THE ROLE OF INFORMATION TECHNOLOGY CAPABILITIES IN MEDIATING BOARD INFORMATION TECHNOLOGY GOVERNANCE AND FIRM PERFORMANCE

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DEDICATION

This thesis is dedicated to my father, who taught me that the best kind of knowledge is to be learned for its own sake. It is also dedicated to my mother, who taught me that even the largest task could be accomplished if it is done one step at a time.

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ABSTRACT

Board information technology governance (BITG) and information technology (IT) capabilities play a substantial part in making a good firm's performance. Thus, the present study aims to examine the relationship between the BITG (i.e. structures, processes, and relational mechanisms) and IT capabilities on the firm performance and the mediating role of IT capabilities on the relationship between the BITG and firm performance. A stratified random sampling technique was utilized to collect the data of the medium-sized enterprises in Iraq. There are 300 questionnaires distributed among board members at the medium-sized enterprises of the state of Baghdad, and 223 questionnaires have proceeded for data analysis. The Statistical Package for the Social Sciences (SPSS) software and AMOS technique was employed to analyze the data. The findings suggest that BITG (i.e. structures, processes and relational mechanisms) and IT capabilities are positive and significantly affect the firm performance. The BITG (i.e. structures, processes, and relational mechanisms) also affects IT capabilities. Moreover, the result also suggests that IT capabilities mediate the relationship between BITG (i.e. structures, processes, and relational mechanisms) and firm performance. The findings of this study add value to the existing body of literature on BITG, IT capabilities and firm's performance, especially in a less developed economy like Iraq that offers different institutional settings, litigation environments and cultures than in developed countries. The findings are also beneficial to the policymakers, professionals and boards of directors in optimizing the IT functions of the companies.

ABSTRAK

Keupayaan tadbir urus teknologi maklumat (BITG) dan teknologi maklumat (IT) memainkan peranan penting dalam mempertingkatkan prestasi syarikat kepada lebih baik. Oleh itu, kajian ini bertujuan untuk mengkaji hubungan antara diantara BITG (iaitu struktur, proses, dan mekanisme hubungan) dan keupayaan IT ke atas prestasi syarikat dan peranan mediasi keupayaan IT terhadap hubungan di antara BITG dan prestasi syarikat. Teknik pensampelan rawak berstrata digunakan untuk mengumpulkan data syarikat bersaiz sederhana di Iraq. Terdapat 300 soal selidik yang diedarkan di kalangan ahli lembaga pengarah syarikat bersaiz sederhana di Baghdad, dan 223 soal selidik telah digunakan untuk dianalisis. Perisian *Statistical Package for the Social Sciences* (SPSS) dan teknik AMOS diguna pakai untuk menganalisis data. Hasil kajian menunjukkan bahawa hubungan diantara BITG (iaitu struktur, proses dan mekanisme hubungan) dan keupayaan IT adalah positif dan signifikan dalam mempengaruhi prestasi syarikat. BITG (iaitu struktur, proses, dan mekanisme hubungan) juga mempengaruhi keupayaan IT. Selain itu, hasil kajian juga menunjukkan bahawa kemampuan IT menjadi pengantara hubungan di antara BITG (iaitu struktur, proses, dan mekanisme hubungan) dan prestasi syarikat. Penemuan kajian ini memberi nilai tambah kepada literatur BITG, kemampuan IT dan prestasi syarikat yang sedia ada, terutamanya dalam ekonomi kurang maju seperti Iraq yang mana menawarkan persekitaran institusi, persekitaran litigasi dan budaya yang berbeza daripada di negara maju. Penemuan ini juga bermanfaat bagi pembuat dasar, profesional dan ahli lembaga pengarah dalam mengoptimumkan fungsi IT syarikat.

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AT	-	Agency Theory
BITG	-	Board Information Technology governance
BoDs	-	Board of Directors
CEO	-	Chief executive officer
CG	-	Corporate Governance
CIO	-	Chief information officer
CFO	-	Chief Financial Officer
CSR	-	Corporate Social Responsibility
CFP	-	Despite Corporate Firm Performance
CICA	-	Canadian Institute for Chartered Accountants
COO	-	Chief Operating Officer
FP	-	Firm Performance
ITCs	-	IT Capabilities
ICT	-	Information and communications technology
IMF	-	International Monetary Fund
IT	-	Information Technology
ITG	-	Information Technology governance
IS	-	Information Systems
ILO	-	International Labour Organization
MSEs	-	Medium-Sized Enterprises
MENA	-	Middle East and North Africa
UN	-	United Nations
XML	-	Extensible Markup Language
OECD	-	Organisation for Economic Co-operation and Development
GDP	-	Gross Domestic Product

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CHAPTER 1

INTRODUCTION

1.1 Background of the study

Although firms to date are making huge investments in the Information Technology (IT) segment, they seem to face multiple obstacles upon directing their IT to enhance firm performance (FP) and to generate business value (Mithas and Rust, 2016). Therefore, firms tend to invest and govern their IT practices and assets (Chan, 2000; Turel *et al.*, 2019). IT has turned into a crucial factor that improves organisational survivability in a highly competitive setting (Sesay and Ramirez, 2016). Hence, it is significant for firms to comprehend the importance of investing in IT (Lim *et al.*, 2012; Van Grembergen and De Haes, 2009). Many studies have assessed the impact of IT capabilities (ITCs) on FP (Chen *et al.*, 2015; Syailendra, 2019). It was found that technology generates value upon being incorporated synergistically into the process of value creation (Chakravarty *et al.*, 2013; Héroux and Fortin,2018), in which this impact relies on IT capabilities and resources – the focus of this present study. Past studies concluded that companies with adequate IT capabilities exert good company performance (Zhang *et al.*, 2016).

The impact of IT on firm operations, strategies, and outcomes has been vastly reported. Information technology governance (ITG) refers to a system that helps shift IT investment into business value. Past studies revealed that board information technology governance (BITG) is a vital aspect in the overall ITG (Jewer and McKay, 2012) that could enhance FP (Turel *et al.*, 2019). Therefore, the narrow focus on ITG at the executive level restricts one's comprehension of ITG and its effect. According to Turel and Bart (2014), BITG denotes the actions taken by the board to ascertain the sustenance of organisational IT, besides extending the organisational goals and strategies, given its possibility in enhancing multiple FP aspects (Liu *et al.*, 2019; Turedi, 2019; Turel *et al.*, 2019).

Investigations on ITG have been dictated by guidelines outlined in the Sarbanes-Oxley Act of 2002 (SOX) in the USA. In this SOX, the corporate board members are constantly being challenged by regulations to govern their organisational IT functions better to build effective governance structures in meeting their objectives (Bowen *et al.*, 1999; Klamm and Watson, 2009). The SOX bestows the US federal government the authority to legislate ITG principles in the wake of corporate scandals (Enron and WorldCom) in 2001 and 2002 to ascertain financial reporting accuracy. Both increased exposure to IT risks and innovation lag appears to increase the boardroom interest towards ITG practices amidst modern organisations. The ITG is composed of several key players, including the management, shareholders, and board of directors, along with several external players (e.g., the community, creditors, government agencies, and consumers) that exert impact on the ITG mechanism (Turel and Liu, 2019). Typically, good ITG practices enhance organisational FP (Turel *et al.*, 2019, 2017; Turel and Bart, 2014).

Higher FP denotes good corporate governance. The definition of FP is abstract despite the recurrent use by numerous scholars and researchers. The FP has been the most important factor for firms to measure their goals, besides gaining competitive advantage (Liu *et al.*, 2019; Khan and Ali, 2017). The FP is vital for economic progress, investors, stakeholders, and shareholders (Khan and Ali, 2019). The FP can be measured in terms of non-financial firm performance (NFFP) and financial firm performance (FFP) (Hamdan *et al.*, 2019; Khan and Ali, 2019). The organisational goals dictate the measurement of FP. The literature depicts that FFP and NFFP indicators have been applied to measure FP (Hofmann, 2001; Kaplan and Norton, 1996). However, only a handful of studies had deployed the NFFP indicator to measure FP while considering the FFP only (Turel *et al.*, 2019, 2017). Recent studies asserted the importance of NFFP in enhancing FP in the long run (Liu *et al.*, 2019; Khan and Ali, 2019). Thus, the present study assessed both FFP and NFFP indicators to measure firm performance.

Based on the corporate governance literature, the agency theory (AT) has been vastly employed to assess BITG (Benaroch and Chernobai, 2017; Caluwe and De Haes, 2019; Liu *et al.*, 2019; Turel and Bart, 2014; Yayla and Hu, 2014) by

emphasising the control function of a board from an IT perspective. While the stakeholder theory (ST) depicts that the board should administer the business for the benefit of all stakeholders (Best and Buckby, 2007). The Cadbury report (Committee on the Financial Aspects of Corporate Governance (Code, 1992) promoted the corporate world to emphasize corporate governance, including integrity, openness, enhanced corporate behaviour, accountability, and internal controls for ITG application. The ST may be deployed to ITG so that the boards will be responsible for managing IT resources in overseeing stakeholders' interests (Daily and Cannella, 2003).

