ISSN:2231-0711
www.ijcset.net

Critical Risk Factors for Information System (IS) Projects
(IS) Projects between Sink and Swim

Safa'a I. Hajeer
Department of Computer Information Systems
safaahajeer@yahoo.com

Abstract-Risk management is very important for Information System (IS) projects. When IS professionals making the project plans, they usually assume that everything will go exactly as planned. However, surprises often arise here and there. These surprises are the factors which effect IS projects and take them between success and failure. Some questions: what factors are associated with transition from escalation to de-escalation of IS projects in Jordan? How to avoid surprises and keep IS on track (under control) as much as possible? Which factors must select more in order to improve quality and reduce cost?
Well; some people think that surprises are unavoidable because of the creative nature of IS. Others are seeking resolutions to reduce surprises. This research is concerned with the second type of people, it analyses several factors that contribute to effects in IS projects and arranged them according to high consideration, this consideration can be: identify, control and avoid as possible to enter the risk area. In addition, the risk assessment steps must be kept on face by IS professional, this will contribute to avoid as much as possible surprises and keep IS on track, this avoidance is the most important thing to improve quality and reduce cost of Jordanian IS projects.
Keywords:Risk Management, Information System (IS), Risk Factors, Information Technology (IT), Project Management, Project Failure, Risk Assessment.

INTRODUCTION

Over years Information System plays critical roles in most business organizations around the world. Every company enters Information system in their business. An Information System (IS) at any organization serves to coordinate the work of many different organizational functions, from back office administration support, to company's strategic management tool. So the Information System becomes the core of any business. It encapsulates and integrates a number of areas of business with an aim to increase efficiency and effectiveness of business practices. The implementation of an information system involves the design, delivery and use of the software systems in the organization. This should be a strategic decision made by an organization's management and should incorporate the view that the business practices will most likely be altered when the information system is put in place. Information Technology (IT) is the enabling tool that powers the IS.

As noted from the previous talk that Information Systems are pervasive in all forms of business organizations, but recent studies show that many of these projects have failed for several reasons like budget and/ or schedule overruns or not meeting users requirements…etc. Based on read reports, Information systems projects often fail. Depending upon what statistics, the failure rate of IS projects can be 50%- 80%. Since few people like to admit failure, the real statistic may be even higher; this takes us to big questions, what causes so many information system projects to fail? How to avoid making the mistakes that lead to IS projects failure? Is it some technical magic secret that most system engineers don't know? That means Any IS project success doesn't come easily, it depends on some contributed factors that take them for success or failure- the reader can see them later…

LITERATURE REVIEW

The identification of risks in information system projects has been the subject of many researches through the years, these risks define the suitable base that take IS projects to failure. The history tells the reader of the root of the IS projects failure see the follow of it.

Early research on IS project failure was carried out by Morgan and Soden in 1973. They examined determinants of failed information systems projects. After studying ten unsuccessful projects, Morgan and Soden concluded that most failures were due (not surprisingly) to management's inability to manage – that is plan, organize, and control [1] [2] [3]. Lately by the end of Seventies (1978) the implementation of a management information system was considered fraught with uncertainty according to Alter and Ginzberg's article, they identified top risks faced information systems as: 1) lack of designer experience with similar systems, 2) nonexistent or unwilling users, 3) multiple users or designers, 4) turnover among users, designers or maintainers, 4) lack of support system, 5) inability to specify the purpose or usage patterns in advance, 6) inability to predict and cushion impact on all parties, 7) technical problems, cost effectiveness issues.

In 1980 Zmud stated the factors that influence software development projects, these factors are: 1) Technological complexity, 2) Degree of novelty or structure of the application, 3) Technological change and project size [4], These factors [5] are grouped under four categories: organizational characteristics, environmental characteristics, task characteristics, and individual characteristics, He found that the cooperation for these factors effects on projects and take them to cost so much and overrun time.

A portfolio approach for managing software development risk was discussed by McFarlan (1981) [6]. McFarlan mentioned that failure to assess individual project risk to adapt management methods was a major source of the software projects problem [4]. Portfolio approach named three key risks: 1) size in the cost, time, staffing level, or number of affected parties, 2) familirty of the project team

and the IS organization with the target technologies and 3) how well structured is the project task [1].

