectiveness is a mediator between tax incentives, government funding R&D investment, and the financial performance of Iraqi firms. The results showed that innovation effectiveness significantly mediates the relationship between tax incentives, government funding R&D investment, and the financial performance of Iraqi firms at a level of 0.01 significance. Hence, the resource-based theory is supported, namely that the degree of strength of a bundle of interrelated resources used for radically developing, designing, and creating new and unique products and processes can enhance financial performance (Crespi et al., 2016). For example, these bundles of innovation effectiveness routines allow firms to differentiate their products and services from competitors, thus achieving better financial performance (Lichtenthaler & Ernst, 2012). There is currently a lack of research in the literature regarding the mediation role of innovation effectiveness in such relationships. However, this study complements the other studies that consider innovation effectiveness. The findings of this study provide empirical evidence in such a context. For example, the findings support the study of Zhang and Lee (2021) found that companies with a high degree of government funding, have a high level of innovation processes in terms of a high R&D ratio, high director compensation, a low price-earnings ratio, a low quick ratio, moderate capital intensity, and a high ROA, which in turn more likely to impact financial performance. The study also supports those by Lu and Chesbrough (2021) found that the government's support policies affect positively R&D investment that related to linked to innovation, which in turn impacts positively on firm financial performance.

6. CONCLUSION

This study asserted the important role of tax incentives, government funding, and R&D investments in driving innovation effectiveness and the subsequent financial performance among firms listed on the Iraq Stock Exchange (ISX). Empirical findings validated significant positive relationships between these variables, consistent with the resource-based view (RBV) theory, which assumes that external resources enhance firms' capacity to develop unique, innovation-driven competitive advantages. Innovation effectiveness is approved as a critical mediator, bridging tax incentives, funding, and R&D investments to improved financial outcomes, measured by return on assets (ROA). For policymakers, these results call for easy access to tax incentives, targeted funding for strategic sectors, and outcome-linked programs to enhance innovations. Iraqi firms are urged to align R&D with market opportunities, cultivate internal innovation capabilities, and leverage government support to optimize resource allocation. The study addresses a gap in post-conflict economic research in Iraq, offering actionable insights for enhancing private sector flexibility in Iraq. Future research should extend the methodological method used in this study through primary data collection, explore additional financial indicators like market share growth, and investigate each sector-specific dynamics to improve policy and managerial strategies in under-researched emerging markets.

7. IMPLICATIONS

The findings confirmed positive and significant relationships between tax incentives, government funding, R&D investment, innovation effectiveness, and the financial performance of Iraqi firms and companies. Hence, the study contributed to the body of knowledge on the importance of tax incentives as a predictor of the innovation effectiveness of Iraqi firms. In terms of resource-based theory (RBT), empirical evidence was provided to support the resource-based theory, namely that tax incentives can act as a financial stimulus, allowing companies to retain more profits or reduce tax burdens. In the same vein, this result contributes to the resource-based theory by approving the theory assumption that tax incentives can help companies acquire VRIN resources that fuel innovation. This result also empirically supports the argument that government funding programs might be targeted towards specific technological advancements or industries. This can provide access to specialized resources that might not be readily available in the market, like research collaborations with national labs or expertise in emerging fields. This empirical result supports the theory assumption that R&D investment fosters the development of valuable, Rare, Inimitable, and Non-Substitutable (VRIN) resources. Companies can develop proprietary technologies, unique knowledge bases, and innovative processes that give them a financial edge.

Moreover, empirical evidence was provided to support the Resource-Based Theory, namely that successful innovation can lead to a financial advantage for high-tech companies. This is because innovation effectiveness allows companies to offer unique or superior products and services that attract a premium price or command a larger market share, streamline production, improve efficiency, and minimize waste, leading to cost reductions and improved profitability, and enhance a company's brand image as a leader in technology and innovation, thus potentially attracting more customers and investors.

For policymakers, they should design tax breaks and government funding programs that specifically target innovation. This could involve focusing on strategic technological areas or industries critical to Iraqi economic development. They also should reduce bureaucratic hurdles for accessing tax incentives and government funding. Streamlined application processes and clear guidelines will encourage companies to participate in these programs. Policymakers should consider linking tax breaks or funding to innovation outcomes. This could incentivize companies to focus on developing commercially viable innovations with a strong potential for market success. Furthermore, it encourages collaboration between high-tech companies, research institutions, and universities. This can foster knowledge sharing, resource pooling, and the development of more impactful innovations.

For companies, firms' managers should align R&D investments with company goals and market opportunities. Consider using tax breaks or government funding to support these strategic R&D activities. Managers should invest in building internal capabilities for innovation. This includes hiring skilled personnel, developing strong research methodologies, and fostering a culture of innovation within the company. Furthermore, firms' managers should actively participate in relevant government programs that offer tax breaks or funding for R&D activities. Make sure to understand program requirements and application procedures. Managers should also develop metrics to track the effectiveness of their innovation efforts. This allows companies to assess the return on investment (ROI) from R&D activities and make informed decisions about resource allocation.

8. FUTURE RESEARCH

Future research should supplement or replace secondary data with primary data collection methods. This could involve surveys or interviews with company executives, researchers, and innovation experts. Future research can develop or utilize more comprehensive metrics to capture innovation effectiveness. This could involve measures like the number of commercially successful products launched, new market creation, or customer satisfaction with innovative features. Future research should also consider additional financial performance metrics beyond traditional measures like profit or return on assets (ROA). Metrics like market share growth or valuation changes might capture the value of innovation.

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