Several scholars have deployed the resource-based view (RBV) (Héroux and Fortin, 2018; Turel *et al.*, 2019; Turel *et al.*, 2017) to evaluate BITG, implying board members as valuable resources for IT governance which complementarity ITCs to enhance FP. This present study has adopted the RBV (Wernerfelt, 1984, Helfat, 1997). The concept upholds that BITG refers to a specific IT capability that complements other capabilities (Turel and Bart, 2014), such as IT capabilities (ITCs) at the firm level, assessed in this present study. The ITCs refers to firms' ability to effectively and sufficiently use IT functions and tools to support their operations and processes (Ravichandran and Lertwongsatien, 2005). The following reasons drive it: (1) ITCs excellences drives FP (Subramani, 2004; Tippins and Sohi, 2003), (2) ITCs largely exist in all types of organisations despite the absence of IT, and lastly, (3) ITCs can be impacted by and complement BITG. Thus, ITCs translates the effects of BITG into FP. These varying theoretical paradigms applied in BITG studies highlight the board of directors' roles to govern IT. They even prescribed the roles of control, service, and resource dependence, as depicted in the literature on corporate governance. The BITG relies on some factors, such as board decisions and institutional pressure. These theories suggest BITG outcomes, including the effect on stock returns and changes in FP.

The motivation of this present study had been based on the recommendations listed in several studies. Ilmudeen and Bao (2020) prescribed that the role of ITCs should be explored within the context of a developing country. In addition, Zhang *et al.* (2016) recommended examining the effects of ITCs and ITG on firm performance

among medium-sized enterprises (MSEs) in various industries and contexts. Meanwhile, Turel *et al.* (2019) recommended using a cross-sectional data study to prove the consistency of the reported results. It is expected that the roles of both BITG and ITCs will be integral, in particular, among Iraqi MSEs as they do not fully utilise ITCs due to limited cutting-edge technological resources (Harash, 2017).

MSEs still experience numerous issues, including cash flow, managing raw materials, meeting the needs of client bases, governing IT, and limited finance (Manurung and Manurung, 2019). For developing countries, MSEs employing ITCs still lag behind the developed world (Ismail, 2009). Hence, it is crucial to accurately track the transactions via performance data through coherent use and implementation of ITCs (Kim *et al.*, 2017). In the context of Iraq, past research has revealed a drawback in the traditional listed factors (e.g., emphasizing the board mechanism, internal audit mechanism, ownership structure, and external audit mechanism) that impact FP (Al-Hakim and Hassan, 2013; Alawi et al., 2018; Harash, 2017; Kareem et al., 2019). Most of such studies in Iraq are concentrated on investigating traditional boards of directors focusing on the board structure, such as independent members, Board Meetings, CEO duality, AC Size, AC Independence, AC Meetings, Government Ownership, Institutional Ownership, Managerial Ownership and Ownership Concentration (Idan et al., 2021). Boards can be troubled by poor risk management and a lack of efficiency in information technology (IT). The Sarbanes–Oxley Act has altered the landscape and impacted the attention placed on IT governance by boards (Li, et al.,2007). Thus, the FP of MSEs could be enhanced by effective usage of ITCs and proper BITG. Examining these variables in the context of Iraq would serve as a source of information and guidance for Iraqi policymakers, MSEs managers, and academics who were focusing on FP issues in comprehending the value-added of BITG and ITCs.

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1.2 Problem Statement

Information Technology (IT) is an essential competitive factor that improves the firms' business capabilities (Liu et al., 2019). Hence, companies need to understand the importance of investing in IT and integrating their IT resources with other managerial and organisational aspects (Van Grembergen and De Haes, 2009; Lim et al., 2012). Moreover, firms encounter several challenges in directing their massive investments in the IT segment to enhance their firms' performance (FP) and to generate firm value. Therefore, firms tend to invest and govern their IT practices and assets (Chan, 2000; Turel et al., 2019). Firm performance is the most critical outcome of a firm, as it reflects the extent to which it achieves its goals and gains competitive advantages. Firm performance, including financial and non-financial performance, is an indicator of the health of a firm for investors and other stakeholders (Zahra and Pearce, 1989; Khan et al., 2019). Therefore, this study adopted the board members' perception of both financial and non-financial performance to assess firm performance, as they have access to information needed to evaluate their firms' performance relative to industry standards and other forms (Liu et al., 2019).

The link between Board IT Governance mechanisms (BITG) and firm performance has been extensively studied. Some studies (Jewer and McKay, 2012, Turel *et al.*,2014,2017,2019, Liu *et al.*,2019) concluded that firms with more governed IT generally have superior firm performance. On the contrary, Nolan and McFarlan (2005); Bowen *et al.*, (2007); Coertze and Von Solms, (2013); Higgs *et al.*, (2016) and Héroux and Fortin, (2018) assert that there is no impact for Board IT Governance on firm performance. However, BITG is still poorly researched based on the theory of the firm Resource-Based View (RBV) (Héroux and Fortin, 2018; Turel *et al.*, 2019; Turel *et al.*, 2017).

The RBV theory assumes that BITG complements other IT capabilities (ITCs), which improves the firm performance (Wernerfelt, 1984; Turel and Bart, 2014). Following Turel *et al.*, (2019), this study defined ITCs as a company's ability to mobilise and use IT effectively and adequately. Moreover, it adopts four

capabilities of IT: IT infrastructure flexibility, integration, business alignment, and management capabilities (Héroux & Fortin, 2018). Infrastructure flexibility relates to the ability to share information easily firm-wide in a scalable, modular, and compatible manner (Bharadwaj, 2000; Byrd and Turner, 2001). IT integration is the inter-organisational system integration and refers to how a firm links its systems to its partners, facilitating their information exchange, communicating, and establishing collaboration (Rai *et al.*, 2006; Grover and Saeed, 2007). IT-business alignment is the firm's ability to synthesise its technology and resources by sharing coherent and harmonious goals and relationships. (Luftman and Brier, 1999). IT management is the company's ability to implement IT activities effectively (e.g., managing, controlling, evaluating, and developing IT system) (Zhang *et al.*, 2008).

This complementary effect is driven by the argument that ITCs capability exists in all firms, even if they do not have a specific IT department. Furthermore, these capabilities affect firm performance (Lim *et al.*, 2012; Zhang *et al.*, 2016; Syailendra, 2019) and are influenced by BITG mechanisms such as Board IT Governance structure (BITGS), Board IT Governance Process (BITGP), and Board IT Governance Relational (BITGR). Due to the argument that firms with suitable BITG may maintain unique IT human resources (e.g., skills and experience) and IT-enabled resources (e.g., knowledge assets and processes), ITCs are expected to influence BITG mechanisms and the performance of a firm.

This work tries to address these issues in order to provide a justification for the previous results and reality in the market. As mentioned earlier, after the inception of strategic choice theory (Miles and Snow, 1978), quite a number of studies investigated the relationship between BITG, ITCs, and FP. However, these studies failed to examine the combination of these parameters altogether and with each other. Therefore, this study aims to address the missing part of this puzzle by investigating the interrelationship between BITG, FP, and ITCs. Understanding and assessing the interrelationship between cited parameters aids this study to meet the necessary requirements for ITCs to become a mediator according to Baron and Kenny (1986)’s mediating model. Implementing ITCs as a mediator in this study assists with comprehending the nature of the relationship between BITGand FP with

regard to strategic choice theory. This is due to the fact that these studies suspect there is an indirect way in which BITG affects FP through ITCs. Moreover, it clarifies whether BITG can explain the FP. Finally, it helps the researchers of this field to have a better and clearer perspective of the supporting theories (agency theory resource-based view theory) in explaining the inter-relation between BITG, FP, and ITCs.

Despite the abundant investment opportunities, the investment climate in Iraq continues to encounter serious challenges arising from political unrest, which had devastating consequences on oil production and oil price (Bureau of Economic and Business Affairs, 2015). For over fifteen years, Iraq has been under severe political chaos following the allegation of weapon possession and mass destruction. The subsequent invasion of the country by the US collation force was in 2003. The US occupation of Iraq lasted until 2009, when the US collation force signified the end of combat activities. The development indicators dropped to the lowest levels after the US invasion as all economic projects were suspended (Jubouri, 2013).