Davis paper on requirement determination strategies in 1982 listed three risks: 1) existence and stability of a usable requirement, b) user's ability to specify requirements, and c) ability of analysts to elicit requirements and evaluate their correctness and completeness [1].

Block (1983) pointed to resource failures (conflicts of people, time and project scope) and requirement failures (poor specification of requirements) [7].

According to Boehm's 1991 article on software risk management, Boehm recommended the use of approximate checklist of the top ten software risk items: personnel shortfalls, unrealistic schedules and budgets, developing the wrong software functions, developing the wrong user interface, gold- plating (i.e. unneeded features), continuing steam of requirements changes, shortfalls in externally furnished components, shortfalls in externally performed tasks, real-time performance shortfalls and stringing computer science capabilities [4] [1].

Barki *et al*. (1993) proposed a variety of risk factors associated with the organizational environment, including task complexity, the extent of changes, resource insufficiency and the magnitude of potential loss [7] [8].

Sauer had criticized this model and proposed a more conservative description of information systems failure in 1993. According to his account, an information system should only be regarded as a failure when development or operation ceases, and end-users are disappointed with the extent to which the system has served their interests [9].

In 1994 CHAOS report, the Standish Group identified ten key risk factors responsible for project failure, these key factors are: incomplete requirement, lack of user involvement, lack of resources, unrealistic expectations, lack of executive support, changing requirement and specifications, lack of planning, didn't need it any longer, lack of IT management and technology illiteracy [1].

A factor-based approach characterized by Flowers in 1996, who uses a series of seven UK-based case studies to identify failure factors of IS projects, Flowers said if any of specific defined situation occurs by him, the information system will fail, these situations are: 1) when the system as a whole doesn't operate as expected and its overall performance is sub-optimal, 2) if on implementation, it doesn't perform as originally intended or if it is so user- hostile that it is rejected by users and under-utilized, (3) if, the cost of the development exceeds any benefits the system may bring throughout its useful life; or (4) due to problems with the complexity of the system, or the management of the project, the information system development is abandoned before it is completed. Flowers used large systems failure cases to illustrate the key influencing factors in the conduct of IS projects, Flower's factors include pre-occupation with technology in project planning, technology focus over human relations, complexity under-estimated, poor stakeholder management, poor consultation, design by committee, technical fix for a management problem, poor competence of project management and project team, and poor selection decisions [10].

Several sources of uncertainty for projects development had been suggested by Ewusi in 1997, these sources are: complexity, lack of structure, instability of project objectives, newness of the technology, users, IS Management, upper management and project size [4].

In the framework developed by Keil *et al*. (1998), the risks in the environment quadrant deal with issues over which the project manager may have no control, such as changing scope/objectives and conflicts between user departments [7].

According to CMA Management (1998) [11], at least three common areas for information systems project failure persist. They are:

1) Poor project planning - risk management was not addressed or project plans were weak.
2) Poor business case - in that the need for the system was not fully justified in ways that are related directly to the organizations business requirements or priorities.
3) Lack of top management involvement and support.

Ropponen and Lyytinen examined risk- management practices of Finnish software project managers were analyzed in 1998 with 83 projects across a variety of organizations. Six risk categories were identified: scheduling and timing, system functionality, subcontracting, requirement management, resource usage and performance and personal management [1].

Jiang and Klein suggest that project size, technological change, novelty of application area and personnel changes are the key factors influencing information system project failure. It is not in 1999, however, uncommon to have many of these factors present concurrently during the course of a single information system project. Regardless of the technological platform, whether it be mainframe or network based, the menace and reality of failure persists [11].

Williams's report in 1999 says Most IS organizations are under mounting pressure to deliver systems with fewer resources and in a very short development lifecycles [9].

A fundamental reason that causes IS projects to fail are that they are too complex, Study done by Murray in 2000. Inherently complex projects must handle both technological issues and organizational factors, which are far too often outside the project team's control. In addition, both information technologies and business environments are evolving at an alarming rate, making technical specifications and business requirements increasingly uncertain and tough to manage [9].

