

## A Review of IT Audit, ITG/ISG and Cobit Frameworks on Institutions in “MENA” Region

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### Abstract

This paper clarifies the context of a critical literature review of previous researchers publications with the objective to spotlight on the IT Governance and IT Audit process frameworks and technologies used to mitigate all kinds of risks, focusing on Public, private and governmental sectors in MENA region, conducted through a desk-based research with the purpose to analysis methods of IT governance / audit.

**Key Words:** IT Governance, IT audit, IT risk, Cobit, MENA region.

## 1. Introduction

Ayshosh and Wadih (2012) It Governance various frameworks and models, measurement and maturity models and implementation tools tries to describe how IT Governance explains Solow's productivity paradox, while Nicho and Mourad (2012) explains that in the UAE public sector Structures, processes, relational mechanisms are the 3 IT Governance domains, under each one of them there are correspondent ITIL domain provide relevant context to categorize the best practices, finally Raeda (2012) clarify that external auditors in Palestinian institutions face a lot of risks and one of the most common risks is called the Access Risk while the Environmental Risk is the least one. IT Governance is reducing risks to trim down the financial electronic manipulation in light of the application and assuring that to improve the maturity of Governance needs to concentrate on the essential steps to move forward to the next level and also it requires an understandable plan and clear strategy for the management and surveillance of all activities in IT Department. While according to (Weill and Ross, 2004) IT governance will never be effective enough to cover its role. An important purpose of IT audits is to provide management with assurance that an automated process or system is meeting its objectives Stoel, Havelka&Merhout (2012). Referred to Allegrini and D'onza (2003) they pointed out that operational audit, compliance, and other activities such as (IT audit; fraud investigation; risk assessment; special projects) forms the total percentage of audit resources needed in the process of financial audit. ISG is an essential element of enterprise governance and consists of the organizational structures, leadership, and processes which enables the monitoring and reporting of security processes to ensure the achievement of objectives. (Johnston and Hale, 2009).Cobit was created by the Information Systems Audit and Control Association (ISACA), and the IT Governance Institute (ITGI) in 1992. The aim of this paper is to provide a critical review of each topic has been mentioned in above.

## 2. Methodology

The systematic literature review of the current and previous studies targeting the Public, Private and governmental sectors in MENA region countries through a desk-based conducted which focusing in IT Governance / Audit and Cobit frameworks and technologies used to mitigate operational, management, general and all other different types of risks in order to get the detailed overview and clarification.

### 3. Literature Review

Table 1: Summary of the Previous Study

No.	Author	Year	Country	Sector	Framework	Type of research
1	Hayale and Abu Khadra	2006	Jordan	Banking	CAIS	Empirical
<b>Title</b>	Evaluation of The Effectiveness of Control Systems in Computerized Accounting Information Systems: An Empirical Research Applied on Jordanian Banking Sector					
<b>Findings</b>	The Jordanian domestic banks are using effective fraud and error reduction controls, there is a need for the application other control system, such as: data security, disaster recovery, communication level and electrical controls.					
No.	Author	Year	Country	Sector	Framework	Type of research
2	Balgedom	2006	Algeria	Telecom	IT Governance	Empirical
<b>Title</b>	The impact of ICT on the strategic management of Economics firms					
<b>Findings</b>	The most important focus in the conclusion on the need to keep pace with technological development because of its role in the activation of the strategic management of organizations to cope with the pressures of modern complex competitive environment and achieve successes and advantages allow them to confrontation and survival. It is what Algerian economic institutions must strive for, and in particular Algeria Telecom company MOBILIS					
No.	Author	Year	Country	Sector	Framework	Type of research
3	Bakry, S. H., & Alfantookh, A.	2006	Saudi Arabia	Public	IT Governance / Cobit	Theoretical
<b>Title</b>	IT-governance practices: COBIT					
<b>Findings</b>	IT governance is introduced in main four steps, 1 <sup>st</sup> the review which identifies what is meant by ITG, then presenting main organization concerned with its development. 2 <sup>nd</sup> review highlights COBIT. 3 <sup>rd</sup> current state of Cobit and finally recommendations and comments of the future of IT governance developments.					
No.	Author	Year	Country	Sector	Framework	Type of research
4	ABU-MUSA, A. A	2007	Saudi Arabia	Public	IT Governance	Empirical
<b>Title</b>	Exploring Information Technology Governance (ITG) in Developing Countries: An Empirical Study					
<b>Findings</b>	Ensuring alignment of IT strategy with overall organizational strategy and supporting it as well as using the IT resources in a responsible manner, managing their IT- related risks appropriately to get the most of the IT development for business success, the entire above is only done by achieving better governance in the Saudi organizations.					
No.	Author	Year	Country	Sector	Framework	Type of research
5	Zaied, A. N. H., Khairalla, F. A., & Al-Rashed, W	2007	Kuwait	Public	ICT	Empirical
<b>Title</b>	Assessing e-Readiness in the Arab Countries: Perceptions Towards ICT Environment in Public Organisations in the State of Kuwait					
<b>Findings</b>	The overall e-Readiness of the public organizations for applying e-Government is only 54%. Ninety percent of the public organizations have adopted ambitious plans to deliver their e-Services within the 10 coming years, while others have seen a more unstructured development. In addition, 50% of the information technology employees in these organizations agreed that the network backbone technologies and infrastructure that connect their organizations to the public network is ready for applying the e-Government and they satisfied about the performance of their organization towards applying e-Government.					
No.	Author	Year	Country	Sector	Framework	Type of research
6	Abu-Musa, A.	2008	Saudi Arabia	Public	Cobit	Empirical
<b>Title</b>	Exploring the importance and implementation of COBIT processes in Saudi organizations: An empirical study"					
<b>Findings</b>	Employees in public sector realize COBIT process and domains impertinence, also lower percentage trust that such processes are satisfactorily implemented in their organization, keeping into consideration that banks service organizations and financial institutions show more concern					

