

IT Governance, IT/Business Alignment and Organization Performance for Public Sectors

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Abstract—In the literature, we found that there is a lack of clear implementation strategies for the public sector on IT governance. The work done for IT governance is largely suitable for private sector. In this paper we identify the gaps in the literature and present a practical model for IT Governance through IT/Business alignment, and organizational performance measures.

Index Terms—Public sector IT governance, IT/business alignment, organization performance.

I. INTRODUCTION

IT Governance is a defined structure which aligns IT strategy with business strategy and it captures the organisation's overall structure and dynamic behavior. The IT governance and its structural establishment impact on business, IT embedded process, organizational behaviour and inter-/ intra- organisational relationships.

IT governance is an essential part of enterprise governance. While the need for governance at the enterprise level is driven primarily by demand for transparency across enterprise risks and protection of shareholder value, the significant costs, risks and opportunities associated with IT implementation call for a dedicated, yet integrated, focus on IT governance. The Public Sector initiative [1] requires re-establishment of the Public Sector IT governance in order to reach the vision and mission of our Public Sector Objectives. However, the IT governance in public sectors is not always practical, resulting in a range of issues, which hinder the organization performance, namely:

- 1) Staff unable to access integrated data due to multiple disconnected systems;
- 2) Proliferation of manual based-systems;
- 3) Lack of semantic integration;
- 4) Mandrauc effort in obtaining a snapshot of data from multiple systems.

Though IT governance aims to adding value to an organisation while balancing the risk and return aspects associated with IT investments, however, it lacks clear implementation strategies guided by clear corporate governance and IT governance. The research will produce literature reviews on the cutting edge technologies for IT governance and propose new models and frameworks for IT governance, business-IT strategy alignment and organisational performance for capability sustainment. This

work aims to solve the incongruities and inconsistencies of ITG mechanisms, to thereby increase the consensus about this subject. To do this, it is necessary to show the incongruities and inconsistencies and how to solve this problem in different sectors.

Therefore, this research examines the literature related to IT Governance, IT/Business Alignment and organisational Performance models, and provides an innovative practical IT Governance Model that could be utilised in the public sector and particularly for Public Sector initiatives. The paper is organised as follows: Section II shows the issues of IT governance in the public sector. Section III describes the concepts of governance and IT governance. The basics of IT governance decision is described in Section IV. The alignment between business and IT is shown in Section V. Section VI mainly presents how IT governance affects organizational performance. IT governance for the public sector is presented in Section VII. Different issues for IT governance in the public sectors are described in Section VIII. Section IX proposed the next generation framework for implementing IT governance in public sector. The paper is concluded on Section X.

II. ISSUES OF IT GOVERNANCE IN THE PUBLIC SECTOR

In the literature, we have studied all the aspects of the governments mandate and recommendations and we have found there are three key dimensions of the domain of IT enabled high performance enterprise governance, namely:

- 1) IT governance,
- 2) Business-IT Strategic Alignment, and
- 3) Organisational Performance.

The literature study shows that there are close interlinkages between these dimensions and many established models around each of the three dimensions. However, there is not much research done on these three dimensions in relation to the public sector. We found the significant "research gap" in the literature, and in this paper, we highlight these gaps and provide a recommendation for transformational change to public sector IT governance and how it impact on the corporate governance, accountabilities, business processes and operation platforms.

III. GOVERNANCE AND IT GOVERNANCE

Governance is itself a concept that can be used in many contexts. There are many different types of governance.

"Corporate Governance" is the responsibility delegated by stakeholders and the public, defined by legislators and regulators and shared by boards, in some measure, with

Manuscript received September 27, 2016; revised November 8, 2016.
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managers” [2].

“Enterprise Governance” is a set of responsibilities and practices exercised by the board and executive managers, with the goal of providing strategic direction, ensuring that plans and objectives are achieved, assessing that risks are proactively managed and assuring that the enterprise’s resources are used responsibly [3].