Schmidt et al.'s study in 2001 revealed a ranked factor list based on a Delphi procedure. The investigation was carried out in three different countries with different socio-economic and cultural backgrounds, where panels of experienced IS project managers participated in identifying, and later, ranking the most common risk factors in the order of criticality. Although, the study revealed some 53 factors in all, about 29 of them were ranked by the different panels, and about 11 of them had composite ranks – ranked by all three

panels. The list of the 11 factors and the composite (average) ranks assigned to them by the different panels are: Lack of top management commitment to the project, Failure to gain user commitment, Misunderstanding the requirements, Lack of adequate user involvement, Lack of required knowledge/skills in the project personnel, Lack of frozen requirements, Changing scope/objectives, Introduction of new technology, Failure to manage end user expectations, Insufficient/inappropriate staffing and Conflict between user departments [12] [13].

According to Winters (2002), Information System risk factors are inadequately trained and/or inexperienced project managers, failure to set and manage expectations, poor leadership at any and all levels, failure to adequately identify, document and track requirements, poor plans and planning processes, poor effort estimation, cultural and ethical misalignment, misalignment between the project team and the business or other organization it serves, inadequate or misused methods, inadequate communication and including progress tracking and reporting [14].

Yardley concluded in 2002 that project risk factors for Information System are not limited to project management, but also include those project activities that lie outside the scope of project management. These factors some originated from within the business, such as strategy, organization, roles, and responsibilities; others, such as competitors, politics, and regulations will be external to the business [15].

Yardley IS Project risk factors:

* Inexperienced Project Manager
* Poor project planning
* Poor requirements management
  - → Not capturing sufficient requirements
  - → Capturing a shopping list of requirements
  - → Changing requirements
* Dependency on project management tools
* No clear project schedule
* Weak leadership
* Inadequate testing

Key contributors to project failure according to Yardely study:

* Weak ownership
* Immature or unproven technology
* Lack of user involvement
* Weak business case
* Poor communication
* Failure to examine existing business [15]

Yourdon has concluded in 2004, project success or failure depends on the way the project is managed, He listed some factors:

1- The extent to which project management
2- Sets of clearly defined projects goals
3- Wins executive support
4- Exercises leadership
5- Manages project scope
6- Plans and organizes the project
7- Communicates with stakeholders
8- Involves users
9- Manages risks
10- Gives timely progress feedback
11- Adapts to unexpected events. [16]

Smith et al., Project Managers in South Africa are facing many project risks in 2006, Some of these risks are lack of top management commitment to the project, unclear/ misunderstood scope/objectives, schedule Flaw, lack of client responsibility, ownership and buy-in of the project and it's delivered systems, no planning or inadequate planning, project not based on sound business case, lack of available skilled personnel, not managing change properly, Lack of adequate user involvement and poor risk management [17] [18].

Kappelman et al. derived 53 "early warning signs" from prior literature as well as panel interviews and conducted a ranking-survey among 55 IS project managers and IS executives in 2006. The result of their study is a list of the "dominant dozen" risk factors in IS projects which were ranked above six on average on a seven point scale. Some risk factors were found to be evident during the initial stages of the project. Known also as early warning signs, they include lack of top management support, weak project manager, lack of documented requirements and lack of change control process [19].

In 2008 A Temporal model of IS project performance that classifies IS project risk factors into earlier (priori) risk factors and later (emergent) risk factor by Gemino et al.. The priori risks are associated to either structural elements of the project or knowledge resources available to the project team, emergent risks denote deficiencies in organizational support or result from the volatility of IS projects. The Model was tested using partial least squares analysis (structural equation) with data from a survey of 194 project managers. A project manager may estimate a priori risks before the start of the project; emergent risks become apparent not until particular project phases. Using structural equation modeling the results show that temporal model offers an improved explanatory power over traditional models of performance [20] [21].

In a more recent study, Conboy studied how IS projects run drastically over-budget and there is no reason to suggest that this trend is improving. He explained the factors explaining the tightness of budgetary control in a case of extreme ISD failure en masse, where all but two of the 22 projects in a business unit went over budget. The study then identifies a set of emerging factors affecting tight budgetary control in IS [22].

In 2011, Pan et al. seek to understand the factors that shape management executives' influence behaviors and the influence tactics that may be utilized during de-escalation of commitment to information systems (IS) projects, they studied how project stakeholders' commitment to troubled IS projects, Through the findings, researchers may develop a deeper understanding of how project stakeholders may surrender previous failing courses of action and accept alternative courses of action. Practitioners may also devise useful influence tactics when troubled IS projects occur [23].