	and application of Cobit processes, also internal auditors, IT specialists and executive managers are the most who appreciated the importance of Cobit processes.					
No.	Author	Year	Country	Sector	Framework	Type of research
7	Ghazanfari, M., Fathian, M., & Rais S. M	2009	Iran	Banking / Government	IT Governance	Empirical
<b>Title</b>	Cobit a suitable frame work for measuring IT Governance in Organizations (Case Study for Governmental Banks Of Iran)					
<b>Findings</b>	For IT Governance in Iran, the average maturity level in the governmental banks is (1.60), which means that Maturity level is not high enough regarding the importance of the adaptation of strategies of business with strategies of IT and the effective usage of IT that would benefit the institutions and helps to achieve strategic goals, also by losing the competition spirit in the banks industry and the satisfaction by applying just the mandatory rules and regulations, governmental banks desire for hosting E-commerce in business as a strategic tool has been vanished .					
No.	Author	Year	Country	Sector	Framework	Type of research
8	Khadra et al.	2009	Jordan	Banking	IT Governance	Empirical
<b>Title</b>	An Empirical Examination of Maturity Model as Measurement of Information Technology Governance Implementation.					
<b>Findings</b>	Local banks in Jordan applied effective awareness and communications, responsibility and accountability, and skills and expertise dimensions, on other hand, there is a shortage with others dimensions (tools and automation, "goal setting and measurement", and "policies, plans, and procedures")					
No.	Author	Year	Country	Sector	Framework	Type of research
9	Abu-Musa, A. A.	2009	Saudi Arabia	Public	Cobit \ IT Governance	Empirical
<b>Title</b>	Exploring COBIT processes for ITG in Saudi organizations: an empirical study					
<b>Findings</b>	IT is the responsibility of IT departments in Saudi organization to implement ITG COBIT process and domains and such process are neither audited nor formally conducted in the organizations. Useful information for senior management accountants, auditors, IT managers should be spelled out to clarify the implementation phase and the impact of Cobit on ITG in Saudi organizations.					
No.	Author	Year	Country	Sector	Framework	Type of research
10	Abu-Musa, A.	2010	Saudi Arabia	Public	IS Governance	Empirical
<b>Title</b>	Information security governance in Saudi organizations: an empirical study					
<b>Findings</b>	Even if the Saudi organizations majority are aware of the ISG's importance as a competence factor for the success of IT and corporate governance but still most of them do not have any written IS policy statements nor clear information security strategies nor plans for disaster recoveries , even roles and responsibilities of IS are not defined and communicated clearly, above all the alignment between ISG and the organization's overall business strategy is relatively poor also risk assessment procedures are not effectively nor adequately implemented, finally performance measurement system or properly functioning ISG processes are not found in the majority of Saudi organizations.					
No.	Author	Year	Country	Sector	Framework	Type of research
11	Yarifard, R., & Gowda, K. N.	2010	Iran	Banking	Cobit	Theoretical
<b>Title</b>	Applying CMMI to Determine the Stages of the COBIT Domains in the Banking Sector of Iran					
<b>Findings</b>	In most of the banking sectors, after the process of adopting Cobit framework, it appeared that Three Cobit domains(Planning and Organizing), (Acquisition and Implementation), and (Delivery and Support) - were at the stage of "Defined Processes. On the other hand the (Monitoring)domain was at the"Repeatable" stage in theCapability Maturity Model Integration "CMMI".					
No.	Author	Year	Country	Sector	Framework	Type of research
12	Al-Qudah, et al,	2012	Jordan	Hospital	IS	Empirical
<b>Title</b>	Impact of Information Technology on Management Control at Al Bashir Public Hospital: A Case Study of Jordan"					
<b>Findings</b>	Directors shall execute many training courses to enable the process of control connotation among staff members, and other growth segments in the field of information systems and mere latest technology at this topic.					
No.	Author	Year	Country	Sector	Framework	Type of

