Information Technology Governance Framework in the Public Sector Organizations

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Abstract

This paper discusses the framework of IT (Information Technology) governance in the public sector organizations and the factors that contribute to the implementation of IT governance in the province of Gorontalo, Indonesia. The problem that occurs is the absence of such a framework which can provide the basis, functions and limits for the efficient use of IT resources, IT strategic alignment and the management of risk in public organizations. Descriptive approach used to identify the processes and the factors that contribute to the implementation of IT governance. This study shows that the form of the IT governance framework ensuring success is related to achieving organizational goals, strategic alignment, resource management, and risk management in the Indonesian public sector, especially to the province of Gorontalo. The strategic role of IT governance can be an effective solution for making more consistent and transparent decisions about strategies and IT investments in public sectors.

Keywords*: IT governance, framework, public sector*

1. Introduction

At present, many organizations have begun adopting and applying the principles and practice of IT governance in carrying out organizational objectives. The concept of IT governance has become in vogue in public sector organizations in various countries. In Australia, IT governance has become a key component of governmental activity [1] because IT governance provides a framework for the government in evaluating, directing and monitoring IT in public organizations. Meanwhile in the United States, IT governance has been applied to set policy in public organizations as a form of U.S. government action on a number of organizational financial reporting scandals [2].

New initiatives for IT governance frameworks may be required for the effective management of public organizations. One reasons is that best IT governance practices improve performance or competitiveness of the organization[3]. IT governance is expected to provide optimum benefits to the management in public organizations.The province of Gorontalo, established based under Indonesian's law number 38 of 2000 and became the 32 provinces in Indonesia covers has an area of 11.967.64 km^2 and with a population of more than 1 million (www.gorontaloprov.go.id). The province has implemented a program of IT governance since 2008 and became a pilot project in Indonesian bureaucracy reform. The objective of transforming the bureaucracy was to create more effective governance and more efficient public services, so later the transformation and the framework that inspired it could be extended to other public sectors.

IT governance policies in Gorontalo province for public services have mandated good governance whereby every governor and regent or (mayor as is known in some places) was to take necessary measures in accordance with the duties, functions and powers of each to the implementation of e-government development. This was to be done in, accordance with Presidential Instruction number 3 of 2003 on national policy and strategy development of e-government. The underlying IT governance policies in Gorontalo province were to ensure that the use of information and communication technologies (ICT) actually supported governmental objectives.

The government of Gorontalo is currently very focused on the development of the IT field, this is due to an increasing public service[4]. Problems occurred is a work unit that acts as a manager not optimal in dealing with the development of IT. The lack of cooperation in the

planning and development of IT in the work unit, so each work unit tend to develop individual IT. This shows that the government of Gorontalo should have proper planning to invest in the IT field, by recognizing that the benefits of IT governance is essential for a competitive advantage and it can reduce the failure rate of IT projects. According to the IT Governance Institute in IT governance global status report in 2008 that 80 percent of organizations recognize the concept of IT governance as a potential solution or governance framework within the organization.

To identify the effectiveness of the IT governance, the principles and programmes of good corporate governance should be manifested in the individual developments applied by the organization. This paper investigates the manifestations of IT governance processes, namely IT police, IT organizational structure, IT resources, risk management and IT processes to see if they have aligned with the purpose, vision, strategy, values and cultural norms of the public institution.

1.1 IT Governance In The Public Sector

IT governance is an integral part of enterprise governance. It provides direction and control to ensure return on IT's investments. IT governance consists of structures, mechanisms and a process to manage, direct and monitor the implementation of an organization's IT, to the extent that alignment of IT strategy supports the objectives of the organization.

The idea of IT governance emerged in the early 1990's and became more important at the beginning of the new millennium because strategic and good governance practices were needed. This emergence was caused in some measure, as a response to government regulations regarding information policy issues, such as privacy of personal information and greater transparency of financial information[5]. IT governance also gained traction in the public sector during the same period[6]. The use of IT governance for better compliance and control over IT spending in government and at the same time to achieve value and greater performance has been the focus in the public sector.

Although the public sector and the private sector have differences both of them require effective IT governance as IT investments now play an important role for the economic and social life of the community [7]. Public sector organizations recognize the importance of effective IT governance for their success. IT is not only important for the company's business, but also is an integral part of the public sector, ensuring the delivery of the required results for the various stakeholders[8].