FACTORS CONSIDERED IN THIS STUDY

Projects in general are affected by various aspects that are taking them to success or fail. This study analyses several factors contribute to effect in projects, these factors are:

Table 1: Critical risk factors for IS [1].

INSIDE RISKS	
Self	***Task***
Not managing change properly	Bad Estimation
Lack of Effective Project Management Skills	Lack of Effective Development Process/Methodology
Lack of Effective Project Management Methodology	Trying New Development Method/Technology During Important Project
Improper Definition of Roles and Responsibilities	Lack of Required Knowledge/Skills in the project personnel
Misunderstanding the Requirements	Poor team Relationship
Poor or Non- Existent Control	Insufficient Staffing
Poor Risk Management	Excessive Use of Outside Consultants
Choosing the wrong Development Strategy	Lack of Available Skilled Personnel
Lack of "People Skills" in Project Leadership	Introduction of New Technology
Project Not Based on Sound Business Case	Stability of Technical Architecture
No Planning or Inadequate Planning	Multi-Vendor Projects Complicate Dependencies

OUTSIDE RISKS	
Client	***Environment***
Lack of Top Management Commitment to the Project	A Climate of Change in the Business and Organizational Environment that Create Instability in the Project
Failure to Gain User Commitment	Mismatch between Company Culture and Required business Process Changes Needed for New System
Conflict Between User Departments	Project Intended to Fail
Failure to Get Project Plan Approval from all parties	Unstable Corporate Environment
Failure to Manage End User Expectations	Change in Ownership or Senior Management
Lack of Adequate User Involvement	Changing Scope/objectives
Lack of Cooperation from Users	Preemption of project by higher Priority Project
Failure to Identify All Stakeholders	Staffing Volatility
Growing Sophistication of Users Leads to Higher Expectations	External Dependencies Not Met
Managing Multiple Relationships with Stakeholders	Lack of Control Over Consultants, Vendors and Sub- Contractor
Lack of Appropriate experience of the User Representative	
Unclear/Misunderstood Scope/Objectives	
Number of Organizational Units Involved	
Lack of Frozen Requirement	
New and/or Unfamiliar Subject Matter for both users and Developers	
Under Funding of Development	
Under Funding of Maintenance	
"All or Nothing"	
Artificial Deadlines	

Those people are like Chief Information Officer (CIO) from both sectors (Private/ Public Companies).

THE METHODOLOGY

This study was designed to identify critical risk factors faced by IS projects in Jordan.

The first step, collecting information from journals articles, books, and Internet sites

Second, doing a Survey using two techniques are: Questionnaire paper & Questionniare online; the paper Questionnaire was designed according to Zikmund [24], and then it was reviewed thoroughly.

Furthermore, the online Questionnaire was designed via a web site by putting the paper Questionnaire online for the companies which we couldn't visit them.

After that, we started to ask people concerned & working in IS projects in a Jordanian company to answer questions.

Third, Data generated, and analyzed using SPSS in order to decide the main factors that affects on projects in Jordan.

Lastly, we are trying to give proposition for giving a heavy weighting of concerns while doing IS projects. With Believing that Understanding the factors of successful/ failure of Information System projects- especially the failure ones- This will assist professionals, doer of these projects and senior management in preventing the same mistakes from recurring, thus improving efficiency and decreasing costs.

SURVEY RESULTS

GENERAL INFORMATION ABOUT QUESTIONNAIRE AND FILTERS

The Questionnaire is found APPENDIX A. It was sent to real Jordanian Public/ Private IS companies in both ways: online and paper. The number of received responses was 150 out of 250; 100% paper and no online, maybe because some servers block foreign emails or put them in spam. These responses are distributed as appear in Figure 1: 52% of them from public companies and 48% from private ones. The responders' information analysis by examining the five pie charts, the first one is Figure 2: Gender, the second is Figure 3: position, Education area… so on until Figure 6: Experience (years), the first chart we can see that the percentage of male is much higher than females. The second chart presents that others enormously marked the biggest value (78%), it is not surprising to find that because of most responders were software engineers, follow it 11% CIO, then programmer by 8% and lastly CEO by 3% of responses.