No.	Author	Year	Country	Sector	Framework	Type of research
13	Ayshosh and Wadih	2012	Algeria	Public	IT Governance	Theoretical
<b>Title</b>		IT governance: a strategic advantage in a knowledge economy				
<b>Findings</b>		IT Governance and its various frameworks and models, measurement and maturity models, and related implementation tools, and its roles in ensuring the performance of the organization also tries to describe how IT Governance explains Solow's productivity paradox				
14	Raeda I. abuEtaiw	2012	Palestine	Public	IT Risks Audit	Empirical
<b>Title</b>		Impact of the use of Information Technology Risks in Organizations Subject to Auditing on External Auditors' Job Quality in Gaza Strip				
<b>Findings</b>		External auditors usually faces a lot of risks, but one of the most well known risks in organizations is called the "ACCESS RISK", while "Environmental RISK" is the least one usually, the most measures affected by IT are efficiency and skills, on the otherhand both new clients' admission and retention of old ones are the least.				
15	Bin-Abbas, H., &Bakry, S. H	2012	Saudi Arabia	Government/Telecom	ICT Governance	Theoretical / compare study
<b>Title</b>		Assessment of ICT governance in three different Saudi institutions using an integrated approach				
<b>Findings</b>		New ICTgovernance approach includes essential controls, incorporated knowledge management principles, structured according to a comprehensive scope and assessment measures including importance weights assessment indicators and implementation grades , assessing those three main Saudi institutions providing useful results and focus on problems that require attentions and finally presenting views on the control's importance derived the ICT staff opinions.				
16	Nicho, M., &Mourad, B. A.	2012	UAE	Public ITG/ITIL	IT Governance	Theoretical
<b>Title</b>		Success factors for integrated ITIL deployment: An IT governance classification				
<b>Findings</b>		Structures, processes, relational mechanisms are the 3 IT Governance domains, under each one of them there are correspondent ITIL domain provide relevant context to categorize the best practices. The difference between "process and " relational mechanisms" contexts in ITG were mostly clear in the factor of "people" especially in "Organizational" and "communications" factors.				
17	Salim, Othman,&Yahya	2012	Iraq /mosu	Health	ISG	Empirical
<b>Title</b>		An Investigation of ISG Status in Mosul Health Sector				
<b>Findings</b>		Several facts regarding the Most of Mosul hospitals in Iraq: They are aware of the importance of ISG; they do not have disaster recovery plan or business continuity plan (BCP), neither have written information security policy nor security awareness program. There is no effective risk assessment procedures; implementation. Majority of Mosul hospitals do not have performance measuring systems or even a suitable working ISG processes.				
18	Shivashankarappa,Smalov,Anba.	2012	Oman	Public	Cobit	Empirical
<b>Title</b>		Implementing it governance using COBIT: A case study focusing on critical success factors				
<b>Findings</b>		Many public sector enterprises in Oman have realized the importance of integration to provide comprehensive services to its citizens and thereby align to e-governance strategies. Many Organizations identified the critical success factors and then proposed a novel framework for achieving ITG.				
19	Al Skafy et al.	2012	Jordan	Telecom	Cobit 5	Empirical
<b>Title</b>		The level of information technology governance in KULACOM-Jordan Company				
<b>Findings</b>		Moderate average of ITG is founded in Kulakom Jordan company, (E, D, and M), (BAI) COBIT principles are applied in highly degree in the company. The rest of COBIT principles such as: (A, P, O.), (D, S, S), (M, E, A) are applied in moderate degree.				