Nevertheless, in 2014, another high-level violence erupted from the activities of the Islamic State of Iraq and Syria (ISIS) group that wants to take over power from the government installed by the US government. ISIS attacked oil facilities in the northern part of the country, which further reduced oil production. Similarly, the political instability resulted in the outward movement of Iraqi wealth abroad and further weakened the government in providing developmental projects due to the absence of foreign investment (Al-kafagi, 2018). The decreased investment in IT infrastructure and various information systems in recent years by the government and companies. Unfortunately, this figure has been reduced to only 12 billion during 2014/2018, on average, due to the ISIS war and the drop in oil prices compared to 255 billion dinars during the period 2009/2013, on average (Iraq federal budget law).

Being the fifth country with the highest oil reserve globally and the second country in the Middle East (Dozier, 2016), Iraq generates revenue from the oil sector. This oil sector constitutes about 54% of the Iraqi Gross Domestic Product (GDP) and represents about 92% of the government's fiscal revenues (Bureau of Economic and

Business Affairs, 2015). The details of oil revenues are as per Table 1.1. The revenue generated from crude oil production continues to be the central pillar sustaining Iraqi's economy. However, the political chaos in the country disrupted the Iraqi oil sector since the country's economy is tied to oil revenue. As a result, it leads to a significant drop in Iraqi's oil production and export. Thus, it has a devastating effect on the entire economy. In addition, the oil price (see

Table 1.1) dropped significantly between 2015 to 2017, which had a significant impact on the economy.

Table 1.1 Crude Oil Price and its Contribution to Iraqi Budget

Year	Share of oil revenues in the financial budget for the period 2009- 2018	Crude oil price (USD / Bbl)
2009	85.4	58.96
2010	90.8	75.61
2011	90.3	103
2012	88.8	106.3
2013	90.7	103
2014	92.1	96.8
2015	83.6	44.7
2016	85.4	36
2017	84.1	49.3
2018	89.7	65.98

Source: Central Bank of Statistics Annual Statistical Group 2009-2018

Table 1.2 presents the Iraqi MSEs performance from 2009 to 2018. The MSEs performance witnessed a gradual increase from 18.5 billion in 2009 to 29.1 billion in 2010, and their performance sharply increased to 123.1 billion in 2011 with continuous improvement from 2012 to 2013. However, there was a sharp decline

between 2013, 2015 and 2017 in the sales volume, thus showing the instability of MSEs' performance.

Table 1.2 Iraqi MSEs Performance

Year	volume of sales (Iraqi dinars)	Annual Change Rate%
2009	18.5 billion	100
2010	29.1 billion	57.2
2011	123.1 billion	323
2012	187.2 billion	52.0
2013	240.8 billion	28
2014	115.5 billion	-52.0
2015	83 billion	-28.1
2016	142.8 billion	72
2017	110 billion	-22.5
2018	132 billion	20

Source: CSO reports, 2009-2018

Within this context, the Iraqi Government considers the current challenges as opportunities to reform both public and private sectors of its economy to attract foreign direct investment and diversify its ailing economy (Abdel Hakim and Dalloul, 2009; Al-Obeidi, 2011). The Iraqi government identifies a prerequisite towards achieving this aim by establishing a stable political climate and a friendly reporting environment. Therefore, the Iraqi government shows some commitments to embark on massive reforms, including promoting efficient and effective corporate governance practices, particularly ITG. Such practices are presently a priority due to their numerous benefits, such as improving managerial practices and corporates' outcomes which assist them to attract foreign investment (Abdratha and Abeed, 2009; Harash *et al.*, 2014; Mchaal, 2015; Mohammed, 2008; Raseed and Zaker, 2013; Tohme, 2013).

New initiatives in the Iraqi capital market include the issuance of the new interim law prohibiting share ownership above 30% (ISX Law 74, 2004). Further legislation ensures better governance and accountability. November 2006 saw a ministerial order for the establishment of committees to develop a code of ethics for

Iraqi companies and in 2016, the ISX issued an exposure draft on corporate governance (Iraqi Securities Commission, 2016).

In addition, the draft protects the right of the minority shareholders by granting them the right to attend meetings, vote and access information and exercise the right to select board members and external auditors. Compared to the companies law, the exposure draft promotes the inclusion of at least two independent directors to represent on the board of directors and the establishment of committees of the board of directors for auditing, risk management and governance. The establishment of an internal audit department and a risk management department by listed companies are the other corporate governance mechanisms recommended in the exposure draft. The duties and responsibilities of the internal audit department were also defined in the exposure draft (Iraqi Securities Commission, 2016)Also This study argues that the economic openness witnessed by Iraq is attracting a large number of international companies, together with the technology and advanced technical and managerial expertise they have, which makes it necessary for the Iraq to go beyond looking at the traditional characteristics of corporate governance; it is also vital to ensure the IT governance in these companies. The structure of the board of directors, that includes specialists in IT or at least experienced in IT, contributes to the effectiveness of the performance of companies in various aspects whether they are operational and/or financial; it also contributes to the prevention of manipulation and fraud, which by its turn contributes to the improvement of the performance of the company..

In response to the scarcity of studies in this field, this study examines the impact of BITG mechanisms on the firm performance theoretical framework that merges the two dimensions of financial and non-financial performance, with the help of ITCs as a mediator among the medium-sized enterprises in Iraq. MSEs are traditionally the bedrock of developing economies and generally represent the private sector. Due to improving their business process, MSEs are investing heavily in IT (Olutoyin and Flowerday,2016). This study focused on MSEs in Iraq due to their significant contributions to economic growth. According to the Canadian Leaders in International Consulting INC report, MSEs absorbed around 40% of the Iraqi

workforce in 2014. Furthermore, this sector accounts for 37 per cent of Iraq's GDP, and the government seeks to increase this percentage to 54 per cent (Hasan, 2018).

Given these issues, it is important to understand ITCs and their influence on MSEs performance in Iraq. In Baghdad, MSEs have had problems running their businesses with few IT ties. IT staff will only really have the knowledge and understanding of the importance of IT in business. Other departments focus on their work without an awareness of IT and how it might improve their company and work (Kareem *et al.*, 2019). In terms of business partnerships, the partner may hold a key role in business success. Still, the uncertainty surrounding the responsibility and position of IT workers is a common issue among MSEs in Baghdad (Bandiera *et al.*, 2019). Distrust and disharmony are evident between the company and IT managers. IT is largely segregated from the company and may not be treated as a business associate in terms of cost and benefit-sharing. Harash *et al.* (2014) have recognised these issues described. Thus, it is important to investigate this partnership and its influence on the MSE performance of Iraq. The objective of this study, then, is to review these elements (IT infrastructure flexibility, IT integration, IT-business alignment, and IT management) and their role as ITC factors in Iraqi companies.

The ever-increasing obstacles that hinder exceptional FP in MSEs can be addressed with BITGs and ITCs, particularly to enhance the strategic role of IT within the organisation (Raymond *et al.*, 2019). Many MSEs in Iraq seem to face the risk of failure due to poor management and absence of managerial expertise (Kareem *et al.*, 2019), institutional drawbacks and low-quality features (L'Écuyer and Raymond, 2020), limited resources (Qahatan *et al.*,2020), weak economic conditions/inadequate capital (Ali *et al.*, 2020), as well as organisational, technical, and strategic issues in IT management. Hence, MSEs must understand how ITCs and BITGs can provide them with the sought business value upon investing in IT. Therefore, it is vital to identify the relative importance of BITGs on the ITCs of MSEs, ultimately, on the FP of these firms.

Motivation for using board ITG has primarily centred on the perception of board members given their senior role in the company. This study argues that board

members are ideally placed to see how and where IT can create value for a business. Additionally, an understanding of board members' views can contribute to the debate on the payoffs of IT and how IT can support the business strategy. The study adopts this measure as its validity has been shown (Turel and Bart, 2014; Turel *et al.*, 2017). The board is well-placed to assess financial performance. Because of their financial insight, they can judge the performance of the firm and regularly have to deal with the legal risks when disclosing financial performance. Financial performance measures are preferred to objective metrics if the information comes from a well-informed source (Tallon, 2010).

On the other hand, there are many research gaps that have been identified in previous studies that need to be addressed in order to provide a better explanation for the effect of ITCs on BITG and FP. Some of these gaps are as follows: Most importantly, this study identified significant gaps within the topic area: (1) the responsibility of the board of directors in contributing to and acquiring ITCs resources, and (2) maximising business value to enhance FP. These include a mediation effect of ITC, as BITGs affect ITCs, which in turn affects FP. The ITCs was measured based on IT infrastructure flexibility, IT integration, IT-business alignment, and IT management. The BITGs was measured using BITG structures (BITGS) (e.g., IT committee and IT expertise at board level), BITG processes (BITGP) (e.g., the responsibilities of the board in light of IT governance, organisational IT strategy, and its suitability in delivering deliver value to organisations, performance and risk management), and BITG relational mechanisms (BITGRM) (e.g., effective communication for the board regarding IT, and the chief information officer CIO regular meeting with the board). Both FFP and NFFP were measuring using FP.

