

Organizational Structural Strategies in Risk Management Implementation: Best Practices and Benefits

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Abstract: When organizations embark on the implementation of IS projects, organizations need to be aware of the potential risks associated with the IS project and they should practice the risk management in mitigating the risk. Risk management needs to address all factors such as organizational, human, process and operational that can affect project success. Hence, risk management is essential for the successful delivery of Information System (IS) projects. Through risk management best practices, it provides guidance to strategies and adopt more consistent and systematical risk management approach and risk methodology for mitigating risk. Therefore, the aim of this study is to explore the risk management best practices and the benefits of 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, observations, and document reviews conducted at eleven private and public organizations in Malaysia. The findings from this research showed that with the organizational structural 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.

Keywords: Information System; Risk Management; Best Practices; Benefit of Best Practices; Organizational Structural

1 Introduction

On August 1, 1996, Malaysia launched the Multimedia Super Corridor (MSC) specifically to enhance and develop a world-class multimedia industry. Under this initiative, the Multimedia Development Corporation (MDC) has to manage the 7 flagships which are Electronic Government, E-Services, Smart School, Multipurpose Card, Telehealth and Research and Development cluster.

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. Currently, Malaysia 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.

The role of ICT in Malaysia has become more crucial than ever with the Malaysian Government exhilarating the pace for various sectors of the industry to embrace Information Communication and Technology (ICT). The federal, state and local government play an important role in planning, coordinating, enforcing and implementing Government policies, standard, and procedures in the implementation of Information System (IS) project. Hence, one of the major concerns in developing large and complicated IS projects is to reduce the risk of producing poor-quality, over budget and late products.

Literature indicates that risks in IT projects are not effectively managed and, as a

result of their lack of identification and management during a project's life-cycle can contribute to their failure [27,14]. Many writers have proposed, tested, and evaluated methods for assessing and minimising IT project risk [1,4,3,24,16,26,15].

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.

In achieving 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. Therefore, in this paper, it addresses the best practices and the benefits of implementing it.

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 [1,11,20,,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 [19, 12, 22]. 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 [23,2,17,7,8,9]. 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 [11, 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 [21] Research done by Noor Habibah et al. [23] 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.

Integrating risk management into IS project is a process of identifying potential risk at every stages and manage them throughout the project to diminish their likelihood or impact. There is wide convergence and international consensus on the necessary elements for a risk management process. This is supported by a growing range of capable tools and techniques, an accepted body of knowledge, an academic and research base, and a wide experience of practical implementation across many industries. Due to that, it is an essential contributor to business operation on IS project success, since it focuses on addressing uncertainties in a proactive manner in order to minimise threats, maximise opportunities, and optimise achievement of objectives and values of the organization [4,25,6,18,13,10].

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 was conducted through an interview, observations and document review methods. The data collection through interview focuses on the actual content and internal features of risk management practices in eleven organizations from various sectors in Malaysia. The content will be divided 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. Observational data was used for the purpose of description of settings, activities, people, and the meanings of what is observed from the perspective of the participants. Meanwhile, the documents reviewed were legislative documentation, directives and system documentation such as system user guide, system administrative manual, system design, and requirement documents. Other documents reviewed were acquisition document, and security-related documentation such as previous audit report, risk assessment report, system test results, system security plan, and security policies that can provide good information about the security controls used by and planned for the IT system.

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 1 List of respondents' profile

Respondent Profile	Total
Organization	
• Public	4
• Private	7
Designation	
• Senior Vice President	1
• Associate Director	1
• IT Director	3
• Head of IT Risk & Security	1
• IS Manager	3

• IT Assistant Manager	1
• Systems Analyst	1
Gender	
• Male	8
• Female	3
IT Experience	
• Greater than 20 yrs	2
• Greater than 15 yrs	1
• Greater than 10 yrs	5
• Greater than 5 yrs	2
• Less than 5 yrs	1

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 survey are as depicted in Table 2.