IT governance can be included as a combination of processes, structures and relational mechanisms in both the public and private sectors[7]. It is important to recognize that processes, structures and relational mechanisms can be applied to serve specific or multiple goals in complex alignment challenges[9]. These three elements collectively assemble what is known as an IT governance framework. IT governance, in practice, is related to five important components including: IT strategic alignment, value delivery, risk management, resource management and performance measurement[10]. These elements, known as domain areas, are important factors in decision making, while supporting an IT governance framework[11]. Domain areas of IT governance are essential in supporting the success of organizational governance in ensuring that improvements are measured effectively.

The domain areas of IT governanceare explained as follows: IT strategic alignment to ensure that organizational planning and alignment of an IT strategy is aligned to business objectives and collaboration solutions; value delivery to ensure optimization of IT costs and proof of the value of IT, which in turn can provide the benefits of IT; risk management to ensure organizational awareness in understanding the risks with respect to handling and protecting IT assets and to provide for disaster recovery; resource management to ensure the optimization of knowledge and IT infrastructure and; performance measurement to ensure monitoring of the implementation of the project plan, resource utilization and IT services.

Domain areas of IT governance in Indonesia are associated with governance in the context of public services, which require good governance. To ensure the use of IT in supporting the government's objectives, attention to the alignment of IT strategy, IT value delivery, resource utilization efficiency, risk management and performance measurement related is essential. In the province of Gorontalo, IT governance is needed primarily to ensure IT that can be empowered and can meet the principles of effectiveness, efficiency and

acceptability. The goal of IT management in the end is to guarantee that IT resources can support the goals of the Gorontalo provincial government.

1.2 Indonesian's IT Governance

In Indonesia, the absence of a clear framework for IT governance, make it difficult to assess the efficiency of the resources used for IT and the management of risks associated with awareness and utilization of IT governance in public organizations[12]. The process of evaluation activities based on the use of IT in local government is still less do[13]. In addition, most IT projects in units of local government organizations work less to achieve their targets and frequent overlaps occur. Furthermore wasteful investment results in increased budgets that should be allocated to developing in IT infrastructure and other related devices[14].

The main problem in Indonesia is that the communication and information IT infrastructure still is feeble and still lacks information services[14]. This assessment is also applicable to other Indonesian provinces of local government such as Kalimantan, Sumatera and Sulawesi. Another issue in Indonesia is the unavailability of an IT master plan for the development of IT that can be used for planning, development and management of electronic information systems. What is required is a local government master plan for the development of IT as a whole to address IT governance[15]. Thus, a need for infrastructure improvements and for conducting studies for that improvement exists.

The above stated issues make Indonesian government feels it the time is ripe to implement IT governance guaranteeing that the use of information technology can support government objectives, taking into account efficient resource use and management of risks associated with IT.

2. Research Method

To get a comprehensive understanding of IT governance in the public sector Gorontalo province, will do an analysis of the factors that contribute to IT governance. This is done considering of IT governance has a broad definition [16], including information systems, technology, communications, business, law and others with all components of the organization. Descriptive approach carried out in this research with the study of literature, policies and procedures, technical and non-technical documentation and direct observation. At this stage the basis of IT implementation is developed on the structures and processes involved in each of the IT governance practices relevant to the purpose, vision, strategy, values and cultural norms of the organization.

The structure is understood as the existence of a set of responsibilities, namely the extent of responsibility of decision makers within the organization to determine the progress of IT governance; stages of the process refers to the decision-making and performance measurement activities, ie how far the formulation of business decisions, strategies and policies IT in the organizations, table 1 shows the stages in the research. From this session, the IT governance framework of public sector organizations is developed.

Table 1. Structures and Processes in IT governance framework

	Structures	**Processes**
Tactics	GCIO (Government Chief Information Officer); CIO (chief information officer) and IT committees.	Strategic IT decision making; Strategic IT monitoring.
Mechanisms	Roles and responsibilities; IT organization structure.	Strategic information systems planning; Management and monitoring.