The effects of contextual factors still create gaps with respect to the influence of BITG on FP and boundary conditions set for BITG effects by such factors. Prior research has inferred the significance of such contextual factors (Jewer and McKay, 2012; Nolan and McFarlan, 2005; Turel and Bart, 2014), but there is still a paucity of empirical studies exploring these factors. Based on literature, only two such studies are available. In the first instance, the impact of BITG on FP is not dependent on the

mode of IT device(s) adopted by the firm (i.e., absence of mediation effect) (Turel and Bart, 2014). Secondly, Turel, Liu, and Bart (2017) opine that transformation of BITG into FP is limited by the authoritarian governance style. Hence, in this study, efforts are to be made to consider the first perspective and theorize to evaluate how such contextual factors might work in agreement to giving effect to the transformation of BITG into FP gains.

Another observation is that a wide gap exists between the academically-inclined advantages of BITG and the low focus on BITG by firms (Turel *et al.*, 2017; Turel *et al.*, 2019). This indicates a "BITGpuzzle" with no or a low-level of BITG not related to obvious inferior or poor FP. Thus, the puzzle shows that the BITG impact may be premised on other situational factors or IT-related capabilities. Aside from the aforementioned gaps, other research gaps have been acknowledged in past studies which require attention in order to generate convincing explanations for the influence of ITCs on BITG and FP . Some of these gaps are as follows: discrepancy between conventional theories in explaining the impact of ITCs on the relationship between BITG and FP; lack of sufficient studies on the relationship between ITCs and BITG as well as FP; implementing the study on various countries without segregating the countries based on their corporate governance codes or regulatory systems; lack of full study of the dimensions of BITG in the third world nations; and lack of focus on the mediation effects of ITCs on the relationship between BITG and FP (Volonté, 2015; Turel *et al*,2017; Turel *et al.*, 2019).

Based on conventional theories, the agency theory, even though applicable to corporate governance, has been found to be deficient with respect to BITG and firm performance since a negative relationship has been established (Baysinger and Butler, 1985). They argued that the proportion of insider directors and total BITG were negatively and significantly related in terms of provision of advice and monitoring of management. They have therefore suggested for future studies to reconfirm this position in order to address the gap created as a result of the mixed results shown when compared with the earlier positive and significant position with respect to corporate governance mechanisms and BITG (Jensen and Meckling, 1976; Benaroch and Chernobai, 2017; Yayla and Hu, 2014; Posthumus and von Solms,

2008). However, institutional theory is yet to be popularly tested with respect to BITG as we only found a case for its usage in literature in the work of Jewel and Mckay (2012). We argue that at the heart of every social setting, there is an institution which is expected to conform to rules, regulations, procedures and processes which are internal or external.

The RBV theory has been widely employed to describe, explain, and predict the IT organisational relationship (e.g., Rivard *et al.*, 2006; Barney *et al.*, 2011; Xu *et al.*, 2016). In light of this theory, the board of directors is a source of advice and counsel for the entire management, including the CEOs. In addition, the board should bring valued resources of the ITCs (IT infrastructure, IT alignment, IT integration, IT management, and relational networks) to their organisations. The board of directors and ITCs are a valuable resource for ITG (Wernerfelt, 1984; Helfat,1997). These resources complement each other to achieve competitive advantages to the firm, improving the firm performance (Turel and Bart, 2014; Turel *et al.*, 2019).

With the gap in the literature and discrepancy between today's ITCs and the conventional theories behind them, it is important for researchers to examine the reasons behind this discrepancy. A new perspective and new group of theories are required in order to rationalize this new trend. This study contributes by clarifying the nature of ITCs through the resource-based view and stakeholder theory with respect to BITG and FP. This clarification is more practical and in agreement with the reality of companies' attitude in the recent era. It also challenges the conventional theories like agency theory and provides a better and more efficient substitute for them (stakeholder theory by Scott (1995), and Barney's (1991), resource-based view).

Referring to the background of the study, most of the previous research fell short on evaluating the association between major explanatory variables of BITG (such as board educational levels, board experiences of IT, Independent directors, IT-experienced audit committee members, board IT committees) and ITCs (Kambil and Lucas, 2002; Trites, 2004; Read, 2004; O'Donnell, 2004; Nolan and McFarlan, 2005; Huff *et al.*, 2006; Li *et al.*, 2007; Andriole, 2009; Parent and Reich, 2009; Bart and

Turel ,2010; Valentine and Stewart, 2013; Higgs *et al.*, 2016; Turel *et al.*, 2017; Benaroch and Chernobai, 2017; Turel *et al.*, 2019). Furthermore, the associations between FP and board IT-experience, technical degrees of the board, IT-experienced audit committee members and board IT committees have yet to be comprehensively examined by the researchers in the field. Hence, the aim of this study is to focus on these issues by showing incremental evidence in terms of the relationships among the stated variables.

From another perspective, a number of elements responsible for the contradictory results in the context of interrelationship among BITG, ITCs and FP are available. They were in terms of: small sample size, business risk, economic environment, less research variable to represent BITG, corporate governance mechanisms, political and regulatory system of the countries, and nature of the industry (Reuer, Klijn, & Lioukas,2014; Volonté, 2015; Turelet al,2017). Also, the dimensions of BITG are not fully studied in the developing countries as witnessed in developed countries like Canada, the USA, and the UK. (Benaroch and Chernobai,2017; Liu, 2019; Turel *et al.*, 2019; Turel *et al.*, 2017; Turel and Bart, 2014; Valentine and Stewart, 2013; Parent and Reich, 2009; Huff *et al.*, 2006).

Based on the above, the new trend of companies' attitude towards ITCs cannot be justified by conventional theories (strategic choice theory, resource dependence theory). Furthermore, the conventional belief in terms of the interrelationships among BITG, ITCs, and FP need to be revised due to the modifications in BITG policies and the new economic and political situation in recent years. This study offers incremental information in relation to the connection between BITG and ITCs as well as ITCs and FP. Additionally, most of the flaws and weaknesses that have been identified in previous studies have been taken into account in order to provide a better explanation for the effect of ITCs on the relationship between BITG and FP.

1.3 Research Questions

Based on the identified gaps, this study probed into the relationship between IT capabilities and FP, along with BITG mechanisms, by addressing the following questions:

1. RQ1: Do BITG mechanisms (BITG structures, BITG processes, and BITG relational mechanisms) and IT capabilities influence firm performance?
2. RQ2: Do BITG mechanisms (BITG structures, BITG processes, and BITG relational mechanisms) influence IT capabilities?
3. RQ3: Do IT capabilities mediate the relationship between BITG mechanisms (BITG structures, BITG processes, and BITG relational mechanisms) and firm performance?

1.4 Research Objectives

In line with the research questions formulated in this study, the following objectives were developed for this study:

1. RO1: To examine the relationships among BITG mechanisms (BITG structures, BITG processes, and BITG relational mechanisms), IT capabilities, and firm performance.
2. RO2: To examine the relationship between BITG mechanisms (BITG structures, BITG processes, and BITG relational mechanisms) and IT capabilities.
3. RO3: To examine the mediating role of IT capabilities on the relationship between BITG mechanisms (BITG structures, BITG processes, and BITG relational mechanisms) and firm performance.

1.5 Scope of study

This study's fields of BITG, IT capabilities, and firm performance are extremely broad and the scope of study only encompasses a small part of a wider field of study. This study aims to examine the quality of BITG, its effect on FP and the mediating effect of ITCs on the relationship between BITG and FP. It focuses on a specific geographical region and the study sample is limited to the MSEs in Iraq. Thus, the results only reflect what is happening in that region in relation to a specific sample in a specific time frame and thus, cannot be generalised. to cover a broader context.

The aims of this study are accomplished via three empirical examinations. Firstly, an examination of the relationship between BITG, ITCs, and FP. Secondly, an examination of the relationship between BITG and ITCs. Thirdly, the examination of the mediating effect of ITCs on the BITG - FP relationship is performed. The first empirical examination examined the relationship between BITG and FP from FFP-based and NFFP -based perspectives. Both types of measures provide different perspectives of FFP values. There is a comprehensive range of different accepted measures of each performance measure. The scope of this study specifically focuses on return on asset, return on investment, and return on sales as a firm's financial performance. Other NFFP are specifically focused on quality of product/services of organization and employee job satisfaction. The study utilized a stratified random sampling technique was utilized to collect the data of the medium-sized enterprises in Iraq. The quantitative method using questionnaire survey and structural equation modelling (SEM) were utilized. A total of 223 questionnaires werehave proceesedded for data analysis.