IT Governance (ITG) – is a set of responsibilities on information technology systems, from procurement, to installation and maintenance, to management of human performance and training, as well as risk management to assure that the investments in IT generate business value, and to mitigate the risks that are associated with IT.

There are three types of IT Governance mechanisms, such as Structure Mechanisms, Processes Mechanisms and Relational Mechanisms.

Structure Mechanisms: The most visible ITG mechanisms are the organizational units and roles responsible for making IT decisions, such as committees, executive teams, and business/IT relationship managers” [4].

Processes Mechanisms: Formal processes for ensuring that daily behaviors are consistent with IT policies and provide input back to decisions. These include IT investment proposal, architecture exception processes, Strategic Information System Planning, chargebacks, among others [4].

Relational Mechanisms – The relational mechanisms complete the ITG framework and are paramount for attaining and sustaining business-IT alignment, even when the appropriate structures and processes are in [4].

For attaining and sustaining business-IT alignment, mechanisms like announcements, advocates, channels and education efforts are used. This includes:

- 1) Provides clear direction to ensure that IT investments support the business
- 2) Is an effective way to manage change
- 3) Creates value for the business in alignment with enterprise objectives
- 4) Addresses the complete life cycle of IT investment.

IT governance decision making differs considerably on how the enterprise defines accountability and how rigorously it formalises and communicates decision-making processes [5].

When senior executives design, implement and communicate IT governance processes, which are well shared and well understood, it embrace transparency and promote individual accountability within the enterprise. The IT governance mechanisms include:

- 1) Decision making structures – Monarchy, federal, or duopoly arrangements.
- 2) Alignment processes - various management techniques for securing widespread and effective alignment in governance decisions and their implementation.
- 3) Formal communication (also known in the literature as relational practices) – more communication generally means more effective governance.

IV. IT GOVERNANCE DECISION

A key issue to effective IT governance is the lack of

understanding about how IT decisions are made, what processes are implemented and what the desired outcomes are.

Almost 300 enterprises across the world suggest that IT governance is a mystery to key decision makers at most companies [5]. The single best indicator of effectiveness of IT Governance is senior management awareness; and that companies that effectively govern information technology garner profits that are 20% higher than those of other companies pursuing similar strategies. These companies also achieve higher returns on equity (ROE), percent profit margin, asset utilisation (ROA), and growth in market capitalisation. While IT governance was also seen as important to the organisation's leadership, several environmental obstacles were found to hinder proper IT governance implementation. The environmental factors that were not conducive to developing an effective IT governance policies included - pace of operations, lack of good interaction with operational counterparts, and the average time spent in the unit by leadership engaged in policy making and these were not sufficient to develop and implement governance policies [6].

There are a lot of works which has been done in the area of IT governance that made interesting contributions to the area of IT governance [7].

V. ALIGNMENT BETWEEN BUSINESS AND IT

IT governance enables both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled business investments [8]. The authors in [9] proposed a Strategic Alignment Model for conceptualising and directing the emerging area of strategic management of information technology. The model is defined in terms of four fundamental domains of strategic choice – business strategy, information technology strategy, organisational infrastructure and processes, information technology infrastructure and processes – each with its own underlying dimensions. The model is used to demonstrate strategic fit (the interrelationships between external and internal components) and functional integration (integration between business and function domains). Four dominant perspectives of alignment are derived that have specific implications for guiding management practice in this area in the form of role of top management, role of I/S manager and the performance criteria for the respective perspective. The four perspectives are:

- 1) Strategy execution – business strategy drives organisational design and I/S infrastructure design;
- 2) Technology transformation – implementing business strategy through appropriate I/T strategy and the articulation of the required I/S infrastructure and processes;
- 3) Competitive potential – this perspective allows the adaptation of business strategy via emerging I/T capabilities, and
- 4) Service level – this alignment perspective focuses on how to build a world-class I/S service organisation.