3. Results and Discussion
3.1. IT Governance in Gorontalo Province

IT governance policies in Indonesia are meant to ensure that IT governance in public organizations complies with rules and regulations related to IT, so it is necessary to assess the compliance of management qualifications in IT governance. IT governance strategies in

Indonesia began with the vision and goals for the realization as society telecommunications and informationa of Indonesia, based on knowledge by 2020, developing infrastructure, human resources and IT industry, regulatory, and financial organizations to carry out the financing mechanism associated with the new paradigm.

IT governance has emerged as a fundamental business imperative to realize the business value of IT[17]. He further said that IT governance describes the distribution of IT decision-making rights and responsibilities among the stakeholders in the company and establishes procedures and mechanisms to make strategic decisions and monitor IT. IT governance policy is one IT governance strategy that was established in government regulation number 6 of 2001 and number 41 of 2007. These regulations were expected to serve as an implementation guide for the Indonesian government in establishing good governance. However, the autonomous system local government law number 22 of 1999 gave freedom to the local government to run, organize and manage the interests of each local government respectively. Governance policies IT in the province of Gorontalo are decisions of leaders, who give directions and limitations about what should be achieved [4]. These leadership decisions have become the basis of policy or guidelines for the management of IT resources in the province of Gorontalo.

In order for an organization to be successful, organizations must manage information well, so the technology investments can give good results to the organization.The existence a good technology system is created from a combination of good corporate governance and good IT governance. The intelligence quotient (IQ) of an organization is determined by the extent to which IT infrastructure has interrelated levels and shares, builds or establishes an organizational structure[18].

A good organizational structure involves the existence of clear roles and responsibilities of the steering committee and the IT strategy committee[16]. Proper structure provides critical functions to regulate and determines the impact that IT decision-makers can have in organizations in determining the progress of IT governance[16],[3].In general the structure takes the form of a formal position and role (integrator), or of a formal group and (management) team setting [17]. Formal position and the role of liaison refer to an individual who is officially appointed to manage the co-ordination within and between organizational functions.

IT governance structure in an entity determines what roles are and how governance serves in the management of IT processes, this structure underlies the whole process of IT governance. IT governance structure in Gorontalo province was established to ensure adequate leadership capacity as well as working relationships between work units (SKPD) in planning, budgeting, realizing the system, operating the system, and evaluating the implementation of IT in the government of Gorontalo province [4]. The IT governance structure as an expression of management principles relates to leadership and the synergistic relationship between work units within the scope of both internal and external entities.

According to the IT Governance Institute, IT is critical and offers potentially high contributions to all an organization's strategies whether those be in the various sectors of the public or private enterprise.The use of IT in an organization should consider limited resources with respect such applications, information, technology, facilities and human resources, accounting for the fact that IT requires a high cost in use. IT governance to manage the use of IT is an important factor in public organizations because the resources mentioned above are limited.

The main success of IT implementation is optimal investment, use and allocation of IT resources to serve organizational needs [11]. Policies and procedures regarding the management of IT resources in Gorontalo province should serve the planning and maintenance of operationals needs and provide guidance and strict limits in managing IT resources. This policy should include strategic alignment of IT in an organization, risk management, and resource management. Policies and procedures should be created to help and support the operation of IT governance.

Relating to the IT resource management, the strategic alignment of IT within an organization is the point at which architecture and IT initiatives must be aligned with the vision and objectives of the provincial government [4]. The alignment of IT strategy must ensure that this strategy is aligned with the organization's objectives.

Priority risks in managing IT included project risks, risks to information, and risks the sustainability of the service. Risks management should be an ongoing process with risk

assessment and identification should minimize risks and should be adjusted at the end of the risk event to reach an acceptable level[10]. Resource management should be aimed at achieving efficiency and effectiveness for the using IT resources, these cover: financial, information, technology and human resources. Resource management focuses on optimizing knowledge and IT infrastructure.

Based on the policies and procedures to manage the IT resources required a structure and role of the GCIO (Government Chief Information Officer) as giving advice on IT policy development of effective and efficient. In addition, the role of the CIO (Chief Information Officer) and IT committee is also absolutely necessary. CIO is responsible for coordinating the planning, realization, daily operations and internal evaluation, co-operation with work units and other users. IT Committee is responsible for loading the interests of work units and IT users, coordinate planning, and IT operations strategy.