This study was conducted to assess the MSEs in Iraq given due to their significant contributions to economic growth. The MSEs complement larger organisations in the business value chain, thus turning the country's wheel of the production segment. Hence, MSEs that established within the services and manufacturing sectors were selected for this study due to their most significant contribution to the economy, particularly in terms of employment contribution in the

service sector up to 24%, andwhile 16% in the manufacturing sector according to the Central Statistical Organization Iraq.

Both BITG and ITCs are greater in MSEs. Thus, this study targeted the board of directors, i.e. CEOs, executive members and Non-executive members of MSEs as the respondents. They are involved in all activities and conceived as knowledge workers. Board members are those with vast knowledge and experience at the workplace. Past studies depicted that board members are the most suitable BITG studies due to their deep monitoring and control of organisationals knowledge and expertise.

The second investigation examined the relationship between BITG and ITCs from., IT infrastructure flexibility, IT-business alignment, IT management and IT integration-based perspectives. The third empirical examination was conducted on the influence of ITCs on the relationship between BITG and FP. This study's scope is confined to merely assessing ITCs based on In MSEs established in Baghdad, mainly because Baghdad is the main contributor to the national Gross Domestic Product (GDP) in Iraq, consisting of manufacturing, construction, and services domains. Moreover, Baghdad is located in one of the first economic growth corridors in Iraq.

1.6 Significance of the study

The study's importance stems from the plethora of key issues that this study has put efforts to address, as well as its contributions. Theoretically, first, the foundations of the study rest on the theory of the resource-based view (RBV). It relies on the BITGs of the organizations for enhancing overall firm performance. BITG represents the internal capability of the organization, which can result in higher performance when adequately aligned. Researchers in BITG tend to concentrate on the direct relationship between BITGs and firm performance (Hamdan et al., 2019; Liu et al., 2019; Turel and Bart, 2014; Turel et al., 2017). Yet, some have indicated an indirect relationship through mediating or moderating, but few have tested the relationship (Lim et al., 2012; Syailendra, 2019; Turel et al.,

2019; Zhang et al., 2016). Especially in the context of the Iraq sector's medium-sized enterprises, limited studies have looked at the relationship of the BITGs with performance through ITCs. This study will provide a linkage between BITG and the performance relationship with ITCs as a mediator.

Second, this study contributes to academic theory in providing empirical evidence in how IT infrastructure flexibility, IT integration, IT-business alignment, and IT management can significantly affect MSEs performance by facilitating the readiness of ITCs. This research also contributes to the body of knowledge resource-based views based on information technology assets and their importance in the competitive advantage of the MSEs. From the findings, ITCs play a key role in advancing firm performance, especially SMEs in less developing countries where studies have been limited. Indeed, it was conducted in a country with an uncertain environment, i.e. Iraq. These findings add to the evidence and extend the resource-based view theory.

Third, the study will help those who want to establish board information technology governance mechanisms. Academics may also benefit from these frameworks incorporating BITGs, ITCs, and firm performance. These would provide an avenue for future research. Practitioners looking to develop BITG for medium-sized enterprises would greatly benefit from the study. It would provide them with concrete and empirical evidence regarding the role BITG plays in firm performance.

Fourth, this study adds volume to the ITG literature with the deployment of ITCs as a mediator in the context of Iraqi MSEs. This study may serve as a platform for professionals that guide boards, executive management, and leadership teams in making important IT investment decisions, apart from applying IT to generate business value. In this digital era, IT has a critical role in the growth of an organisation. Thus, it is crucial for firm executives to make accurate decisions when integrating IT into their strategic business plans. This study highlights the significant role of BITG in developing ITCs that indirectly leads to gaining a distinctive competitive advantage. It also helps to facilitate the senior executives in making important decisions on investing in BITG.

Fifth, since firms cannot merely depend on BITG, they must focus on ITCs to enhance their FP. Notably, this study is the first that conceptualised ITCs as a mediator on the relationship between BITG and FP. Sixth, this study offers practical implications for Iraqi MSEs to leverage FP via BITG, apart from adding knowledge to the Iraq ITG literature that is in scarcity. In opposed to prior studies that explicitly demonstrated the direct impact of BITG on FP, the outcomes of this present study offer a solid basis to firms in other developing countries to further look into their business contexts.

This study has made significant contributions to the existing literature, which can assist the practitioners. First, this study has provided evidence regarding the role of IT governance in the MSEs performance, especially in the developing countries that are economically growing and encouraging foreign investments. These would lead to the growth and development of the risks associated with the IT sector related to the corporate governance and legislative system. Second, this study has presented a novel dimension to the corporate governance in Iraq as the study investigated the characteristics of the board of governors related to IT governance, which significantly improved the company's operational performance. It also helped the company effectively monitor the processing and electronic systems and the firm performance related to preventing manipulation, fraud and fund wastage.

Third, the earlier studies focused on identifying and monitoring the weakness noted in the internal control systems. These studies presented mixed results regarding the factors that affect the control of the IT monitoring and operating systems. This study has provided a new dimension as they discussed the structure of the board of directors of a company and the level to which it is controlled by the IT governance that affects the operational performance and the control of the monitoring and operating systems. Fourth, this study will hopefully contribute to Iraq Economic Policy. It will provide information on how to enhance the performance of MSEs, which would have a positive effect on the country’s economy. MSEs can then consolidate their competitive position in both the micro and macro markets due to globalization and the rapid competition for growth. The MSEs, through information

technology, can overcome the physical restrictions and improve services while reducing costs. These will help companies achieve competitive advantages.

1.7 Definitions

This section lists the definition of key terms used in this study. As this study is concerned with BITG, ITCs, FP and their measurements, the respective terms are defined with reference to this study.

Board Information Technology Governance (BITG): BITG is: "the board's actions to ensure that the organization's IT sustains and extends the organization's strategies and objectives" (Turel and Bart, 2014, p. 224). The BITG includes structure, processes, relations, and leadership to ensure IT aids organisational objectives.

Board Information Technology Governance Structures (BITGS It denotes the organisational structure and responsibilities from the process of IT investment (ITGI,2003).

Board Information Technology Governance Processes (BITGP): It reflects that these governance structures will be in place according to the IT governance framework adopted by the firm (ITGI,2003).

Board Information Technology Governance Relational Mechanisms (BITGRM): It signifies the results of governance and IT decisions that have been monitored, measured, and communicated (ITGI,2003).

IT Capabilities (ITCs): Refer to a firm's ''abilities to mobilize and deploy IT-based resources in combination or co-presence with other resources and capabilities'' (Bharadwaj, 2000). This study comprises four IT dimensions: infrastructure flexibility, integration, business alignment, and management.

Firm performance (FP): Refers to a firm's health along multiple dimensions (Zahra and Pearce, 1989) such as financial, operational, social, relational and legal.

1.8 Organization of thesis

This thesis is composed of five chapters. Chapter 1 outlines the background of the study, the statement of the problem, and the purpose of this study. It is then followed by the research objectives and questions, the study's significance, the study's scope, and the related operational definitions. Chapter 2 begins by laying out the theoretical dimensions of research, followed by the literature review of BITGs, ITCs, and FP literature. The chapter ends with research hypotheses and the development of the proposed research framework. Chapter 3 explains the methodology, besides describing the research, the design, and the sampling procedures. The quantitative approach was adopted in deciding the study population, sampling method and sample size, data collection and their sources, and the analytical techniques applied to arrive at the outcomes. The measurement scale, the reliability and validity of the measurement of variables, a pilot study, the goodness of data, data analysis procedures, and a summary are covered in this chapter. Chapter 4 presents the data analysis outcomes. The analysis of results verified the proposed conceptual model and hypotheses. The results are discussed in this chapter to address the research questions and objectives outlined in Chapter 1. Lastly, Chapter 5 summarises the study findings, its contribution to the body of knowledge, and its implications for future endeavours. The limitations of the study are discussed, and the chapter ends with a summary and conclusion.

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Appendix A Survey Questionnaire

SURVEY QUESTIONNAIRE

Dear Respondent,

You are invited to participate in research being conducted for a Doctor of Philosophy Degree (PhD) in University Technology Malaysia (UTM). This research aims to determine the mediating role of Information Technology capabilities in the relationship between Board Information Technology Governance and Firm Performance of medium-sized enterprises in Iraq. The questionnaire is for research purposes only. Each questionnaire will remain anonymous and confidential. Your participation is entirely voluntary (i.e. you are free to withdraw your participation) while the information will be taken as informed consent only.

The questionnaire will take approximately 15 minutes to complete. Please read the instructions at the beginning of the questionnaire, and be sure you have attempted all questions. There is no right or wrong answer. It is your responses that are important. If you have any query, please feel free to contact me via my mobile number: (+6011 63980307) or e-mail at sarhannazhan007@gmail.com.