Table 2 Risk Management Best Practices Elements

Risk Management Best Practices Elements
• Organization Structural Strategies
• Risk Implementation Strategies
• Risk Management Steering Committee
• Project Management awareness, education and training
• Risk Management Processes
• Risk Mitigation Options
• Risk Control and Treatment on Infrastructure and Information Structure
• Risk Verification and Compliance
• Risk Management Impact to Entire Organization Success

This paper addresses the first best practices, which is organization structural strategies in order to lay a foundation for organization in forming risk management strategies. The detailed findings and its discussions of the addressed element is as illustrated in the subsequent subsections.

4.3 Organizational Structural Strategies

The organizational structural strategies consist of seven areas. There are a) risk management

approach, b) risk management framework, c) risk management objectives and values are communicated, d) wide organization support, e) shared responsibilities for managing and controlling risk, f) support risk awareness culture, and g) risk status monitored and reported to top and senior management.

a) Risk Management Approach

Based on the interview, there were three (3) approaches involved in implementing and managing risk management practices such as

- i. Using an established risk management application;
- ii. Tailored Risk Management Methodology such as Malaysian Public Sector Information Security Risk Assessment Methodology (MyRAM);
- iii. 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). Malaysian Administrative Modernization and Management Planning Unit (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 risk management approach are as below:

- Create process and steps that enable improvement in decision making;
- 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.

b. 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:

- Organization mission and vision;
- Strategies and objectives;
- Risk identification;
- Risk assessment;
- Risk monitoring and controlling;
- Risk mitigation and action plan;
- Risk verification and compliance

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, decision-making and priority setting to respond better to citizens' needs.

The survey showed that the risk management framework would help in promoting and instill 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.

c. Risk Management Objectives and Values are Communicated

Organizations need to understand the objectives and the alignment of the vision and mission of the organizations. Moreover, the strategic risk management objectives are to define clearly on the organizations' objectives in order to enable the organization to manage risk effectively. By understanding and communicating the objectives and values of risk management, organizations can (i) better securing the IS project development from risk; (ii) enabling management to make well informed risk management decisions in justifying the IS project budget; (iii) help management in authorizing the IS project on the basis of the supporting documentation resulting from the performance of risk management.

From the survey, the benefits from this process are:

- Clear definition of objectives can drive the organization to achieve its objectives for managing risk;

- Strengthening of the planning process and helping the organization to identify opportunities;
- Communication can develop risk awareness and understanding of both risk types across organization and create values to the other organizations; and
- Establishing open communication channels up, down and across entire organization can help to identify risks and manage the risks appropriately.

The survey findings showed that a fear-free environment is needed for risk management to be effective, where risks can be identified and discussed openly. People need to undergo the culture transplant and in-depth training, periodic retraining, mentoring, and auditing to gain expertise in dealing with risk management. With the effective risk management, focus will be planning on avoiding future problems rather than solving the current problems.

d. Wide Organization Support

The wide organization support is necessary in increasing the accountability and responsibility of the management to support the risks management. The involvement and commitment of sponsor/top management increase the chances for the project to be successfully completed. The basic idea of having a project sponsor is getting management buy-in where project must be recognised by the organization. Top management and senior management must understand, aware and support the risk management. The presence of a sponsor who is the organization member is of vital importance. The sponsor should be as senior as possible and clearly an identifiable person. He or she must be able to carry his or her roles, be committed and involved in the project and able to champion the cause at the highest level. The sponsor should play an active role from the initiation phase through the implementation phase. The sponsor should also have the necessary authority and power to get the decisions made and resources committed.

However, the best practices as key components that make up the project implementation success are a risk steering committee and risk management implementation team as shown in Figure1.



Figure 1: IS Project Risk Structure

Detailed explanation on Figure 1 will be provided below:

- a. Risk Steering Committee

This committee is responsible for risk policy and resources decisions that are essential to all projects undertaken to the successful delivery of project outputs. The committee is responsible for the IS project documentation that provides guidance and ensure appropriate risk management plan and oversees that the correct level of risk management is applied.
- b. Management Implementation Team

Risk management implementation team which include project organization, a risk working committee, stakeholders, and internal auditor.