No.	Author	Year	Country	Sector	Framework	Type of research
20	Al-Zwyalif	2013	Jordan	Industrial	IT governance	Empirical
<b>Title</b>		IT Governance and its Impact on the Usefulness of Accounting Information Reported in Financial Statements				
<b>Findings</b>		IT governance affects the usefulness of accounting information and AIS. However, this usefulness is significantly influenced by the AIS. IT governance affects the usefulness of accounting information through its direct effects on the AIS.				
21	Al Ramahi et al,	2014	Jordan	Banking	COBIT 5	Empirical
<b>Title</b>		Information Technology Governance Control Level in Jordanian Banks Using: Control Objectives for Information and Related Technology (COBIT 5)				
<b>Findings</b>		Executives must ensure that information technology works with the greatest possible efficiency to help achieve goals and objectives. Growing competitive advantage, ensuring compliance and continuity, security and privacy are essential in order to achieve effective management for Information Technology related risks as well as maximal benefits in technology investment.				
22	Abu Hajar and Amineh	2014	Egypt	Government	IT governance	Theoretical
<b>Title</b>		The role of IT governance mechanisms in reducing information security risks to cut Of electronic financial manipulation in government units as a result of government system				
<b>Findings</b>		The mechanics of IT Governance is reducing these risks to reduce the financial electronic manipulation in light of the application of E-Government in the governmental units theoretically				
23	Lubbad, R. R., & Ashour, Y	2014	Palestine	Government	IT Governance	Empirical
<b>Title</b>		Towards An Abbreviated Model of IT governance for Palestinian government sector According to COBIT 5 framework				
<b>Findings</b>		13 processes has high significant and necessary for implementing IT governance framework considerable by respondents concludes in Managing all process such as (Solutions Identification and Build, Strategy, Security Services, Relationships, Security, Assets, Continuity, the IT Management Framework, Problems, Operations, Business Process Controls), then (Monitor, Evaluate and Assess Performance and Conformance), finally Ensure Benefits Delivery. The entire above are to be independent of context (international or national) and organizational settings.				
24	Zyoud, Lateef, Nsour, Reem Mohammad	2014	Syria	Banking	Cobit	Empirical
<b>Title</b>		Determining the level of IT governance applicable Commercial Bank of Syria in Lattakia according to a framework (COBIT)				
<b>Findings</b>		The level of application of IT governance in the Commercial Bank of Syria Lattakia according to the framework (COBIT) is the four dimensions of the average level.				
25	Harikrishnan, Zakareya,	2014	Bahrain	Public	IT Governance	Theoretical
<b>Title</b>		Bahrain Governance Framework: Towards Efficient Use of IT				
<b>Findings</b>		Bahrain enterprise architecture and governance is long term, continuous effort and is an "living" entity with many parts, it is a model of organization's enterprise and its future direction, enterprise architecture value to business operation should be more than simply information technology investment decision management, it is a main tool to reduce the response time for impact assessment, tradeoff analysis, reduce time-to-market, strategic plan redirection and tactical reaction, enterprise architecture and governance is not the end but a continuous journey.				
26	Griffiths, Janahi, & Al-Ammal	2014	Bahrain	Public	IT Governance	Theoretical
<b>Title</b>		IT Governance from the theory to Practice: The importance of accountability				
<b>Findings</b>		Improving the Governance maturity needs to refocus on what is necessary to move beyond the current level and requires a clear strategy or plan for the oversight and management of IT activities. IT Governance is mainly related to IT decision-making authority. Accountability is an important part in IT Governance.				