Thank you.

ALNASERI NAZAHAN QAHATAN SARHAN
PhD candidate
Azman Hashim International Business School
Universiti Teknologi Malaysia
Kuala Lumpur, Malaysia

Kindly tick (√) where appropriate

Section A: Personal Details				
1. Gender	Male	☐	Female	☐
2. Age Group (years)	25 and below	☐	26-35	☐
	36-45	☐	46-55	☐
	56 and above	☐		
3. Highest Qualification(s)	Bachelor Degree	☐	Master	☐
	Professional	☐	Others: _____	
4. Position/Job title	Executive Board	☐	Non-Executive Board	☐
	CEOs	☐	Others: _____	
5. Experience	1-5 years	☐	6-10 years	☐
	11-15 years	☐	16-20 years	☐
	Above 20 years	☐		☐
6. Industries	Manufacturing	☐	Services	☐
	Agriculture	☐	Communication	☐
	Construction	☐	Others	☐

Section B: Board of Information Technology Governance (BITG)

For each statement, indicate the extent of your agreement or disagreement based on your knowledge regarding the practices that are being executed by the board of directors.

Board IT Structures (S)

Index	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
S.1	Directors are resourceful in IT devices.	1	2	3	4	5
S.2	Directors are involved with overall IT budget sessions.	1	2	3	4	5
S.3	Directors connect on matters relating to IT.	1	2	3	4	5
S.4	Directors are involved in providing IT policies.	1	2	3	4	5
S.5	Directors are conversant with the overall IT strategy/vision of the organization.	1	2	3	4	5
S.6	Directors are aware of the IT risks to which the organization is exposed.	1	2	3	4	5
S.7	Directors have received formal training in IT.	1	2	3	4	5
S.8	Directors have experience in the general management of IT within the organization.	1	2	3	4	5
S.9	Directors have worked directly in an IT role within the organization.	1	2	3	4	5

S.10	The IT strategy committee for the board of directors ensures IT is a regular agenda item and reporting issue for the board.	1	2	3	4	5
S.11	The IT strategy committee for the board of directors provides strategic direction and the alignment of IT and business issues.	1	2	3	4	5
S.12	The IT strategy committee for the board of directors provides direction for the sourcing and use of IT resources, skills, and infrastructure to meet the strategic objectives.	1	2	3	4	5
S.13	The IT strategy committee for the board of directors provides direction to management relative to IT strategy.	1	2	3	4	5
S.14	The IT strategy committee for the board of directors is comprised of independent members (from outside the organization).	1	2	3	4	5
S.15	The IT strategy committee for the board of directors' addresses IT risks.	1	2	3	4	5

Board IT Processes (P)						
Index	**Statements**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**

P.1	A formal planning process is used to define the IT strategy.	1	2	3	4	5
P.2	A formal planning process is used to update the IT strategy.	1	2	3	4	5
P.3	IT budgets are used to control and report on IT activities/investments.	1	2	3	4	5
P.4	There are IT performance measures (e.g., organization contribution, user orientation, operational excellence, or future orientation).	1	2	3	4	5
P.5	Methodologies are used to charge IT costs back to business units.	1	2	3	4	5
P.6	There are formal agreements between business and IT service about IT development projects or IT operations.	1	2	3	4	5
P.7	Processes are used to monitor the planned business benefits during and after implementation of the IT investments/projects.	1	2	3	4	5
P.8	Define objectives and expectations, such as accountability and responsibility.	1	2	3	4	5
P.9	IT strategies and policies are clearly written so that employees impacted by IT projects can understand them.	1	2	3	4	5
P.10	IT strategies and policies provide	1	2	3	4	5

these employees with extensive guidance regarding how to manage IT projects.

Board IT Relational Mechanism (RM)						
Index	**Statements**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
RM.1	The Directors/officer in charge of IT articulates a vision for IT's role in the organization.	1	2	3	4	5
RM.2	The Directors/officer in charge of IT ensures that the vision for IT's role is clearly understood by managers throughout the organization.	1	2	3	4	5
RM.3	There is job rotation (IT staff working in the business units and business people working in IT).	1	2	3	4	5
RM.4	Directors and IT people are physically located close to each other.	1	2	3	4	5
RM.5	Directors are trained in IT or IT people are taught about business.	1	2	3	4	5
RM.6	Systems such as the intranet are used to share and distribute knowledge about the IT governance framework, responsibilities, tasks, etc.	1	2	3	4	5
RM.7	Business/administrative managers	1	2	3	4	5

	act as in-betweens for business and IT.					
RM.8	Senior business and IT management act as “partners.”	1	2	3	4	5
RM.9	Senior business and IT management informally discuss the organization’s activities and its role.	1	2	3	4	5
RM.10	Internal corporate communications regularly address general IT issues.	1	2	3	4	5
RM.11	The IT executive or directors regularly attends business planning meetings.	1	2	3	4	5

Section C: Firm Performance (FP)

For each statement, indicate the extent of your agreement or disagreement based on your knowledge on the firm’s Financial Performance, and Non-Financial Performance which reflect the overall performance of the firm.

Financial Performance (FP)

Index	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
FP .1	Our organization profit increases gradually within the last three (3) years.	1	2	3	4	5
FP .2	Our organization sales volume increases gradually within the last3 years.	1	2	3	4	5

FP .3	Our organization return investment has not increased gradually within the last three (3) years.	1	2	3	4	5
FP .4	Our organization return on assets increases gradually within the last three (3) years.	1	2	3	4	5
FP .5	Our organization market share increases gradually within the last three (3) years.	1	2	3	4	5
Non-Financial Performance (NFP)						
Index	**Statements**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
NFP.1	The number of new products in our organization increase within the last three (3) years.	1	2	3	4	5
NFP.2	Our organization market development increases significantly within the last three (3) years.	1	2	3	4	5
NFP.3	Our organization quality of product/services of the organization has increased within the last three (3) years.	1	2	3	4	5
NFP.4	Our organization employee commitment or loyalty to the organization increases within the last three (3) years.	1	2	3	4	5
NFP.5	Our organization employee	1	2	3	4	5

	productivity increase within the last three (3) years.					
NFP.6	Our organization personnel development increases in the last three (3) years.	1	2	3	4	5
NFP.7	Our organization employee job satisfaction increases for the last three (3) years.	1	2	3	4	5

Section D: Information Technology Capability

For each statement, indicate the extent of your agreement or disagreement based on your personal knowledge of the firm's IT resources and capabilities.

IT Capability (ITCs)

Index	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
ITCs.1	Our information systems are scalable	1	2	3	4	5
ITCs.2	Our information systems are adopted to share information.	1	2	3	4	5
ITCs.3	Our firm transfers data with our suppliers.	1	2	3	4	5
ITCs.4	Our firm connects our systems with our suppliers' systems, which allows for the sharing of real-time information with our suppliers.	1	2	3	4	5
ITCs.5	Information systems plan reflects the business plan goals.	1	2	3	4	5

ITCs.6	Business plans refer to information systems Plans.	1	2	3	4	5
ITCs.7	Effectiveness of IT planning in our firm is better than that of other firms in our industry.	1	2	3	4	5
ITCs.8	IT project management practices in our firm are better than that in other firms in our industry.	1	2	3	4	5

Thank you for your co-operation!

دور توسيط القدرات التنظيمية لتكنولوجيا المعلومات في العلاقة بين حوكمة تكنولوجيا المعلومات في المجلس وأداء الشركة في الشركات متوسطة الحجم في العراق

أسئلة الاستبيان

عزيزي المشارك

أنت مدعو للمشاركة في الاستبانة التي يتم إجراؤها للحصول على درجة دكتوراه فلسفة في المحاسبة من جامعه التكنولوجيا (يو تي ام) في ماليزيا. الغرض من هذه الدراسة هو تحديد الدور الوسيط لقدرات تكنولوجيا المعلومات في العلاقة بين حوكمة تكنولوجيا المعلومات لمجلس الإدارة واداء الشركات متوسطة الحجم في العراق. الاستبيان هو لأغراض البحث فقط. سيبقى كل استبيان مجهولاً وسرياً. وبما ان الاستبيان تستخدم لأغراض اكاديمية فان المعلومات التي يتم جمعها ستكون سرية للغاية. أشكركم على مشاركتكم في هذه الدراسة. مساهمتكم هو موضع تقدير كبير لي .

