

A REVIEW OF RISK MANAGEMENT AND ITS RELATIONSHIP WITH INFORMATION SYSTEMS

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Abstract

The new era of information technology and information systems, our environment has become a challenging environment. In this context, every day and so we witnessed the arrival of new technologies and the ability to tackle new challenges. Information technology and information systems in all areas of human life have intruded and although it facilitate lives of human communication and encourage but like any other new technology also bring risks. For example, the organization that use of telecommunications networks and the Internet For increase their effectiveness and efficiency in communication should accept or manage Risk caused by accessing unauthorized persons or competitors to information.

Considering the points mentioned above, in the decision for the implementation of information systems

and enjoying the benefits of information technology, like any other decision in life, should assess the potential risks and with managing risks, promote the effectiveness of the system.

In this article , after the introduction of risk management , it means types of risks and ways to promote and implement information systems to introduce how to use the risk management process

IT and implementation of information systems using any of the SDLC, one of the most comprehensive and complete system approach is be addressed. Finally has been attempting to introduce some of the key roles in the success of the risk management process.

Key words: Risk Management - Information Technology - Information Systems - System development life cycle

Introduction

Nowadays organizations and their systems in an environment full of challenges and changes have been this requires organizations to survive and continue living in such an environment, keep up with the evolution of timely and accurate responses to their environment.

True accountability requires the right decisions, the overall ambition of every program managers and decision takes. It is clear that in all the circumstances of the decision, all aspects of work and decision making, unclear therefore, such cases must necessarily be taken into account when making decisions; there are definite risks or which can influence the decision outcome, impact and risk management is discussed in the same scope.

In today's era of digital communication, deployment of new technologies such as IT and information systems, necessary to respond to changes in the current environment. Because IT increasingly effect on how organizations function and performance, both public and private.

Decisions in the field of IT-based projects and systems are not free of probability and risk. Therefore, rules and procedures and risk management in this scope is also considered and needs to support the decisions.

In each organization uses automatic information technology system to fulfill its Mission, risk management plays a vital role in supporting the organization's information resources. In fact risk management process is considered as part of a program to the organization's information security, because of its mission to support organizations in today's dynamic environment.

Application of risk management is very essential.

An overview of the concepts

Including concepts that will be covered in this article, can be Risk, Risk Management and Cycle of creating a system, can be mentioned in the following review of concepts and definitions given in various books and resources will be discussed.

Risk and its types

Definition of risk

For word of risk in different sources, various definitions have been proposed, but they all mean the receiver unit. Some of these definitions are mentioned below:

"Risk is defined as the deviation with events that can be used during a specified period, in a given situation happen." [1]

This definition means; If an event is possible, deviation is zero risk in other words, there is no possibility in the future is quite predictable. Elsewhere, risk is defined as follows:

Risk is defined as anything that might impede the achievement of its goals or reduce power of organization, in this way that may be one of the following manners:

- 1 . Occurrence of one disaster or casualty
2. Lack of happening issues, as expected
3. Lack of important events Good and issues [4]

Types of Risk

Three types of risk in the overall development and management of a system are: inherent risk, residual risk and acceptable risk. [4]

Inherent risk: the risk that the level of implementation of the system, there is potential to reduce the need for alternative thinking.

Residual risk: the risk that despite the level of control factors and to reduce the risk still exists.

Acceptable Risk: The level of residual risk, although there is a serious obstacle in the way of achieving the goals or mission of the organization is not created.

In the other categorization risk is assigned into three levels, low, medium, or high.

In other categories, risk is divided into three types:

1. Risk business expenses or loss of income and asset failures and weaknesses of the business, there is a common operation. Example disabling of a device.
2. Organizational risks: damage caused directly or indirectly by one or more of the following:
 - incomplete or failed internal processes
 - People
 - Systems
 - external events
3. Information technology risk: is the lack of automation systems, network or other IT resources that are likely to impact on business processes.

Risk Management

Definition of Risk Management

Risk management is process risk identification, reduced to an acceptable level, and finally evaluate the system. [2]

Williams and Hinz, defined risk management as follows:

Risk management is the process of identifying, assessing and controlling risks, which typically happens the potential consequences it may have for damages or otherwise change the status quo. Risk management runs, risk control and financing by the damage that despite the damage control efforts, have taken place. [1]

Risk management objectives and its importance

The main objective Risk management is helping organizations better manage risks related to the mission. And risk management of IT, managing IT risks relating to the mission and it is possible in the following ways:

- 1) The task of securing greater IT systems to store, process and transmit data to undertake the enterprise.
- 2) Helping managers make informed decisions about the risks and the mitigation of IT-related expenditure part of the budget.
- 3) Contributing to the Director of IT systems to support the promotion of risk management operations. [2]

The overall risk management objectives can be outlined as follows:

- Survival organizations
- Cost savings
- maintain an acceptable level of anxiety
- stable revenues (revenues) through the filter cuts or cash flow from unforeseen losses.
- not to stop after a Loss
- Continuous growth of the organization
- fulfill their social responsibilities and limit the damage. [1]

3.2.1 Benefits and Importance of Risk Management

Risk management benefits can be briefly outlined as follows:

Increase the efficiency and effectiveness of psychiatric facilities, reduce costs, speed and reduction operations, improve communication reliability of the control system, or system help identify threats to project objectives in a timely realization.

Risk Management Tools

A manager needs to apply risk management tools and techniques, including specific tools and methods that can be used include:

1. Avoid the risk: the risk by eliminating the risk factors and outcomes.
- Two. To limit the risk, reducing the risk of damage, or if it occurred in the domain of prevention.
3. Risk Transfer: Transfer to other potential costs (such as insurance companies or companies that are working in the field of risk acceptance).
4. Risk cover: maintenance or damage suffered by the company or organization (self-insurance) and continued operation of the system, with an acceptable level of risk or risk.
5. Planning risk: risk management using a risk-reduction program in which to prioritize, execute and control agents are paid to protect.
6. Research and Identification: reducing the risk through identifying vulnerabilities and researching controls to correct vulnerabilities. [1,2]

It should be mentioned select the most appropriate combination of risk management tools, should consider costs and other aspects of the use of any composition.

scope of risk management

In the process of risk identification, risk is the probability of the effect; they must be on a spectrum from very high to very low categories. Then prioritize the most important risks to be paid as soon as they can be answered.

Decisions on prioritizing the risks identified should appear as shown below, according to the characteristics, operation and sensitivity of resources, and to define a threshold for the risk organization higher the threshold, actions should be required.

Risk Management in Information Technology

With the advent of information technology and the need for organizations to meet and keep up with the technology,

Need for applying risk management techniques in the development and maintenance of information systems based on the organization's most important resource, the data deal is clearer. In fact, risk management, information technology means to identify, assess and reduce the risk of developing and using information systems to acceptable levels [8].

For information systems development methods, there is such diversity, some of them are:

- System development life cycle
- Modeling
- Use of ready software packages
- System developed by the user
- Purchase or Use of external producers.

In using any of the above methods variety of risk management techniques, depending on the method used in the system and the risks should be identified, assessed and managed.

In this article investigates the implementation process using SDLC, that is one of the most comprehensive, and the oldest and most used system development methods is discussed and how to apply risk management in each of the steps of the method is considered.

System development life cycle (SDLC)

Develop a mechanized system of general cycle consists of five stages:

initiation , development or acquisition , Oimplementation ,operation or maintenance, disposal.

In the first stage, the need for an information system, or its goals, area covered by the system and resources and tools are identified and documented.

Secondly, the target system has been undergoing feasibility studies and the design, planning, production or purchased.

In the third stage, the implemented system and security features of the system, are tested and certified. The logical model and a physical model of the system with the physical structure of the system, taking into account the security features is matched.

In the fourth stage, the system will be operational and will begin his duties .In this system, continuous phase by adding or reducing or changing hardware and software and the processes, procedures, and policies of the organization ,teaching staff and ... is moderated and reviewed.

In the last stage, data, hardware and software are made available are continuously monitored and system operation, errors and the need for improvement are identified. This may work in the transportation, removal, or destruction of classified information should be done. [2]

Risk management process

As defined in the risk management, the risk management process includes three steps of risk identification, reduced to an acceptable level, and finally it is assessment.

In the implementation of risk management, these steps will be examined in more detail.

Some other sources in 5 steps and 6 steps to implement this process.

For example, a six-step risk management process are as follows:

- 1) identify and define the goals of the organization or system, the most important goals of survival, was in stable, long-term, low cost and ease. Of course, a certain level of each of these targets in mind, and between them created a reasonable compromise.
- 2) Identification of risk: The risk management process is the most difficult task.
- 3) Risk Assessment of potential losses in this step by step during the planning period relevant to the assessment of these risks are evaluated to determine:
 - A) the probability or chance of damage occurring
 - B) the effect of these losses will have on the financial status of the organization., And
 - C) the ability to predict the losses they had really happened,

It is.

At this stage they are identified and prioritized risks that require more immediate action are identified.

- 4) Select one of the risk management tools available to respond to risks.
- 5) Implementation of decisions concerning the selection of tools and methods to address the risk. For example, in the case of risk transfer and rates should be the most logical choice to take insurance.
- 6) Evaluation of the process and whether risks have been answered or not. [1]

From risks that may affect the system effectiveness and efficiency, can lead to weak management, type of technology or skill point system users. The lack of security system unawareness of users from viruses and hackers can affect the reliability of the system.

Furthermore, From topology of weak points that could affect the availability of the system, weak design can lead to system and network , Hardware failure , Sabotage the system the lack of a backup system can be pointed out. Including risks associated with the supply needs to be aware of the rules and principles of non-use or insufficient monitoring can be pointed out. Weak design of input and output, unauthorized access, the hackers and ... also are included the risks and potential losses that result is uncertainty and system integration[7].

Risk assessment:

At this stage, the probability of any event the objectives of the information system , should be assigned, and this inherent risks and impacts in both of residual risks should be management to performs the necessary actions to minimize the risk to an acceptable level.

To investigate the possible effects on the system, impact financial, effect on the reputation of the organization (Due to insecure systems) and business operations, destruction of valuable assets such as data and the delay in the decision Should be considered and the probability of each event,

governing the organization of the industry, organizational structure and culture, existing systems and controls should be mentioned.

Responding to risk

If the residual risk is still higher than the acceptable level of risk, then we should take measures to reduce risk.

- Supervision: Includes all of the steps above. [4]

- Risk Management and system development cycle

Risk Management system development cycle

At each stages of development of a system, lies risks that for improving the system and implementation of the system is optimized to identify the risks and weaknesses and take measures to reduce them[5].

Key roles in the success of the risk management process

Including those involved in risk management and implementation of IT systems are

It can be noted that the following persons: Chief Executive Officer, CIO, owners and managers of information systems, Operational managers, Director of Information Security and Trainers security system. [2]

In addition, other factors that must be considered in the risk management process are: Customers, users, , The project team, Related Projects and suppliers. As is known, the risk management process, the process is based on the relationships between the factors mentioned above therefore; IT is a key factor in this process. Whether risk management projects be based on IT or not[6].

Success factors and risk management

A successful IT risk management is based on the following factors:

- Commitment of senior management about time and resources
- Support and comprehensive cooperation of Group
- IT risk management team competence
- Awareness and participation of system users
- Continuous evaluation and ongoing identify risks associated with information technology mission. [2]

Conclusion

In this article risk is introduced and how they are managed in different systems and information systems were investigated, including and the identification, reduction and evaluation were discussed in detail. However, as was noted earlier, when it comes to speaking of Information Technology, we should know that we have entered a domain that is highly dynamic and sensitive, because the most important sources of information dealing with. Moreover, often with a new technology, the features, benefits and new challenges we face can not necessarily be avoided. Therefore, in such an environment , risk management such a cycle must be repeated regularly. In order to combine, taking advantage of new technologies with assurance for managers. But it should be noted that depending on the type of organization and the sensitivity of its assets, is facing With different levels of risk that risk management process should be implemented for it.

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