The Effects of Implementing Organizational Structural and Risk Management Strategies in Information System Projects

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Abstract: - The Government of Malaysia launched the Public Sector Information and Communications Technology (ICT) Strategic Plan in 2000 to ensure that the various ICT initiatives undertaken by Government agencies are in line with the Public Sector ICT vision. In assisting and supporting the Malaysian Government, Malaysian Administrative Modernization and Management Planning Unit (MAMPU) has initiated to develop the Malaysian Public Sector risk management practices in ICT security to ensure the integrity of government information and assets in providing efficient and effective services to all citizens. Therefore, the aim of this study is to explore the risk management best practices in Information System (IS) projects in Malaysian Information Technology (IT) industry particularly on organization structural strategies. The primary data for this research was collected by means of an interview conducted at eleven private and public organizations in Malaysia. The findings from this research showed that with the organizational structural and risk management strategies, it aligns the organization strategies, technology and knowledge. Furthermore, the establishment of risk management practices is a strategic mechanism in managing and controlling IS project risk. In addition, with risk management practices, risk, uncertainty and the potential impact of failure could be acknowledged and dealt with forthrightly, not ignored or hidden. Failure to make decisions based on risk can damage the project - often invisibly until it is too late.

Keywords: Information System; Risk Management, Best Practices, Organizational Structural

1 Introduction
Information communication and technology (ICT) plays a crucial role in all aspects of sectors in Malaysian industry. In 1994, the National Information Technology Council (NITC) was created and then this leads to the formation of the National Information Technology Agenda (NITA) in 1996. The objective of NITA is to ensure a coordinated and integrated approach leveraging on ICT in transforming the Malaysian society into a valued-based knowledge society in line with Vision 2020. Since then, the Government has taken proactive action to provide a comprehensive framework for development in the Information Age.

Malaysia has spent billion of ringgit for the comprehensive ICT infrastructures and information structures to accelerate effectively the electronic services to the public. There are still many public complaints in the electronic media questioning on the poor deliverables of the Government services. The lack of impact study or research on the implementation of the Government projects deliverable is one of the crucial things that need to be done to ensure the success of the IS projects. The budget overruns and unmet user requirements are the factors that contribute to the project failures [14]. Therefore, Malaysia currently is embarking billion of ringgit to ensure a success implementation and development of the ninth Malaysian Plan projects starting from the year 2006 until 2010.

Risk management is essential and integral governance in sustaining its public services and processes for the successful delivery of Information System (IS) projects. As the complexity of IS projects increase the risk of failure had also increased. Risk Management in the implementation of information systems projects is seldom being
practiced by the Malaysian organization. The Government standards need to be enforced on Risk Management to ensure the key risks are being identified and robust controls are put in place to manage the IS project risks. To achieve this, the Public and Private Sectors are required to establish and maintain risk management best practices to assist top management in making decision, mitigate, and control the risks.

2 IS Risk Management Practices

In developed countries, many researchers defined that IS projects failures may result from the inadequate assessment of project risk in managing IS project and its may be a major source of problems in IS development [1,9,13,,5,4,3]. To help managers manage and appraise project risk more accurately, IS researchers have developed a variety of risk assessment tools and techniques including checklists and surveys. There are many IS project areas which contributed to the failure of the development of the IS project [12, 10, 15]. There has been extensive research in IS project risk, where the risk factors have been identified and the risk components have been categorized to develop risk strategies [16,2,11,6,7,8]. As the implication of risk factor affects both researchers and practitioners to stress and concern on how to properly manage and mitigate the IS project risk [9, 4, 3].

Despite the importance of IS risk management, Malaysia differ widely in the extent to which they were practiced. Results showed that only 33.3 % practice risk management, 25% sometimes practice and 41.7 % did not practice at all [14] Research done by Noor Habibah et al. [16] showed that risk management is still not highly practised in public sector IT projects where only 44% of the IS developers practice or sometimes practice risk management. The study found that out of this 44%, only four of them firmly claimed that they were really practicing risk management.

The ultimate use in risk management practices is value added services into IS project in order to reduce and mitigate the potential risk. Therefore, this research will focus on the risk management best practices or approaches by the organization in practicing the project risks in IS implementation project. Based on the research finding, the risk management best practices will be proposed in order to reduce the IS project failure.

3 Research Methodology

This research will be conducted through an interview method which focuses on the actual content and internal features of risk management practices in eleven organizations from various sectors in Malaysia. The content will be broken down, into manageable categories on a variety of risk components and levels, and then examined using qualitative content analysis to analyze the information on risk management best practices.

The data from open-ended interviews consist of direct quotations from participants’ experiences, opinions, feelings and knowledge. The data from observations consist of detailed descriptions of participant's behaviours, and the full range of human interactions.