سيستغرق استكمال الاستبيان حوالي 15 دقيقة. يرجى قراءة التعليمات في بداية الاستبيان ، وتأكد من أنك اجابات على جميع الأسئلة. ليس هناك جواب صحيح أو خاطئ. ردودك مهمة. إذا كان لديك أي استفسار ، فلا تتردد في الاتصال بي عبر رقم هاتفي النقال:07707637731() أو البريد الإلكتروني**nalnasiry@yahoo.cmm**

SURVEY QUESTIONNAIRE

Dear Respondent,

You are invited to participate in research being conducted for a Doctor of Philosophy Degree (PhD) in University Technology Malaysia (UTM). This research aims to determine the mediating role of Information Technology capabilities in the relationship between Board Information Technology Governance and Firm Performance of medium-sized enterprises in Iraq. The questionnaire is for research purposes only. Each questionnaire will remain anonymous and confidential. Your participation is entirely voluntary (i.e. you are free to withdraw your participation) while the information will be taken as informed consent only.

The questionnaire will take approximately 15 minutes to complete. Please read the instructions at the beginning of the questionnaire, and be sure you have attempted all questions. There is no right or wrong answer. It is your responses that are important. If you have any query, please feel free to contact me via my mobile number: (+6011 63980307) or e-mail at sarhannazhan007@gmail.com.

Thank you.

يرجى وضع علامة (√) حسب الاقتضاء

	ذكر	☐	انثى	☐
2. الفئة العمرية	25 مادون	☐	35-26	☐
	45-36	☐	55-46	☐
	56 مافوق	☐		
3. المؤهل العلمي	درجة البكالوريوس	☐	درجة الماجستير	☐
	درجة مهنية	☐		
4. العنوان الوظفي	عضو مجلس ادارة تنفيدي	☐	عضو مجلس ادارة غير تنفيدي	☐
	مدير التنفيدي	☐		
	1-5 سنوات	☐		
	6-10 سنوات	☐	11-15 سنوات	☐
	16-20 سنوات	☐	فوف 20 سنة	☐
	صناعة	☐	خدمات	☐
	زراعة	☐	اتصالات	☐
	بناء	☐	اخرى	☐

القسم ب: مجلس إدارة تقنية المعلومات (BITG)

لكل بيان ، اذكر مدى موافقتك أو خلافك بناءً على معرفتك فيما يتعلق بالممارسات التي يتم تنفيذها من قبل مجلس الإدارة في الشركة .

Section B: Board of Information Technology Governance (BITG)

For each statement, indicate the extent of your agreement or disagreement based on your knowledge regarding the practices that are being executed by the board of directors.

هيكليات مجلس ادارة تقنية المعلومات (هـ)

Board IT Structures (S)

Statements	اوافق بشدة	اوافق	محايد	تعارض	لا اوافق بشدة	الموشرات	الفهرس
Directors are resourceful in IT devices.						اعضاء مجلس الادارة على معرفة بتكنولوجيا المعلومات داخل المنظمة.	هـ1
Directors are involved with overall IT budget sessions.						يشارك اعضاء مجلس الادارة في جلسات ميزانية تكنولوجيا المعلومات الإجمالية.	هـ 2
Directors connect on matters relating to IT.						يتواصل اعضاء مجلس الادارة في الأمور المتعلقة بتقنية المعلومات.	هـ 3
Directors are involved in providing IT policies.						يشارك اعضاء مجلس الادارة في توفير سياسات تكنولوجيا المعلومات.	س4
Directors are conversant with the overall IT strategy/vision of the organization.						إن اعضاء مجلس الادارة على دراية بإستراتيجية / رؤية تكنولوجيا المعلومات الشاملة للمؤسسة.	هـ 5
Directors are aware of the IT risks to which the organization is exposed.						يدرك اعضاء مجلس الادارة مخاطر تكنولوجيا المعلومات التي تتعرض لها المنظمة.	هـ 6
Directors have received formal training in IT.						تلقى اعضاء مجلس الادارة تدريبًا رسميًا في مجال تكنولوجيا المعلومات.	هـ 7
Directors have experience in the general management of IT within the organization.						يتمتع اعضاء مجلس الادارة بخبرة في الإدارة العامة لتكنولوجيا المعلومات داخل المنظمة	هـ 8
Directors have worked directly in an IT role within the organization.						عمل اعضاء مجلس الادارة مباشرة في دور تكنولوجيا المعلومات داخل	هـ 9

	المنظمة.						
هـ 10	تضمن لجنة استراتيجية تكنولوجيا المعلومات لمجلس الإدارة أن تكون تكنولوجيا المعلومات بندًا منتظمًا في جدول الأعمال ومسألة الإبلاغ لمجلس الإدارة.						The IT strategy committee for the board of directors ensures IT is a regular agenda item and reporting issue for the board.
هـ 11	توفر لجنة استراتيجية تكنولوجيا المعلومات لمجلس الإدارة التوجيه الاستراتيجي ومواءمة قضايا تكنولوجيا المعلومات والأعمال.						The IT strategy committee for the board of directors provides strategic direction and the alignment of IT and business issues.
هـ 12	توفر لجنة استراتيجية تكنولوجيا المعلومات لمجلس الإدارة التوجيه لتحديد مصادر واستخدام موارد تكنولوجيا المعلومات والمهارات والبنية التحتية لتحقيق الأهداف الاستراتيجية.						The IT strategy committee for the board of directors provides direction for the sourcing and use of IT resources, skills, and infrastructure to meet the strategic objectives.
هـ 13	توفر لجنة استراتيجية تكنولوجيا المعلومات لمجلس الإدارة التوجيه للإدارة فيما يتعلق باستراتيجية تكنولوجيا المعلومات.						The IT strategy committee for the board of directors provides direction to management relative to IT strategy.
س14	تتكون لجنة استراتيجية تكنولوجيا المعلومات لمجلس الإدارة من أعضاء مستقلين (من خارج المنظمة).						The IT strategy committee for the board of directors is comprised of independent members (from outside the organization).
هـ 15	تتصدى لجنة استراتيجية تكنولوجيا المعلومات لمجلس الإدارة لمخاطر تكنولوجيا المعلومات.						The IT strategy committee for the board of directors' addresses IT risks.
عمليات مجلس ادارة تقنية المعلومات(ع)							**Board IT Processes (P)**
الفهرس	**الموشرات**	**لا اوافق بشدة**	**تعارض**	**محايد**	**اوافق**	**اوافق بشدة**	**Statements**
ع1	يتم استخدام عملية التخطيط الرسمية						A formal planning process is used

to define the IT strategy.						لتحديد استراتيجية تكنولوجيا المعلومات.	
A formal planning process is used to update the IT strategy.						يتم استخدام عملية التخطيط الرسمية لتحديث استراتيجية تكنولوجيا المعلومات.	ع2
IT budgets are used to control and report on IT activities/investments.						تستخدم ميزانيات تكنولوجيا المعلومات للتحكم والإبلاغ عن أنشطة / استثمارات تكنولوجيا المعلومات.	ع3
There are IT performance measures (e.g., organization contribution, user orientation, operational excellence, or future orientation).						هناك مقاييس لأداء تكنولوجيا المعلومات (على سبيل المثال ، مساهمة المؤسسة ، أو توجيه المستخدم ، أو التميز التشغيلي ، أو التوجه المستقبلي).	ع4
Methodologies are used to charge IT costs back to business units.						يتم استخدام المنهجيات لتوجيه تكاليف تكنولوجيا المعلومات إلى وحدات الأعمال.	ع5
There are formal agreements between business and IT service about IT development projects or IT operations.						هناك اتفاقيات رسمية بين خدمة الأعمال وتكنولوجيا المعلومات حول مشاريع تطوير تكنولوجيا المعلومات أو عمليات تكنولوجيا المعلومات.	ع6
Processes are used to monitor the planned business benefits during and after implementation of the IT investments/projects.						يتم استخدام العمليات لرصد فوائد الأعمال المخطط لها أثناء وبعد تنفيذ استثمارات / مشاريع تكنولوجيا المعلومات.	ع7
Define objectives and expectations, such as accountability and responsibility.						تحدد استراتيجيات وسياسات تكنولوجيا المعلومات الأهداف والتوقعات ، مثل المساءلة والمسؤولية.	ع8
IT strategies and policies are clearly written so that employees impacted by IT projects can understand them.						استراتيجيات وسياسات تكنولوجيا المعلومات تتم كتابة استراتيجيات وسياسات تقنية المعلومات بوضوح حتى يتمكن الموظفون المتأثرون بمشاريع تكنولوجيا المعلومات من	ع9