Managers are expected to use a mix of the four performance criteria. The model provides a set of ideas, tools, and illustrations to leverage I/T in transforming organisations and markets.

The analysis of IT-Business strategic alignment through conducting a meta-analysis examined whether IT-business strategic alignment leads to higher firm performance [35]. They found the bulk of the extant evidence suggests there is not much of an alignment paradox, which suggests alignment should lead to higher levels of performance. IT governance enables both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled business investments [8]. We now explore this aspect of business value, also known as organisational performance.

VI. IT GOVERNANCE FOR ORGANIZATIONAL PERFORMANCE

The literature so far states that IT governance affects business-IT alignment and these two affect business value or organisational performance. Yet, it is unclear through what mechanisms IT governance affects organisational performance. Research recently published in [10] proposes a nomological model showing how organisational value is created through IT governance mechanisms. They have created this model by consolidating the strategic alignment and IT governance models. In order to empirically validate the research model, a field study was conducted. The structural model [9] used to explain the causal affect that the positive impact of well-designed IT governance mechanisms enable IS strategic alignment, which itself increases organizational performance, especially operational excellence and customer attentiveness. These findings have substantive implications for organisations implementing IT governance practices in as much as IT governance needs to be focused and leveraged in order to create superior strategic alignment [10].

The implication for research related to public sector is that the IS strategy components used in this model - namely product-oriented, market-oriented and quality-oriented (includes production efficiency) business strategies, encompass the major business strategies that most companies employ. These strategies may not be appropriate for government organisations. The research was conducted using data from various firms in Taiwan. Organisational performance of these firms was assessed as customer perspective, operational excellence, and financial returns.

Whilst all these aspects of organisational performance can be measured in commercial organisations and focusing on these will lead to more effective and efficient organisations, how can these aspects of organisational performance be measured in the public sector context? And within the Australian (western) context?

The role of public manager and their organisations as “creating public value” in the sense of producing services or outcomes is to “add value” to society [11]. There is no universal agreement on what counts as “problem” and what as “solution” or when the point is reached where the

“solution” becomes worse than the “problem”. Public organisations almost everywhere are exposed to successive reform and restructuring exercises purporting to clarify responsibility and improve accountability [12]. So why do official and media inquiries after major failures time and again find “smoking gun” evidence of who knew or did what when so hard to pin down. Further, to the above, the pre-eminent scholars in the area of IT governance have also studied the IT governance of not-for-profit organisations, including Government organisations. They have stated that not-for-profit organisations have poorer governance performance – probably a reflection of broader and more multifaceted strategic objectives. Leaders of not-for-profit organisations need a different management framework to help strategize and govern. The difficulty of measuring value and performance makes IT investment, already an uncertain science, more of an art [5].

Although there is a reasonable amount of research conducted on government and not-for-profit organisations; we have not found any instance of research conducted in the public sector context, noting that any public sector has all the above discussed attributes, albeit to a higher degree of complexity. Clearly, there is a research gap in the area of organisational performance in the public sector context. Further, a different management framework is required to help strategize and govern [5], which is another gap in the literature that will be studied in this research work. There is quite a large body of literature on IT governance, business-IT alignment, and organisational performance. In this paper, a select number of peer reviewed journal articles recently published have been reviewed for identifying the research gap in the following section.

VII. IT GOVERNMENT FOR THE PUBLIC SECTOR

Several IT governance mechanisms have been proposed in the literature which are suitable for private sector or private organisations [5], [7], [13]. There is a preliminary proposal of having effective IT governance [14] for public sector, but little research has been conducted into examining what models, mechanisms or framework that can be used to help establish effective IT governance for public sector.

The private sector is defined as profit organizations and public sector is defined as non-profit organizations [15].

The efficiency of IT governance for a private or public organization depends on the structure of the organization and the position of the decision-making authority [5].

The private sector focuses on providing goods and services that people can afford, while the public sector focuses on providing goods and services for which people are prepared to pay [16].