4 Findings and Results

In this study, eleven (11) organizations were identified that practice the risk management into their project system development life cycle (SDLC). This study investigated what is the risk management best practice activities that help to monitor and control the risks associated to the IS project implementations.

4.1 Demographic profile

The interview captured background data of respondents’ profile as shown in Table 1.

<table>
<thead>
<tr>
<th>Respondent Profile</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td></td>
</tr>
<tr>
<td>• Public</td>
<td>4</td>
</tr>
<tr>
<td>• Private</td>
<td>7</td>
</tr>
<tr>
<td>Designation</td>
<td></td>
</tr>
<tr>
<td>• Senior Vice President</td>
<td>1</td>
</tr>
<tr>
<td>• Associate Director</td>
<td>1</td>
</tr>
<tr>
<td>• IT Director</td>
<td>3</td>
</tr>
<tr>
<td>• Head of IT Risk &amp; Security</td>
<td>1</td>
</tr>
</tbody>
</table>
4.2 Risk Management Best Practices
The information gathered in the survey helps to categorize best practices on risk management activities in Malaysian IT industry. The study focuses on best practices that were specifically effective in assisting an organization to achieve the organization strategic objectives for managing risks in IS projects.

The best practices elements collected from the interview are as depicted in Table 2.

Table 2 Risk Management Best Practices Elements

<table>
<thead>
<tr>
<th>Risk Management Best Practices Elements</th>
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<tbody>
<tr>
<td>Organization Structural Strategies</td>
<td></td>
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<tr>
<td>Risk Management Strategies</td>
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<td>Risk Implementation Strategies</td>
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<td>Risk Management Steering Committee</td>
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<td>Project Management awareness, education and training</td>
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<td>Risk Management Processes</td>
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<td>Risk Mitigation Options</td>
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<td>Risk Control and Treatment on Infrastructure and Information Structure</td>
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<td>Risk Verification and Compliance</td>
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<tr>
<td>Risk Management Impact to Entire Organization Success</td>
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</tbody>
</table>

This paper addresses the first two best practices, which are organization structural and risk management strategies in order to lay a foundation for organization in forming risk management strategies. The detailed findings and its discussions of the two addressed elements are as illustrated below:

i. Organizational Structural Strategies
Based on the interview, there were three (3) approaches involved in implementing and managing risk management practices such as:

a. Using an established risk management application;
b. Tailored Risk Management Methodology such as Malaysian Public Sector Information Security Risk Assessment Methodology (MyRAM);
c. Integrating project risk management into System Development Life Cycle (SDLC).

In this survey, it was indicated that by using this risk management approach, it enabled the risk to be controlled, monitored and updated regularly and systematically. It is also learned that by using an established risk management application such as Enterprise Risk Management (ERM) application and Strategic Enterprise Wide Risk Management (SEWRM) is in line with the strategic direction of organizations. Organizations are exposed to risks at all time and resources should be optimizing to manage these risks. Through this application the perception of key risks would be captured, prioritised and delegated ownership to individual managers to effectively evaluate the risks. This is an effective implementation of formal risk management and can be looked upon as an integral part of the management in an organization.

Finding from the survey showed that the Malaysian Government has developed very comprehensive ICT Security (MyRAM in Oct 2005) methodology guidelines and procedures to assist public sector organizations in identifying and managing ICT security risks and to ensure the integrity of government information and assets in providing efficient and effective services to all customers. Due to that, all ministries and government agencies are advised to develop their own ICT policy, procedures and standard to manage IT infrastructures and information structures; and business continuity plan (BCP). MAMPU has taken the initiative in developing MyRAM software as a tool to do the risk assessment methodology. MyRAM application was developed according to the MyRAM component guidelines.

In public sector, integrating risk management practices into system development life cycle (SDLC) project was
applied to the most complicated and costly IS project. This third approach was used for example in the Malaysian National Card development. The purpose of the project was to integrate the national card with other public agencies. The Malaysian government was assisted by risk management consultant team to carry out the risk management processes. They used standard risk management approach and processes to identify, analyse and respond to the project risk. It includes maximising the results of positive events and minimising the consequences of adverse events. It defines the organisation, processes and procedures necessary to establish a formal risk management approach within the project.

From the survey, the benefits of having organization structural strategies are as below:

- Aligning strategies processes, technology, people and knowledge;
- Improving risk management policies, processes, and activities;
- Improving data quality in identifying, assessing, controlling; and mitigating the risks;
- Consistent measurement of risk adjusted regulatory capital in the company across functional and operation;
- Integrating various silos of risk into a single risk view;
- Creating risk awareness, management and integral component of company’s culture; and;
- Risk systematically identified, measured and managed on aggregated basis.