Figures 4-5, discuss the Education area and degree, thus, CIS and CS reached their highest level in the percentage 28%, this means that they are the most consternation of this study, later one it became others like GIS specialist in 25%, the percentage of management and MIS dipped largely around 13% of percentage. Coming to degrees, any society has a B.S degree more than M.S, PhD or diploma, it is clear from the data given that diploma had the lowest value with 9% value, on the other hand B.S reached the peak by 36% of responses.

Finally, the last pie chart represents the years of experience which shows the youngest people took a high percentage with 60%, The percentage sank by 40% to reach 20% for 5-9, while 9% for >20 years of experience.

To sum up, the most of IS project specialists are men, normally software engineers who hold a B.S degree whether in CS or CIS, plays a good role at companies with a less than 5 experience.

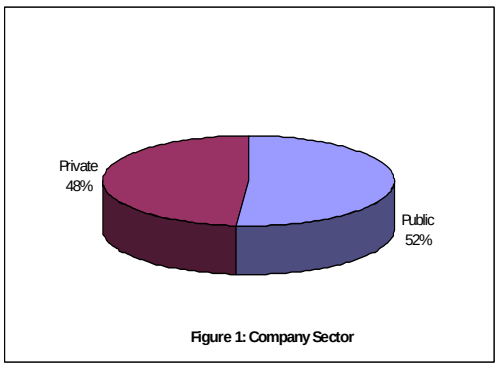

Figure 1: Company Sector

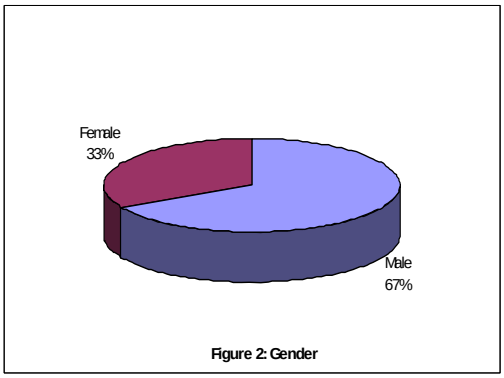

Figure 2: Gender

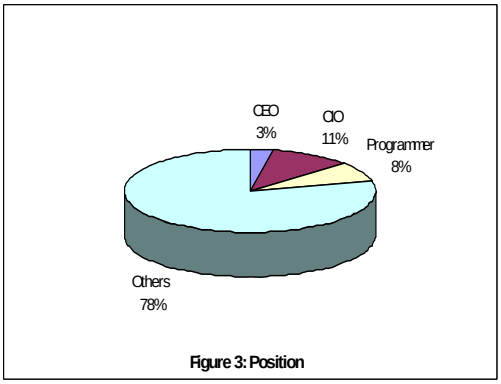

Figure 3: Position

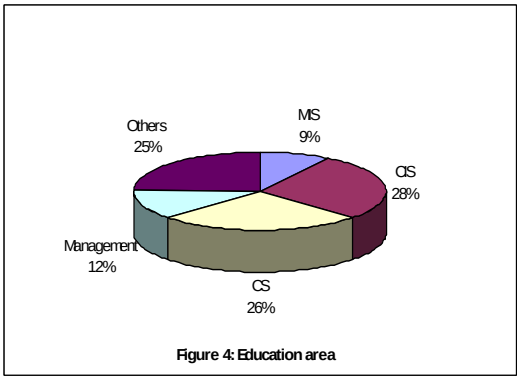

Figure 4: Education area

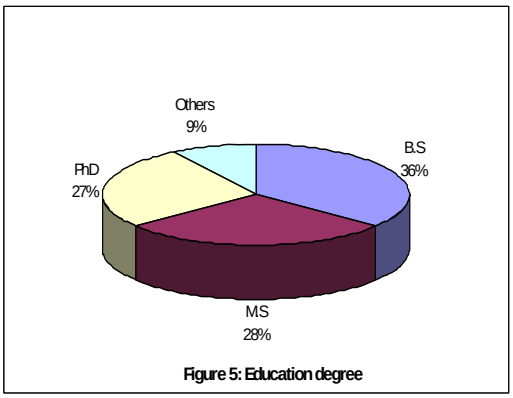

Figure 5: Education degree

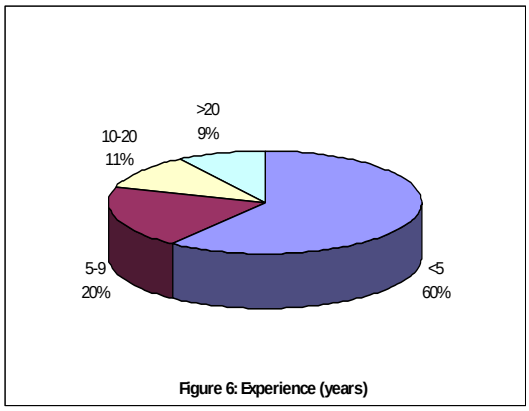

Figure 6: Experience (years)

FACTORS ANALYSIS

Now the most important part from the survey is presented here. In other words, the target of this research. Studying the several factors that contribute to the effects in Information System (IS) projects. Giving the suggestions to avoid failure situations, improve quality and reduce cost. The reader can see the results of study in Table 2. the table clearly presents and compares the risk factors of two main categories: Inside, outside risk under two groups in each category, Highlighted factors indicate the top five risk values in each group. These factors must be taken into full consideration while doing any IS projects. IS professionals should take good care of them in any IS projects. They should ensure as much as possible that they have high people skills for function project utility correct, have nearly a perfect plan, have strong team with the soul meaning of cooperation, have perfect estimation, have clear objective and scope, have pertinence and trying to keep the project on track always and give the permission for a higher priority.

In Figure 7, the chart indicates four different groups on the factors contributing to effect of Information System projects, as we can see, the highest values of rating were itself group under the inside risks category, the second highest rating be for the outside risk (client group), the remaining groups we can't compare because un-stabilized in decreasing or increasing, although it seems generally that environment factors had a smaller higher at almost times, this maybe the effect in projects task on the other category, so that's why they have almost the same level.