Both in private and public sectors, IT governance frameworks are developed with an intention to increase operation efficiency, decrease IT cost and increase control of IT investments. Among of them, the most popular frameworks are ITIL, COBIT, ISO17799 which can provide guidance and tools for better IT governance which are shown in Table I.

TABLE I: PROBLEMS OF IT GOVERNANCE FRAMEWORK [36]

Frameworks	References	Identified Problems
CoBIT	Zhang and Fever [17]	-Complicated concepts and structure - Lack of Implementation guidance
ITIL	Hank Marquis [18]	- Incongruence between quality improvement and customer's expectation -Inefficiency in meeting customer's needs -Conflicts between standardized processes and unanticipated requests -Lack of autonomy and calcified learning scope -Lacking integrative capability
COSO	Matthew Leitch [19]	-Gaps in control objectives -No usable list of controls -Systematic understatement of controls -Gaps in controls
CMMI	Dale and Anderson [20]	-No cover of safety engineering aspects -No detailed implementation process -Complex organizational improvement process

VIII. ISSUES FOR IT GOVERNANCE IN THE PUBLIC SECTORS

It is worth noting again that in our literature study, we have reviewed all the aspects of the governments mandate and recommendations. We have also raised several questions earlier in the respective sections identifying gaps in the literature related to all of these within IT governance context and organisational performance context. Therefore, we firmly believe that, in commercial organisations, which are the study of most of the published research, good IT governance mechanisms will lead to improvement in organisational performance through improved Business-IT alignment.

There are 4 major issues identified, they are:

1) The 1st issue is that all of the aforesaid aspects have not been researched in the Public Sector environment with relation to measurement of organisational performance through IT governance. In particular, the literature presents a close link between organization performances to organization objectives. If the IT governance is unclear, then the Objectives is unclear, it will not help define the organization performance measures.

According to [11], [12] they stated that "Objectives and performance measures are unclear, conflicting and competing leading to "Blame Game" by business and IT executives. Further they indicated that entities within the commonwealth often face a number of competing and sometimes conflicting objectives. The authors in [21] stated that environmental turbulence (uncertainty) affects the importance of IT alignment, the ease with which it is achieved, and the mechanisms for achieving it. They cite published research - In times of high environmental uncertainty, organisations have a stronger need for information and information systems. It is expected that organisations will invest heavily in IT alignment during times

of environmental uncertainty [21].

The literature to date has not provided any solutions or methods on how to define or re-define the IT governance objectives. A clear IT governance objectives a foundation for organization performance measurement development.

2) The second issue identified from the literature is that there is a lack domain knowledge sharing between Business and IT executives, which impact on Business-IT alignment. The authors in [22] found that only shared domain knowledge was an antecedent to long-term alignment. In addition, the existence of clear business plans influenced both short-term and long-term alignments [22]. Creating an environment in which shared domain knowledge can grow may entail actions such as physically moving IT people into business units, making industry (non-IT) reading, course work, and conference attendance mandatory, and sending IT people on regular trips to visit sales offices and customers [23].

Further, there are no literature studies in this area for the public sector setting and "how" to establish a close communication mechanism between Business and IT executive, so that it enabled Business-IT alignment, particularly for public sector.

3) The 3rd issue identified from the literature is that there are many IT outsourcing and IT contract management methods, but there is not sound guidelines on how to use them and how to implement them. Some pioneering work on US Government procurement has been done previously by Kettl [24]. He states that "recognise that market methods raise new issues for governance; conducting the business of government in new ways brings new questions that the government must consider. Competitive outsourcing may lead to efficiencies but can also lead to uncertainties that can prove disruptive and costly." Kettle then coins the word "Smart Buyer" - the smart buyer concept is around the answers to three questions: what to buy, who to buy it from, and what it has bought (i.e., what the purchase has produced). The Government should be a Smart Buyer, only then it should outsource [24]. However, there is no peer reviewed literature on "how" to manage IT outsourcing, so that the organisation will not loss its capability and reduce uncertainties or how to implement Smart Buyer approach or how public organisations can becoming Smart Buyers. This thesis will address this research gap.