	Although organizations share more or less the same characteristics, they have different IT Governance maturity levels. IT Governance is specific for the organization and is the responsibility of the board and senior executives to give direction and control over IT					
No.	Author	Year	Country	Sector	Framework	Type of research
27	Alber and mayval	2015	Egypt	Banking	COBIT / IS	Empirical
<b>Title</b>	The impact of information security on banks in Egypt					
<b>Findings</b>	Implementation of ISO 27001 standards may affect profitability indicators as measured by "Return on Capital", while implementation of PCI-DSS standard may affect asset quality as measured by "Non-Performing Loan Ratio"					
No.	Author	Year	Country	Sector	Framework	Type of research
28	Madian A., NAzeer M.	2015	Syria	Banking	ITGovernance	Theoretical
<b>Title</b>	IT in Public banks Branches in Latakia City (A Field Study)					
<b>Findings</b>	There is commitment of the public banks inLatakia city using exercising of IT governance that ensures the control on this resource, aswell as, making sure that it enhances achieving wished fit with the strategy and aims of these organizations.					
No.	Author	Year	Country	Sector	Framework	Type of research
29	Karima A. Kadhim, Ahmad J. Hamoudi	2015	Iraq	Public	Cobit	Theoretical
<b>Title</b>	IT governance procedures: A proposed model in the light of Cobit's framework objectives					
<b>Findings</b>	General concept of information technology reflects the group elements interact with each other in order to perform specific tasks. And that the adoption of these techniques requires the provision of an appropriate environment to understand the hardware and software and provide adequate resources for the information technology, infrastructure and the skills required. COBIT framework can be guided to develop appropriate regulatory measures that achieve effective use of those components.					
No.	Author	Year	Country	Sector	Framework	Type of research
30	Vijayakumar, U., &Ilangovan, D.	2015	UAE	Public / SME's	IS AUDIT	Empirical
<b>Title</b>	A Quantitative Approach to Information Systems Audit in Small and Medium Enterprises					
<b>Findings</b>	This study focused on measuring the effectiveness of the IS audit functions in selected small and medium enterprises. The variations in KPI scores between (manufacturing, trading and services sectors) sectors in India and UAE for the SMEs. The Study found There are no significant variation in the Maturity Level Index scores, between the sectors in India. in addition, There are significant variations in the Maturity Level Index scores, between the sectors in the UAE. Furthermore, There are no significant variations in the Maturity Level Index scores, between the four regions (Abu Dhabi, Dubai, Other Emirates and Sharjah), in both countries India and UAE. There is no significant interaction between the two factors sector and region, in the determination of Maturity Level Index scores, in both the countries. Therefore, the auditor should examine the Information System policie and standards followed in an SME.					
No.	Author	Year	Country	Sector	Framework	Type of research
31	Dr. FIRAS M. ALKHALDI Dr. MINWER M. WRAIKAT	2015	Jordan	Public	ITG Governance	Empirical
<b>Title</b>	Portfolio Management And IT Governance: An Empirical Investigation using PLS Path Analysis					
<b>Findings</b>	There is a direct relationship between IT Governance and IT Portfolio Management Pillars; the Technique to Execute Organization Strategy (PMSE), Optimizing Resource Allocation across Projects (PMOS), Projectification of Business Strategy (PMPS), and Risk Balance (PMRB). Firms should take into considerations the importance of IT governance and its pillars accountability, transparency, participation and predictability in enhancing IT Portfolio Management.					
No.	Author	Year	Country	Sector	Framework	Type of research
32	Janahi, L., Griffiths, M., & Al-Ammal, H.	2015	Bahrian	Public	ITG	Empirical
<b>Title</b>	A CONCEPTUAL MODEL FOR IT GOVERNANCE: A CASE STUDY RESEARCH					
<b>Findings</b>	Study enables public sector organizations to adopt an IT Governance model in a simple and dynamic manner. The model provides a basic structure of a concept; for instance, this allows organizations to gain a better perspective on IT Governance processes and provides a clear focus					