Table 2: Factors analysis results.

INSIDE RISKS					
Case Number	**Itself**	**Average Response Rating**	**Case Number**	**Task**	**Average Response Rating**
1	Lack of "People Skills" in Project Leadership	67.42	1	Poor team Relationship	62.74
2	No Planning or Inadequate Planning	66.77	2	Bad Estimation	60.21
3	Improper Definition of Roles and Responsibilities	62.7	3	Lack of Available Skilled Personnel	59.92
4	Lack of Effective Project Management Skills	60.7	4	Lack of Effective Development Process/Methodology	57.89
5	Poor Risk Management	59.92	5	Lack of Required Knowledge/Skills in the project personnel	57.3
6	Misunderstanding the Requirements	59.67	6	Introduction of New Technology	56.82
7	Choosing the wrong Development Strategy	59.64	7	Trying New Development Method/Technology During Important Project	55.56
8	Poor or Non- Existent Control	58.48	8	Multi-Vendor Projects Complicate Dependencies	55.33
9	Lack of Effective Project Management Methodology	57.95	9	Stability of Technical Architecture	54.09
10	Project Not Based on Sound Business Case	53.86	10	Excessive Use of Outside Consultants	51.82
11	Not managing change properly	52.7	11	Insufficient Staffing	50.71

OUTSIDE RISKS					
Case Number	Client	Average Response Rating	Case Number	Environment	Average Response Rating
1	Unclear/Misunderstood Scope/Objectives	66.47	1	Project Intended to Fail	61.67
2	Lack of Cooperation from Users	62.14	2	Preemption of project by higher Priority Project	61.53
3	Failure to Identify All Stakeholders	59.95	3	Staffing Volatility	61.14
4	Lack of Appropriate experience of the User Representative	59.58	4	Changing Scope/objectives	59.71
5	Artificial Deadlines	59.3	5	Unstable Corporate Environment	58.59
6	Managing Multiple Relationships with Stakeholders	59.14	6	A Climate of Change in the Business and Organizational Environment that Create Instability in the Project	57.42
7	Failure to Manage End User Expectations	58.61	7	Change in Ownership or Senior Management	55.71
8	"All or Nothing"	58.56	8	Mismatch between Company Culture and Required business Process Changes Needed for New System	55.56
9	Failure to Get Project Plan Approval from all parties	57.73	9	External Dependencies Not Met	54.12
10	Lack of Top Management Commitment to the Project	56.38	10	Lack of Control Over Consultants, Vendors and Sub- Contractor	53.05
11	Number of Organizational Units Involved	55.73			
12	Under Funding of Development	55.2			
13	Under Funding of Maintenance	54.42			
14	Lack of Adequate User Involvement	52.88			
15	New and/or Unfamiliar Subject Matter for both users and Developers	52.72			
16	Conflict Between User Departments	52.17			
17	Growing Sophistication of Users Leads to Higher Expectations	51.89			
18	Lack of Frozen Requirement	49.18			
19	Failure to Gain User Commitment	48.57			