	فهمها.						
ع10	استراتيجيات وسياسات تكنولوجيا المعلوماتتوفر استراتيجيات وسياسات تكنولوجيا المعلومات لهؤلاء الموظفين إرشادات شاملة حول كيفية إدارة مشاريع تكنولوجيا المعلومات.						IT strategies and policies provide these employees with extensive guidance regarding how to manage IT projects.
آلية العلاقات المعلوماتية لمجلس الإدارة (ا ع) **Board IT Relational Mechanism (RM)**							
الفهرس	**الموشرات**	**لا اوافق بشدة**	**تعارض**	**محايد**	**اوافق**	**اوافق بشدة**	**Statements**
ا ع 1	يوضح اعضاء مجلس الادارة / المسؤول عن تكنولوجيا المعلومات رؤية لدور تكنولوجيا المعلومات في المنظمة.						The Directors/officer in charge of IT articulates a vision for Its role in the organization.
ا ع 2	يضمن اعضاء مجلس الادارة / المسؤولون عن تكنولوجيا المعلومات فهم رؤية دور تكنولوجيا المعلومات بوضوح من قبل المديرين في جميع أنحاء المؤسسة.						The Directors/officer in charge of IT ensures that the vision for IT's role is clearly understood by managers throughout the organization.
ا ع 3	هناك تناوب الوظيفة (موظفي تكنولوجيا المعلومات الذين يعملون في وحدات الأعمال ورجال الأعمال العاملين في مجال تكنولوجيا المعلومات).						There is job rotation (IT staff working in the business units and business people working in IT).
ا ع 4	اعضاء مجلس الادارة وموظفي تكنولوجيا المعلومات متواجدين ماديًا بالقرب من بعضهم البعض.						Directors and IT people are physically located close to each other.
ا ع 5	يتم تدريب اعضاء مجلس الادارة في مجال تكنولوجيا المعلومات أو يتم تدريس أفراد تكنولوجيا المعلومات حول الأعمال.						Directors are trained in IT or IT people are taught about business.
ا ع 6	تُستخدم أنظمة مثل الإنترانت لمشاركة وتوزيع المعرفة حول إطار						Systems such as the intranet are used to share and distribute

knowledge about the IT governance framework, responsibilities, tasks, etc.						حوكمة تكنولوجيا المعلومات والمسؤوليات والمهام وما إلى ذلك.	
Business/administrative managers act as in-betweens for business and IT.						يقوم اعضاء مجلس الادارة بادارة مهام الاعمال التجارية وتقنية المعلومات	ا ع 7
Senior business and IT management act as “partners.”						يعمل اعضاء مجلس الادارة ومسوولي تكنولوجيا المعلومات بمثابة "شركاء"..	ا ع 8
Senior business and IT management informally discuss the organization’s activities and its role.						يناقش اعضاء مجلس الادارة ومسوولي تكنولوجيا المعلومات بشكل غير رسمي أنشطة المنظمة ودورها.	ا ع 9
Internal corporate communications regularly address general IT issues.						تعالج اتصالات الشركات الداخلية بانتظام قضايا تكنولوجيا المعلومات العامة.	ا ع 10
The IT executive or directors regularly attends business planning meetings.						يحضر المدير التنفيذي أو المدراء في مجال تكنولوجيا المعلومات اجتماعات تخطيط الأعمال بانتظام.	ا ع 11

القسم ج: أداء الشركة (اس)

لكل بيان ، وضح مدى اتفاقك أو خلافك بناءً على معرفتك بالأداء المالي للشركة والأداء غير المالي الذي يعكس الأداء العام للشركة.

Section C: Firm Performance (FP)

For each statement, indicate the extent of your agreement or disagreement based on your knowledge on the firm’s Financial Performance, and Non-Financial Performance which reflect the overall performance of the firm.

Financial Performance (FP) **الأداء المالي (ام)**

Statements	**اوافق بشدة**	**اوافق**	**محايد**	**تعارض**	**لا اوافق بشدة**	**الموشرات**	**الفهرس**
Our organization profit increases						تزداد أرباح مؤسستنا تدريجيًا	ا م 1

gradually within the last three (3) years.						خلال السنوات الثلاث (3) الأخيرة.	
Our organization sales volume increases gradually within the last3 years.						يزداد حجم مبيعات مؤسستنا تدريجيًا خلال السنوات الثلاث الماضية.	ا م 2
Our organization return investment has increased gradually within the last three (3) years.						يزد الاستثمار العائد لمنظمتنا تدريجيًا خلال السنوات الثلاث (3) الأخيرة.	ا م 3
Our organization return on assets increases gradually within the last three (3) years.						يزداد عائد مؤسستنا على الأصول تدريجيًا خلال السنوات الثلاث (3) الأخيرة.	ا م 4
Our organization market share increases gradually within the last three (3) years.						تزداد حصتنا في السوق بشكل تدريجي خلال السنوات الثلاث (3) الأخيرة.	ا م 5
Non-Financial Performance (NFP)						**الأداء غير المالي (اغ م)**	
The number of new products in our organization increase within the last three (3) years.	اوافق بشدة	اوافق	محايد	تعارض	لا اوافق بشدة	الموشرات	الفهرس
Our organization market development increases significantly within the last three (3) years.						يزداد عدد المنتجات الجديدة في مؤسستنا خلال السنوات الثلاث (3) الأخيرة.	ا غ م 1
Our organization quality of product/services of the organization has increased within the last three (3) years.						يزداد تطوير سوق مؤسستنا بشكل ملحوظ خلال السنوات الثلاث (3) الأخيرة.	ا غ م 2
Our organization employee commitment or loyalty to the organization increases within the last three (3) years.						زادت جودة مؤسستنا لمنتجات / خدمات المنظمة خلال السنوات الثلاث (3) الأخيرة.	ا غ م 3
Our organization employee productivity increase within the last three (3) years.						يزداد التزام موظفي مؤسستنا أو ولائهم للمنظمة خلال السنوات الثلاث (3) الأخيرة.	ا غ م 4

Our organization personnel development increases in the last three (3) years.						تزيد إنتاجية موظفي مؤسستنا خلال السنوات الثلاث (3) الأخيرة.	ا غ م 5
Our organization employee job satisfaction increases for the last three (3) years.						يزداد تطوير الموظفين في مؤسستنا في السنوات الثلاث (3) الأخيرة.	ا غ م 6
The number of new products in our organization increase within the last three (3) years.						يزيد الرضا الوظيفي لموظف مؤسستنا عن آخر ثلاث (3) سنوات.	ا غ م 7

القسم د: قدرات تكنولوجيا المعلومات في الشركة

لكل بيان ، وضح مدى اتفاقك أو خلافك بناءً على معرفتك الشخصية بموارد وقدرات تكنولوجيا المعلومات في الشركة.

Section D: Information Technology Capabilities

For each statement, indicate the extent of your agreement or disagreement based on your personal knowledge of the firm's IT resources and capabilities.

IT Capabilities (ITCs) **قدرات تكنولوجيا المعلومات في الشركة (ق ت م ش)**

Statements	**اوافق بشدة**	**اوافق**	**محايد**	**تعارض**	**لا اوافق بشدة**	**الموشرات**	**الفهرس**
Our information systems are scalable.						أنظمة المعلومات لدينا قابلة للتطوير.	ق ت م ش 1
Our information systems are adopted to share information.						تم اعتماد أنظمة المعلومات لدينا لتبادل المعلومات.	ق ت م ش 2
Our firm transfers data with our suppliers.						تقوم شركتنا بنقل البيانات مع موردينا.	ق ت م ش 3
Our firm connects our systems with our suppliers' systems, which allows for the sharing of real-time information with our suppliers.						تقوم شركتنا بربط أنظمتنا بأنظمة موردينا ، مما يسمح بمشاركة المعلومات في الوقت الفعلي مع موردينا.	ق ت م ش 4
Information systems plan reflects the business plan goals.						تعكس خطة نظم المعلومات أهداف خطة العمل.	ق ت م ش 5

Business plans refer to information systems Plans.						تشير خطط الأعمال إلى خطط نظم المعلومات.	ق ت م ش 6
Effectiveness of IT planning in our firm is better than that of other firms in our industry.						فعالية تخطيط تكنولوجيا المعلومات في شركتنا أفضل من الشركات الأخرى في صناعتنا.	ق ت م ش 7
IT project management practices in our firm are better than that in other firms in our industry.						ممارسات إدارة مشاريع تكنولوجيا المعلومات في شركتنا أفضل من تلك الموجودة في الشركات الأخرى في صناعتنا.	ق ت م ش 8

LIST OF PUBLICATIONS

Qahatan, N., Basiruddin, R., Mohdali, R., Adedeji, B. S., Mohammed, Hamdi. (2020). Board IT Committees And Firm Performance: A Review Of Literature, *29(8)*, 1728-1738. (Indexed by SCOPUS)

Qahatan, N., Basiruddin, R., Mohdali, R., Adedeji, Hamed., Khlifa. (2020b). Board-Level Competency and Firm Performance in the Information Age. *International Journal of Innovation, Creativity and Change , 13(4),* 1171-1189. (Indexed by SCOPUS)