	for decision-making attention. IT Governance model also forms as a basis for further research in IT Governance adoption models and bridges the gap between conceptual frameworks, real life and functioning governance.					
No.	Author	Year	Country	Sector	Framework	Type of research
33	Hejase et al,	2016	Lebanon	public	IT governance	Empirical
<b>Title</b>	Information technology governance in Lebanese organizations					
<b>Findings</b>	IT middle management represented by IT directors and IT managers are more knowledgeable about COBIT, ITIL, ISO 17799, PMBok and Balanced Score Card approaches in comparison to employees. IT structure / strategy are aligned with the corporate structure / strategy. Implementing IT governance at their organizations will affect their job responsibilities, IT investments in their organization are taken in consultation with the board. IT structure/strategy are aligned with the corporate structure/strategy.					
No.	Author	Year	Country	Sector	Framework	Type of research
34	Mahmoud y. Zgout	2016	Palestine	Audit institutions	IT Audit	Empirical
<b>Title</b>	The Effectiveness of using Information Technology (IT) in Auditing and its impact on improving the quality of Auditing service in the Gaza Strip					
<b>Findings</b>	IT is important in planning phase, control tests' execution and process test phases. Important role played by IT in the analytical audit implementation phase and balance examination is based on assessment of the client's ability to continue and comparing real results with the planned ones. IT usage in completion stage of audit process and report's issuance leads to improve quality of audit performance and documentation since this will assure more relevant evidence and objective result of audited items.					
No.	Author	Year	Country	Sector	Framework	Type of research
35	Waleed S. Afandi	2016	Saudi Arabia	Private	ITG	Empirical
<b>Title</b>	INFORMATION TECHNOLOGY GOVERNANCE ROLE IN ENHANCING IT PORTFOLIO MANAGEMENT: A CASE STUDY ON SAUDI ARABIA PRIVATE SECTOR					
<b>Findings</b>	1st there is an existence of the relationship between IT Governance and its Pillars: accountability, transparency, participation, and predictability. 2nd there is an existence of the relationship between IT Portfolio Management and its Pillars: a Technique To Execute Organization Strategy accountability, transparency,, Optimizing Resource Allocation across Projects (PMOS), Projectification of Business Strategy(PMPS),and Risk Balance (PMRB). 3rd there is a relationship between IT Governance and IT Portfolio Management.					
No.	Author	Year	Country	Sector	Framework	Type of research
36	Janahi, L. A. M.	2016	Bahrain	Public	ITG	Theoretical
<b>Title</b>	<i>The importance of accountability in IT governance practice in the public sector: a case study of the Kingdom of Bahrain</i>					
<b>Findings</b>	IT structure in public sector organizations needs revisiting to enable to better disseminating of IT activities , therefore lead into promoting an accountability culture through definite roles and responsibilities. In addition, the researcher pointed to the enacting forces and the importance of IT-related laws in defining internal controls and protecting the organization's assets from IT related risks.					
No.	Author	Year	Country	Sector	Framework	Type of research
37	Nakabi, N., Tadili, H., &Semaa, A.	2017	morocco	Public	ITG	Empirical
<b>Title</b>	The state of IT Governance in Moroccan Public Sector					
<b>Findings</b>	IT governance based on decisive factors namely: (i) setting up an IT leadership authority that must be granted to the CIO with a clear definition of his authorities and responsibilities. (ii) Defining organization's structure in terms of IT functionality and IT subordinates and describing limits and separations between Business/IT functions. (iii) Definition of clear decision-making processes in terms of portfolio management, the necessary IT investments. Decision-making in the public sector is an important challenge Many organizations are beginning to implement IT Governance practices. We note that IT Governance Structures are implemented in the main cases. For IT Governance Processes, we note that IT frameworks are not applied and specific processes like Service Level Agreements (SLAs), Activity Based Costing, ROI calculation, and measurements are not widely practiced.					