3.2 Processes of IT governance in Gorontalo Province

One capability of IT governance is the ability of process (coordination)[17]. IT government process capability refers to the formalization and institutionalization of decision making with respect to either strategic IT or IT monitoring procedures [9]. The process refers to decision-making strategies, IT systems strategy planning, management and monitoring. The IT governance process involves the implementation of IT management techniques and meeting policies and procedures by setting the IT strategy [19].

IT governance processes are processes intended to ensure that the primary objectives of IT governance can be achieved and that, processes are related to the achievement of organizational goals, resource management, and risk management [20]. IT governance was a set of processes used by organizations to manage IT, to align IT with business goals, to direct IT project resources, and to monitor IT performance. IT governance process began with setting goals and direction of the organization's start, and then continued to measure performance, compare with objectives, transfer and change the appropriate destination. IT effective management requires knowledge of the process, a process that can usually be arranged according to the domain of planning, delivery, implementation, and monitoring.

The processes of IT governance that can be identified and contribute to the implementation of IT governance in accordance with the purpose of IT governance in Gorontalo province are as follows:

1. System planning is a process intended to set the vision and architecture of information technologies. In the case of Gorontalo, these include the necessary considerations regarding the determination of IT for contributing to achieving the goals and needs of the organization and the realization of plans for the implementation of the IT vision and architecture. System planning is needed to manage and direct all IT resources in accordance with the organization's strategy and business priorities.
2. Investment or expenditure management is the mechanism of project IT initiatives that have been specified in the project portfolio for IT initiatives and is the implementation of a roadmap to be managed in accordance with budgets or IT investment. Expenditure management processes or IT investment have a purpose in demonstrating that the need for continuous improvement in IT is met with cost efficiency and that its contribution to business profitability with integrated and standardized services meet the expectations of end-users.
3. The realization of the system is a process aimed at implementing IT plans, ranging from the selection of IT systems up to, and including, the post-implementation evaluation. The realization of this system should also establish procedures aligning with organizational change management standards to request post-implementation review as set out in the implementation plan.
4. The operating system is an IT service delivery process, which provides support to business process management, to the parties who need and; maintenance of the system ensures that all IT resources function to support optimal system operation.
5. Organizational culture refers to a system in which meanings held by any member of an organization help distinguish the organization from other organizations[21]. Organizational culture as the value system that is believed and awakened by the organization so that system elicits common behavior from the members of the organization. Organizational culture is one success factor in IT governance that needs attention.

Processes as described above are components or domains that shape and influence the ultimate goal of IT governance. Each process shows major activities of IT. The IT governance process involves the identification and formulation of IT business decisions, priorities, justification, and authorization of IT investment decisions, monitoring and evaluation of the implementation of the decisions of IT and IT performance[22].Eventually, the process of IT governance managing resources needs monitoring and evaluation, so that feedback for all IT governance processes, such as the achievement of expected performance, is ensured. All IT processes need to be assessed periodically in accordance with quality control requirements.

Performance management of IT effectively requires monitoring and evaluation. Assessment of IT processes should be regularly performed to ensure quality and compliance requirements. The purpose is to monitor and evaluate the performance of IT with respect to appropriate business requirements, in terms of transparency, IT investments, benefits, strategy, policies and service levels in accordance with the requirements of IT governance.

The utilization of IT can control the process, costs, and minimize the risk of a business, so that the organization can continue to grow and compete. The use of IT in government is an important investment for public resources. Decision-making framework for IT governance of the organization allows public organizations to make decisions more transparent and consistent with investment and IT strategies.The utilization of IT in the governance process, in accordance with the vision of Gorontalo provincial government can be realized through innovations in the fields of public service, management, work processes, work culture, leadership, and policies, so as to improve the efficiency, effectiveness, and transparency and participatory society, without being limited by space and time. Based on the above theoretical studies, a practical model of IT governance framework of public organizations in the province of Gorontalo can be explained as shown below (Figure 1). The IT governance framework is as follows:

1. Vision – Gorontalo provincial government's vision in the field of IT is to be an innovative province through information and communication technology. This illustrates the desire for the future that will be achieved from Gorontalo provincial government.
2. Monitoring and Evaluation – monitor and evaluate all processes (system planning, investment or expenditure management, system realization, operating and maintenance system, culture) to ensure that the direction given was appropriate and followed.
3. Planning system, investment or expenditure management, realization system, operating and maintenance system, and culture – This is the process that is intended to ensure that the main objectives of governance can be achieved.
4. SKPD – this is the work unit (department, agency, bureau, or office) of the local government area of the provincial and district or city.
5. Structure and Roles – this is the definition of work and organizational hierarchy, as well as processes that combine people into teams as work flows across organizational boundaries.
6. Policies – these are the concepts or a basic implementation guideline for planning the work, leadership and how to act.