 - i. Project Organization

The project organization consist of Project Manager and Project Team that works on and ensure the successful of the IS project end deliverables. The Project Manager is responsible for managing the aspects of the project, resolving risk and issues and monitoring project and budget, and task and activities.
 - ii. Risk Working Committee

The senior management leads the risk working committee. The status report produced will be reviewed by the top management for decision-making. The risk working committee will consist of Risk Manager and Technical Manager and they are specialized groups that deal with and resolve risk and issues or concern that arise during project execution.

iii. Internal Auditor

The internal auditor is responsible to audit the risk management activities and give advices to specific issues that involved in the IS SDLC project.

iv. Stakeholders

The involvement of the all stakeholders is important in creating the risk culture literacy among them and it disseminates throughout the staff in the organization. The stakeholders would consist of Risk Manager, Project Sponsor and other senior business level managers that guide the business needs and IS project management issues that arise during project execution. The Business System Owner may also be a part of the team.

The benefits of having full support and commitment risk management practice into IS project are listed as below:

- To develop Management Team support that is proactively taking action and seeking for risks which associated to the organization entirely; and
- To bridge the gap between the top, senior management with the manager from different units and make them feel as part of the team.

The findings showed that the lack of time and commitment from the top management/sponsor sometime delayed the project implementation. The support and commitment towards the project from all parties will also be lacking if the top management/sponsor are not really committed and involved. In other words, the top management/sponsor profoundly affects the organization to support the project.

e. Shared Responsibility for Managing and Controlling Risk

The responsibility and accountability for managing risk management should be placed

high level in the organizations. Hence, the specific responsibilities in risk management for the top and senior management was set to ensure the integrity of the control and the defining of the responsibilities in coordinating the risk management will foster commitment in administrative and governance bodies.

The benefits of establishing the ownership of the risk are:

- To support the government's roles and responsibilities in taking risk;
- To improve results through more informed decision-making; and
- To share risk awareness and understanding among the top and senior management, project managers and stakeholders based on a risk common language.

The findings from the survey showed that it is best to establish early the ownership of the risk. The willingness of parties to take on risks is important consideration in the allocation of project risks. Sometimes, risk ownership is shared between particular departments. When risk ownership has been established, appropriate mitigating measures could be discussed.

f. Support Risk Awareness culture

To create risk awareness culture in an organization, the management must support on open communication on risk discussion. Organizations could use approaches such as face-to-face workshop and discussion. They also could use the IT facilities to communicate among the staff such as e-mail, intranet and internet to discuss on risk management. In order to manage the risk effectively, all the staff must be able to understand the organization's goals and work towards the strategic business goals and visions.

The benefits of having risk awareness culture are as follows:

- The risk culture awareness changes their paradigm of thinking where they really support open discussion about risks and identify the unknown risks;
- Able to create the risk responsibility and accountability for managing risks; and

- Define consistent approaches to manage risks.

Once the organizations have established the open communication channels up, down and across the business units on managing risk appropriately, it creates values among the internal and external organizations by providing the efficient services to the customers, governance body and staff. Therefore, risk management awareness culture would help in identifying risk in IS projects.

g. Risk Status Monitored and Reported to Top and Senior Management

Risk management performance is reported at least three times annually to the risk steering committee for decision-making. The risk management performance and activities are also required to report regularly to the risk working committee.

The benefits of this process are:

- Able to create an effective communication and good relationship between the staff and the top management for fostering and managing risks; and
- Able to monitor closely on the risks status and the risk solutions.

The survey findings showed that the risk reporting is very important in managing risk. A well documented risks management activities help organization to properly make a decision on the specific risk. Risk reporting facilitates learning and improved decision-making by assessing both successes and failures, monitoring the use of resources, and disseminating information of best practices and lessons learned.

4.4 Organizational Structural Strategic Steps

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

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.



Figure 1 Strategic Approach of Risk Management

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.

5 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 survey.

In general, the survey showed that the implementation of organizational structural strategies in the establishment of risk

management practices is a strategic mechanism in managing and controlling the IS project risk. The organizational structural strategies not only align with the organization strategies but also with technology and knowledge. The organizational structural strategies in 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 be included and should be very comprehensive and integrated in risk activities and processes. In addition, with risk management best practices, risk, uncertainty and the potential impact of failure could be acknowledged and dealt with forthrightly, not ignored or hidden.

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