The survey shows that the clear strategic corporate vision and mission towards the risk management practices that align with the business strategies will contribute to the high competitive services. This requires the involvement and commitment of the top management, stakeholders and the IT personnel to work as a team.

### ii. Risk Management Strategies

The risk management strategies include risk management framework and integrated strategic approach. Its detail findings and discussions are as demonstrated below:

#### a. Risk Management Framework

The survey showed that organizations, which implemented risk management as an integral part of the management process had developed their risk management framework. The purpose of designing risk management framework was to enhance the development and implementation of modern management practices. It supports the innovation throughout the risk management practice and to provide a comprehensive approach of integrating risk management into IS development life cycle. The framework could help in promoting and instil a sense of risk awareness across an organization and is relevant in establishing a set of clear baseline for managing the threats and opportunities that will be identified during the project life cycle as a result of this awareness. The paradigm shift is necessary in forcing the way of thinking and acting in making risk management the task and responsibility of everybody in the organization. A fear-free environment is needed for risk management to be effective, where risks can be identified and discussed openly.

The results of best practices on risk management framework identified in the study are as below:

- Risk Management Processes include risk identification, risk analysis, risk tracking, risk planning and risk resolve;
- Risk Monitoring and Controlling;
- Risk Mitigation actions;
- Risk Management;
- Organization objectives, mission and vision;
- Risk policy and procedures;
- Risk strategic implementation.

The benefits of having the Risk Management Framework into IS project are listed as below:

- Provide guidance to the advanced use of a more systematic approach to risk management;
- Contribute to the building of a risk-smart workforce and environment that allows for innovation and responsible risk-taking; and;
- Risk management framework is designed to strengthen management practices,
b. Integrated Strategic Approach

The IS risk management can be achieved through an integrated strategic approach. The approach involved three strategic steps as shown in Figure 1.

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**Figure 1  Strategic Approach of Risk Management**

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Step 1: Organization and Culture

Risk management should be made as an organization culture and promote risk awareness across the organization so that the line managers and employees understand and accept their accountability for identifying threats and opportunities. Clear roles and responsibilities for risk management should also be established. The management personnel must believe the risk management program outlined to them is critical to the success of the project. To promote and inculcate the risk culture, there is need for a powerful and the full backing of sponsorship. The success of the collaboration between all stakeholders, consultant and the contractors relied heavily on the commitment and leadership of the strong supporters of the key positions people in the project. The benefits of step 1 are:

- The risk culture awareness changes the paradigm of thinking where the culture support open discussion about risks and identify the unknown risks;
- Create the risk responsibility and accountability for managing risks; and
- Define consistent approaches to manage risks.

Step 2: Strategy and Policy

Not all risks can be eliminated. In fact, some of the risks need to be taken to gain a competitive edge. Therefore, a competitive strategy should be developed to enable a person to make sound decisions on whether to accept, mitigate or transfer those risks. By developing the risk policy and guidelines, all decisions made should support the business strategies. The benefits of step 2 are:

- Provide guidance to ensure the strategic vision and mission are achieved and risks are managed appropriately;
- Improve decision-making, planning, and prioritization of business activity, threat and opportunity;
- Provide a modeling component that lets managers compare the likelihood of different projects succeeding;
- Help group managers assess whether projects fit the risk profile of their individual group and at a higher level, managers can evaluate the risk profile of a business unit and see how different units compare; and
- To clarify the roles and responsibilities.

Step 3: Operations and Systems

Control and early warnings must be established to provide the organization with a good set of options of reducing risks. Measurements tools and processes must also be developed to track the risk reduction progress and applying whatever corrective action necessary to keep the risk resolution process on track. The benefits of step 3 are:

- Provide systematic and consistent standards guidance to ensure the risk management to put in place and work accordingly to the risk component;
- Get clear definition on the risk management practices in an organization; and
- Strengthen the risk management planning, developing, tracking, analyzing and resolving in risks.

The survey shows that the key risk strategic implementation must be in placed first to support the main risk management activities and processes.

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6 Conclusion
The main objective of this study is to identify the risk management best practices involved in Malaysian IT industry, which include the Public and Private Sectors. A total of eleven respondents participated in the interview.

In general, the survey showed that the establishment of risk management practices is a strategic mechanism in managing and controlling the IS project risk. The risk management practices were an essential basis for guideline and procedure to integrate into the management practice in order to minimize risk in project. Furthermore, it adds values to other organizations and provides the best practices in planning, developing, implementing and monitoring risk management in organizations or IS project implementation.

Therefore, to bring towards the successful of IS project, the risk management best practices should include a very comprehensive and integrated best practices risk activities and processes such as; organizational structure, communication, risk knowledge, risk policies and procedures, strategic risk implementation, risk management processes, risk control and treatment; risk compliance and verification and risk strategic mission and vision.

References:


