Risk Management

Introduction

Why do some projects fail miserably while others are supremely successful? Of course, the greater the risk, the higher the failure rate, but even high-risk projects have been successfully implemented. The ability to first assess and measure risk, then create strategies to reduce the risk, and finally, tactically implement the strategies to manage the risk will significantly improve the chance of success. To do this you will use a Risk Evaluation table and a Risk Reduction Strategies table.

Description

Five basic categories of factors influence risk. They are:

- Characteristics of the organization.
- Characteristics of the information system.
- Characteristics of the system developers.
- Characteristics of internal users.
- Characteristics of external users.

Within each category, the development team poses a series of questions to evaluate and measure the risk level by creating a Risk Evaluation table (Figure 1). Answering and scoring the questions yields insight into the level of risk and where the risk resides. Using this knowledge, the team devises risk reduction strategies and summarizes their strategies in a Risk Reduction Strategy table (Figure 2).

Purpose

Whether they are small or large, all IT projects contain risk. Using a Risk Evaluation table and a Risk Reduction Strategies table enables you to recognize and mitigate the risks associated with all IT projects and achieve success.

Creating a Risk Evaluation Table

To create your Risk Evaluation table first download the template from the class Resources page, rename it and save it. Answer the questions by assigning a numeric score of +1 if the risk does not exist (the answer is positive). If the risk exists, score it a -1 and if uncertain, give it a 0. Include specific comments regarding each question.

Using this basic 5-category Risk Evaluation table, notice there are 18 possible scores ranging from -18 (extremely risky) to +18 (no risk.) Figure 1 gives an explanation of each factor on the Risk Evaluation table.

A high final risk score is a general warning about project risk. A very high score is an indication that there needs to be a change in the scope, resources, or schedule. A low score should not be taken as an indication that that the project is risk free; for example, if a couple of the factors for "system developers" are scored "-1" then a resource change needs to be considered: can system developers be replaced with others who have the necessary skills to change the scores to "+1"? So what is most important is looking at all the "-1" and "0" risk factors to see if risk can be reduced, rather than the actual total risk score.

Figure 1. Risk Evaluation: Explanation of Factors

Factors affecting project risk	Explanation
1. Characteristics of the organization. a. Has stable, well-defined objectives?	Organizations with missions that are undefined, chaotic, or rapidly-changing present challenges to development teams. The information system goals may be clear, but the value to the organization will shift (or disappear) if the organization's goals change. Recent mergers can create risky situations if the merged businesses have conflicting objectives. Existing organizations that are re-organizing or shifting their focus will present similar challenges.
b. Is guided by a strategic plan for information resources (SPIR)?	Ideally, individual projects are part of a broader plan for managing and improving technology resources. When no clear list of prioritized IT projects exists, your project may lose funding if managers decide that other projects are higher priority.
c. Proposed system fits strategic plan and addresses organizational objectives?	From an organizational perspective, the least risky projects are those that clearly contribute to organizational objectives.
d. Executive sponsor of the proposed system has adequate authority to fund project scope?	Project scope may be compromised if the executive sponsor does not have the budget authority to fund the project with adequate staff or technology resources.
2. Characteristics of the proposed information system. a. Model available or clear requirements?	Is a clear model available that guides the system development team for design, construction, and testing? If not, has the client provided clear requirements for the proposed system?
b. Automates routine, structured procedures?	Does the proposed system simply automate a well-structured process or do the users follow a wide variety of processes with the current system and use their own judgment for key steps?
c. Affects only one business area? (No cross-functional or interorganizational links?)	Your comment should be clear about the single business area for your project or the range of areas.
d. Can be completed in less than three months?	This answer is based on the original scope request by the client, unless the team has negotiated multiple releases. If there are multiple releases, your comment should be clear about the scope that is the basis for the answer to this question.
e. Uses stable, proven technology?	Your comment should be clear about what software tools you are evaluating as stable and proven or not.
f. Installation at only one site?	Your comment should be clear about where the system will be installed.

3. Characteristics of the developers. a. Are experienced in chosen development methodology?	In MIS 374 you are required to use an iterative development methodology. In professional situations you are likely to be unfamiliar with the methodology of your firm for your first project, but a team lead should be familiar.
b. Are skilled at determining functional requirements?	Be clear about which developers are experienced, if any.
c. Are familiar with technology and information architecture?	A +1 score here for client projects means you are using the same environment as past MIS 333k projects and you know your clients' information architecture—an unusual situation for MIS 374 projects. That said, there may be additional skills on your team. Be clear about "why" for your assessment.
4. Characteristics of the users.	*Repeat this 4th category for each major user group, like the AWS example in Figure 3, unless your project has only internal users.*
a. Have business-area experience?	Does this user group have experience in the functionality required for effective use of the system?
b. Have development experience?	This question should only be included in the internal user category - for the clients who will work with you to define requirements and test your system. External users will only be involved in the process if they are part of a focus group.
c. Are committed to the project?	Client commitment for internal users is key to learning functional and non-functional requirements early—a necessary condition for a smooth, successful development process. External users might be involved as part of a focus group to determine usability or even be involved in early requirements. Sometimes you will just have to guess about the commitment of external users.

Creating a Risk Reduction Strategies Table

Once you have identified the risks associated with your project, download a Risk Reduction Strategies table template from the class Resources page, rename it and save it.

Transfer risk factors receiving -1 or a zero score to the Risk Reduction Strategies table and create strategies that will mitigate each risk.

Although all projects are unique, there are some recurring themes regarding risk in IT projects. Figure 2 summarizes recurring risk themes along with suggestions on how to reduce each type of risk.

Figure 2. Recurring Risk Themes and Possible Risk Reduction Strategies

Examples of project risk	Possible risk reduction strategies
1. Newly merged organizations have conflicting unstated objectives.	Enlist high level executives from both organizations to attend a team meeting that includes key users. These executives must sell the value of the proposed system to users. (Notes: Developers rarely have the power to change business cultures. Technology by itself does not solve organization dysfunction, so enlisting the appropriate organizational help is a key to success.)
2. System requirements are unclear.	Conduct whiteboard meetings with key users to work out the processes graphically with data flow diagrams and use cases; photo all the graphics and recreate them in Visio for user review. Once there is an agreement on the existing process, work with the users to design well documented new processes that meet the clients' system objectives and performance criteria.
3. Key users are unable to explain their processes. They seem to do something different every week for their weekly reports.	Videotape the weekly reporting process for all key users. Summarize these graphically as Data Flow Diagrams in Visio for user review. Once there is an agreement on the existing process, work with the users to design well-documented, new processes that meet the clients' system objectives and performance criteria.
4. The development team does not know Java*, the software development tool requested by the client. *this could be any unfamiliar language or platform-- Ruby on Rails, iPhone app, etc.	There are several possible solutions; all are dependent on your abilities and client situation. Here are three possibilities. • Learn Java. (The JudyPaul.com team did this, as have many past MIS 374 teams with mixed success.) • Create a proof-of-concept system and thorough documents and test data that can be turned over to paid programmers once the semester is over. • Complete the software in the .net tools you know from MIS 374 and 333k. (Note that the hosts that include these tools are more expensive than the inexpensive host sites that low-budget non-profits can afford. So, this, like all decisions, needs to be discussed with your clients.)
5. This is the first time our client has worked with developers before.	Ask lots of questions, create lots of prototypes that your client can interact with, and write early drafts of training materials to be sure you learn the detail level of user materials required.

Benefits

Understanding the characteristics of the organization, the information system you want to develop, the developers, and the internal and external users enables you to see the strengths and weaknesses of your project. Using this knowledge proactively by creating a Risk Evaluation table and a Risk Reduction Strategies table will help you reduce risk, thereby increasing the efficiency and effectiveness of your project

Tips for Completeness

- Include as wide a range of users as possible as a way to learn the real scope of the project and help your clients consider whether risks vary across potential user-categories. You do not have to limit yourself to the generic categories of "internal" and "external" users.

Note that the AWS Risk Evaluation Table, shown in Figure 3, includes three user categories. Risk exists in two of the categories and they explain how they will mitigate this risk in their team's Risk Reduction Strategies Table shown in Figure 4. Consider adding a second category of developers. This probably won't make sense for many of the MIS 374 client projects, but in your future professional positions you will frequently depend on developers working as contractor programmers or with an outsourcing vendor in another country. A previous 374 team accessed a user forum and found a developer willing to code functionality to solve special problems they were having with Joomla. The developer was one of the open source contributors to Joomla and was pleased to add to Joomla's functionality for all users, based on the requirements specified by the MIS 374 team. The team's client was pleased too.

Figure 3. Risk Evaluation Table for Austin Waldorf School (AWS)

Factors affecting project risk	Rating	Comments
1. Characteristics of the organization a. Has stable, well-defined objectives?	1	Yes, to provide its students with a quality, "well-rounded" education by creating an environment that balances academic, artistic, and practical disciplines.
b. Is guided by a strategic plan for information resources (SPIR)?	-1	AWS does not have a strategic plan for information resources.
c. Proposed system fits strategic plan and addresses organizational objectives?	+ 1	The goals for the web site redesign fit with AWS goals to increase enrollment and gain alumni support.
d. Executive sponsor of the proposed system has adequate budget authority to fund project scope?	+ 1	The school management team is involved weekly at meetings with our development team.
2. Characteristics of the information system a. Model available/clear requirements?	0	No unified database model is available since they use multiple programs, but Kim knows what she wants (since the website already exists).
b. Automates routine, structured procedures?	0	All current processes on the site will be left as is, this semester because of time constraints. What will change is the process by which Jo makes changes to the site; it will be through one platform instead of multiple ones.
c. Affects only one business area? (No cross-functional or inter-organizational links?)	-1	The website services every area of AWS – events, donations, parents, calendar committee.
d. Can be completed in less than three months?	1	Initially the scope was too large, but we narrowed it down to be completed by May 1st. Future teams will be used for additional functionality, as we will focus mainly on updating the look of the site and consolidating the platforms used to manage it.
e. Uses stable, proven technology?	0	CiviCRM is well proven, and Joomla has a lot of support. This will be merging independent components, so it could affect stability, although integration of CiviCRM and Joomla is common.

Factors affecting project risk	Rating	Comments
f. Installation at only one site?	1	Simple installation onto existing web host.
3. Characteristics of the developers a. Are experienced in chosen development methodology?	0	Team is familiar with phased development through class lectures, and has limited experience with it through internships.
b. Are skilled at determining functional requirements?	1	Team is skilled at determining requirements both from the MIS curriculum and internship experiences.
c. Are familiar with technology and information architecture?	0	Familiar with open-source technology, specifically Joomla, and relatively new to CiviCRM. Not familiar with AWS architecture as it is fragmented, with little documentation.
4. Characteristics of the users (Internal: Jo Spall – Site Administrator) a. Have business-area experience?	1	Jo has worked at AWS for 8 years, and has acted as site administrator for 3 years; she is very familiar with its processes.
b. Have development experience?	-1	Jo has no specific development experience.
c. Are committed to the project?	1	They will give all necessary help. Everyone involved is eager to have a new website that better represents AWS.
5. Characteristics of the users (External) a. Have business-area experience?	1	Some that visit the website are familiar with AWS and its mission (parents/donors), other visitors are the general public or perspective students looking for additional information from the site.
b. Have general computer/internet experience?	0	Most site visitors are familiar with the basics of computers and internet browsing. But, a minority of users may be new to the technology.
Total Points		
* + 1 = yes; 0= maybe; -1 = no	6	

Figure 4. Risk Reduction Strategies for Austin Waldorf School (AWS)

Factors	Risk Reduction Strategies
1. Organization	Work with Kim, Chip, and Susan to determine clear requirements, and meet with them weekly to provide system progress updates. By keeping alll three of them involved in every phase, the team will be able to make sure that work done aligns well with the objectives of AWS, and quickly correct anything that doesn't. Note: We discussed creating a SPIR for AWS, but they prefer we focus on web site functionality.
2. Information System	Use prototyping at the weekly client meetings and JAD sessions at critical phase junctures with key employees to ensure clear understanding of requirements and the proposed system across all affected areas. Study the current website for relevant content and processes to be transferred onto the new platform, and what can be improved. Work with Jo Spall to outline her current updating processes through the different channels, and identify the quick wins that can be accomplished given the deadline. Study other Waldorf schools' websites around the country and try to develop a list of "best practices" to follow, based on the client's needs. Identify useful forums, blogs, and websites early on to use as resources for developing and integrating CiviCRM and Joomla.
3. Developers	Develop a detailed Gantt chart based on the phased development methodology, to ensure that the team utilizes the phased approach and can clearly recognize if we get off track. Work closely with our AWS contacts and key employees to ensure that a clear picture of AWS's architecture is outlined. For this project because of lack of documentation, people will be the primary source of system/information architecture information.
4. Users (Internal)	Complete thorough system documentation, including a developer and user manual to facilitate ease of use in the new environment. Complete training for Jo through a phased framework, that is, through prototyping allow Jo to get familiar with pieces of the system as they are developed. This will allow her a smoother transition to the new system, and allow for any use problems to be addressed early on.
5. Users (External)	Develop the new website with an intuitive menu hierarchy and flow to allow even the inexperienced computer user to easily navigate the site. Provide a search function to allow a new user to find information quickly without searching through menus.

Tips for Completeness

- Use labels that are specific to your client—not "user" or "our client," but the actual types of users and names. Notice in Figure 3, the AWS team used "Parents" and "Susan" on their AWS Risk Evaluation Table.

- All your risk reduction strategies should be appropriate for *your* project. For example, hiring programmers to add to your team is not appropriate. Another example is writing a Strategic Plan for Information Resources (SPIR) to reduce the risk factor on the template about whether the organization has a SPIR. The large companies that hire UT MIS majors as consultants all have SPIRs. Large IT projects must be approved and included on the company SPIR before resources are allocated to the project. The consulting firms that hire UT MIS majors consider it risky to be involved in a project that is not part of their client firm's SPIR, since that suggests that the project might not be an on-going, well-supported IT venture for the firm. For the non-profits that are clients for MIS 374, a discussion of their IT plans makes sense, but creating a formal SPIR does not. Similarly, on the other hand, creating a SPIR that is a short list of critical IT projects for a small, start-up company might make sense for your MIS 374 client. For most MIS 374 clients, however, the project request is a clear business need and your team will have too little time to help them to create a SPIR.

FAQs

Q1. What if we don't know if our client has a strategic plan for information resources (a SPIR) or not? **Answer:** Ask them.

Q2. Are the system category questions about the existing system or the proposed system? **Answer:** The focus is on the proposed system, but the existing system is often relevant when you consider your answer. In the ICC Risk Evaluation table provided as an example on the Resources page of the class website, the team scored Factor 2a. as -1 because the existing system did not provide a clear model. Note that the ICC Risk Reduction Strategies Table (also on the Resources page) indicates that the team planned to reduce this risk by videotaping the ICC staff going through their process, thus creating a clear model that did not exist at the beginning of the project.

High Quality Delivery Tips

Risk Evaluation Table:

- Identify all potential risks specific to the case or client project situation.
- Write detailed comments that are consistent with the case or client project situation.
- Ask your clients about each of the risk factors in an initial review of your risk assessment and revised your evaluation to reflect your discussion.
- Err on the side of too much caution—the goal is to determine potential problems and reduce the chance of unforeseen difficulties.
- Include the greatest risks in your strategy discussion.

Risk Reduction Table:

- Include risk reductions strategies for each one of your risk factors with "-1" ratings.
- Include your risk reduction strategies in your project plan.

Templates and Examples on Resources Page:

Risk Evaluation:

- Risk Evaluation Template
- Risk Evaluation - ICC
- Risk Evaluation - ARL
- Risk Evaluation and Reduction - Waldorf

Risk Reduction:

- Risk Reduction Strategies Template
- Risk Evaluation and Reduction - Waldorf
- Risk Reduction - ICC
- Risk Reduction - ARL