To run the framework based on the stages described above, the following are required:

1. The underlying policy of how IT governance is executed or performed in accordance with the objectives or boundaries must be defined by the Gorontalo provincial government.
2. The structure and the underlying role throughout the implementation of IT governance must be established. In this case, a person or entity that has sufficient capacity to execute and implement the planning, funding, and operation of the system realization, evaluation and implementation of IT governance.
3. A work unit (SKPD) responsible for defining requirements in the implementation of IT initiatives and providing input on the implementation of IT in particular operational IT systems must be empowered.
4. IT processes related to the achievement of organizational goals, resource management, and risk management, especially in the province of Gorontalo, must be identified. These processes contribute to the implementation of IT governance in accordance with the purpose of IT governance in the province of Gorontalo. These have a continuous life cycle with the monitoring and evaluation.
5. Monitoring and evaluation underlying the achievement of expected performance must be created and can later be used by management or auditors, to determine whether the processes of IT has done well.

6. The desires of the government in Gorontalo province, according to its vision of that which is expected to improve the quality of public services through the utilization of IT in the governance process of Gorontalo province, must be articulated and met.
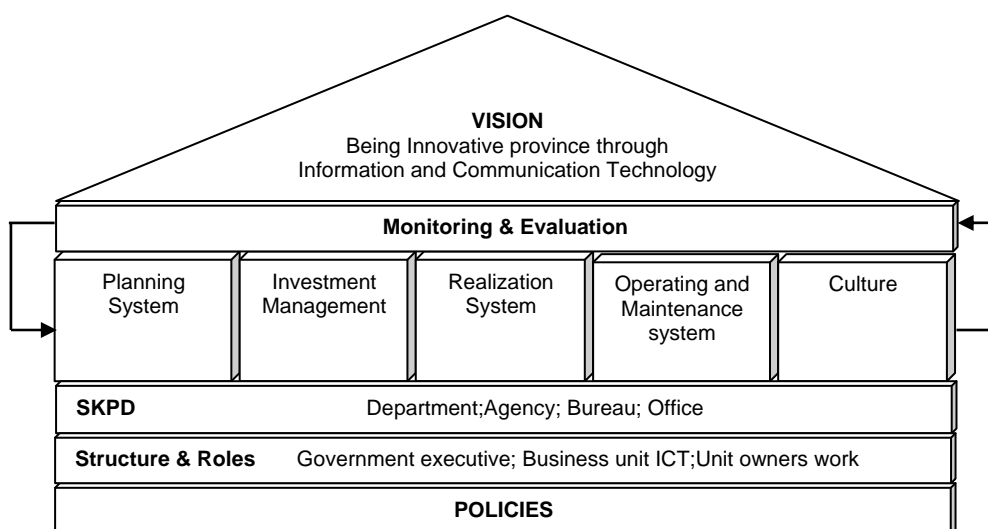

Figure 1. IT governance framework of public organizations in the province of Gorontalo

4. Conclusion

This paper seeks to contribute knowledge by identifying an IT governance framework for the public sector in the province of Gorontalo. This paper proposed as a guide in formulating and identifying areas in IT governance to improve the management of IT in public organizations so that they can provide optimal benefits. The framework is built based on the governance of IT resources that are important and affect the provision of public services so that IT resources can be empowered to support the achievement of IT activities in accordance with the purpose of Gorontalo province government.

Additionally, the framework will enhance the understanding and confidence that new problems that arise can be resolved quickly. This IT governance framework is focused on the management of IT processes through mechanisms guidance, monitoring and evaluation. Such a framework will also ensure that the use of IT is really supporting the objectives of the government, taking into account the efficiency of resource use and management of IT risks associated with IT. However, further research is needed to test and evaluate this framework so that it may be used and provide improved IT governance in the public sector in Gorontalo.

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