## 4. Result/Findings

Table 2: Finding from Previous Literature Review

No.	Authors	Year	Country	Sector	Framework	Type of research	Findings
1	Hayale and Abu-Khadra	2006	Jordan	Banking	CAIS	Empirical	Appendix A (Table 1)
2	Khadra	2009	Jordan	Banking	ITG	Empirical	Appendix A (Table 1)
3	Al-Skafy	2012	Jordan	Telecom	Cobit 5	Empirical	Appendix A (Table 1)
4	Al-Zwaylif	2013	Jordan	Industrial	IT Governance	Empirical	Appendix A (Table 1)
5	Al Ramahi	2014	Jordan	Banking	Cobit 5	Empirical	Appendix A (Table 1)
6	Al-Oudah	2012	Jordan	Hospital	IS	Empirical	Appendix A (Table 1)
7	Balgedom	2006	Algeria	Telecom	IT Governance	Empirical	Appendix A (Table 1)
8	Ayshosh and Wadit	2012	Algeria	General	IT Governance	Theoretical	Appendix A (Table 1)
9	Abu Hajar and Aminet	2014	Egypt	Government	IT Governance	Theoretical	Appendix A (Table 1)
10	Alber and mayyal	2015	Egypt	Banking	Cobit /IS	Empirical	Appendix A (Table 1)
11	Hejase	2016	Lebanon	Private	IT Governance	Empirical	Appendix A (Table 1)
12	Mahmoud Zgout	2016	Palestine	Audit Institutions	IT Audit	Empirical	Appendix A (Table 1)
13	Raeda abu Etaiwy	2012	Palestine	General	IT Risks/ Audit	Empirical	Appendix A (Table 1)
14	Lubbad & Ashour	2014	Palestine	Government	IT Governance	Empirical	Appendix A (Table 1)
15	Abu-Musa	2009	Saudi Arabia	General	Cobit / IT Governance	Empirical	Appendix A (Table 1)
16	Abu-Musa	2007	Saudi Arabia	General	IT Governance	Empirical	Appendix A (Table 1)
17	Abu-Musa	2008	Saudi Arabia	General	Cobit	Empirical	Appendix A (Table 1)
18	Abu-Musa	2010	Saudi Arabia	General	IS Governance	Empirical	Appendix A (Table 1)
19	Bin-Abbas&Bakry	2012	Saudi Arabia	Telecom	ICF Governance	Theoretical	Appendix A (Table 1)
20	Bakry & Alfantouk	2006	Saudi Arabia	General	ITG / Cobit	Theoretical	Appendix A (Table 1)
21	Zyoud, Lateef, Nsour, Reem, Mohammad	2014	Syria	Banking	Cobit	Empirical	Appendix A (Table 1)
22	Median, Nazeer	2015	Syria	Banking	IT Governance	Theoretical	Appendix A (Table 1)
23	Kaenna Kadhim, Ahmad Hamoudi	2015	Iraq	General	Cobit	Theoretical	Appendix A (Table 1)
24	Vijayakumar & Ilangooven	2015	UAE	General/ SME's	IS Audit	Empirical	Appendix A (Table 1)
25	Nicho & Mourad	2012	UAE	General	IT Governance	Theoretical	Appendix A (Table 1)
26	Waleed Afandi	2016	Saudi Arabia	General	ITG	Empirical	Appendix A (Table 1)
27	Firas Alkhaldi, Mawer Wraikat	2015	Jordan	General	ITG Governance	Empirical	Appendix A (Table 1)
28	Firas Alkhaldi, Mawer Wraikat	2015	Jordan	General	ITG	Empirical	Appendix A (Table 1)
29	Harikrishnan, Zakareya	2014	Bahrain	General	ITG	Theoretical	Appendix A (Table 1)
30	Janahi	2016	Bahrain	General	ITG	Theoretical	Appendix A (Table 1)
31	Griffiths, Janahi & Al-Ammal	2014	Bahrain	General	ITG	Theoretical	Appendix A (Table 1)
32	Janahi, Griffiths, & Al-Ammal	2015	Bahrain	General	ITG	Empirical	Appendix A (Table 1)
33	Salim, Othman & Yahya	2012	Iraq /mosul	Health	ISG	Empirical	Appendix A (Table 1)
34	Yarifardis Gowda	2010	Iran	Bank	Cobit	Theoretical	Appendix A (Table 1)
35	Ghazanfari, Fathian & Rais	2009	Iran	Bank / Governmental	IT Governance	Empirical	Appendix A (Table 1)
36	Zaid, Khairallah & Al-Rashed	2007	Kuwait	General	ICT	Empirical	Appendix A (Table 1)
37	Nakabi, Yadiril & Sema	2017	Morocco	General	ITG	Empirical	Appendix A (Table 1)
38	Shivashankarappa, Simalov, Dharmalingam & Srinivasagan	2012	Oman	General	Cobit	Empirical	Appendix A (Table 1)

## 5. Conclusion

The study revealed the contribution from the current and previous study in few countries in the Middle East which related to the sector in MENA Countries regarding IT Governance, Cobit, IT Audit and IT risk Controls. The comparison of current and previous study is revealed the gap in the research has been

mentioned in above table in detailed.

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