4) The 4th issue identified from the literature is that there is no strategy to support continuous innovation in Information Technology. Social capital creates the environment in which intellectual capital can be created, leading to organizational advantage and to further increases in social capital [25]. Research shows that an insurance company created a stream of business-enabling IT innovations after more than 70 career transitions of IT people into line business positions [26]. However, this research comes from just one industry and one commercial organisation. Effective governance delivers on a long-time management paradox – encouraging and leveraging the ingenuity of all the enterprise's people while ensuring compliance with the overall enterprise vision and principles [5].

Innovation is a key challenges for public sector and in the

IT context there no strategy to support innovation. In this thesis, we will propose extending the previous research on IT innovation and how to achieve it in public sector.

5) Other issues such as management of IT risk such as how to measure and quantify the ambiguity in the mission statements or on the context of IT investment, how to address the gap in between private sector and public sector, particular in IT governance, how to define risks in the context of IT governance, etc. However, due to time limits, these will be outside of the scope of this paper.

Thus, an advanced practical solution – the next generation of models and framework for IT governance for public sector is required and to address above issues governing their IT investments.

IX. THE NEXT GENERATION OF IT GOVERNANCE FRAMEWORK FOR PUBLIC SECTOR

The root causes of the IT problems are POOR IT governance. This is the central theme of this proposed research. There is a need to develop a framework to provide an advanced set of solutions –the next generation of models and framework for IT governance, business alignment and organization performance for public sectors.

In the proposed framework need to incorporate three key elements:

- 1) IT and Information Governance
- 2) Business-IT Alignment
- 3) Organisational Performance

A. IT and Information Governance

Information sharing from different sources, and decision-making transparency in the public organisation determines the efficacy of IT governance [5]. IT Governance and IT decisions impact on policies and procedures relative to gaining organizational performance across the enterprise.

B. Business and IT Alignment

ITG can be represented as a matter of alignment between business and IT, and public sectors tend to confuse between the alignment and misalignment and the impact on organization performance. The authors in [28] found that a good connection and understanding of business and IT is an important enabler of business-IT alignment. ITGI and PwC [29] revealed that communication between IT and business is a critical success factor for ITG. Business values from IT practices can be revealed through the enhancement of communication between IT and business [30]. The authors in [31] emphasized two aspects, management support with understanding of ICT and strong relationships between IT and business management which are considered as key factors in achieving business and ICT alignment.

This theme is also supported by [5]. The authors in [32] stated that the integration of different strategies for building the relationship of business and IT always keep a positive impact on ITG. Therefore, it can be concluded that the alignment between IT and business has always an important aspect for the implementation of IT.

C. Organisational Performance through Feedback Loop

The development of a framework that is intended to

provide governance solution and supports the primary business objectives or strategy of the organisation is critical to provide effective solution. The strategy for development of such framework starts with a clear understanding about the outcome of each level. The value delivered at each level of the framework is examined to get real-time feedback. This feedback loop will be evaluated depending on the understanding between IT governance solution and business goals and objectives. The evaluation through feedback is a measure of whether IT governance solution provides necessary services that the business requires. In other way, this feedback approach represents an assessment of the alignment between the business strategy and IT business execution. IBM proposed feedback loop for ITGA framework in which the inputs (stakeholder needs) are developed for the requirements for possible future governance solution [33]. In this stage, we would like to use bootstrap algorithm for implementing IT governance in the public sector [34]. This algorithm develops control and feedback loops in organizational environments, by adapting to local needs and provides an opportunity for gaining business performance through bootstrapping IT governance infrastructures.

X. CONCLUSION

There is a lack of practical IT governance framework for public sectors. This paper presents the key issues of IT governance including IT/Business alignment and organizational performance in the public sectors.

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