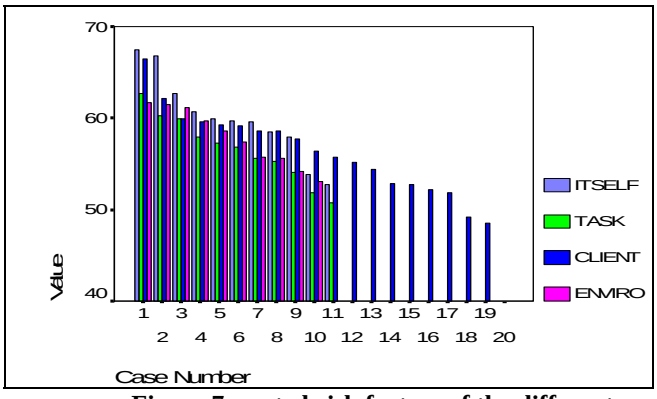

Figure 7: sorted risk factors of the different groups.

Now, from all of our experience we suggest some actions that may take to bring IS projects under control via risk assessment step, these steps are initial step and later step, each step holds several points of concern. So risks assessment steps with its points are:

Initial step

- ***Risk identification.*** Risk identification is to identify project, product and business risks. These risks are known by a risk factors study, so Risks to a IS project must first be identified. One way of identifying IS project risk is to follow the most common risk types.
- ***Risk analysis.*** The purpose of *analysis* is to convert the data into decision-making information. Analysis is a process of examining the risks in detail to

determine the extent of the risks, how they relate to each other, and which ones are the most important.

- ***Develop strategies to mitigate identified risks***. According to Richard, Risk mitigation involves two types of strategies, which are: Action planning and Contingency planning. Action planning addresses risk that can be mitigated by immediate response. For example, the action plan could provide for hiring experienced personnel to resolve the risk of insufficient experience with new hardware architecture. On the other hand, contingency planning addresses risks that require monitoring for some future response should the need arise.

Later step

- ***Risk monitoring.*** As a project proceeds, some risks will be eliminated, but some new risks may also occur. Some risk mitigation actions will work well, but some may not work and new action will need to be taken. As a project proceeds, priorities will change and new risk management planning will need to be undertaken. Therefore, the projects progress towards resolving risk items or taking corrective action should be tracked.
- ***Invoke a contingency plan***. A contingent plan is invoked when a quantitative risk indicator crosses a predetermined threshold. For example, if a project team cannot solve the problem within a specified period, like two weeks, they must invoke a crisis-management plan.
- ***Manage the crisis.*** For some reasons, if the contingent plan fails, there must be some other plan to reevaluate the project or to cancel the project.

LIMITATION

Not all the visited companies accepted to fill the Questionnaire survey, really we don't know why?

Because of the mother language in Jordan is Arabic, not all people understood the English format of the Questionnaire. This reason leads us to translate it into Arabic format which have the same information of the English one. The Arabic Questionnaire appears in APPENDIX B.

FUTURE WORK

Humans known taxonomically as Homo sapiens, Latin for "wise man" or "knowing man", knowing man is the person who has knowledge, by the way knowledge simply enters our names, it looks like the blood passes through Arteries and Veins around our body to be alive.

However, Knowledge is like climbing mountains, you always suppose that you reach a peak when you have got a higher point of it. No stopping… No peak… through out history proves that, humans have had a thirst for knowledge and development, aspiration couldn't stop. It is the engine to reach more and more. Our aspirations are comparing Jordanian results with other countries companies like Lebanon, Bahrain ...etc; this will help us to put our hands on the critical factors and took off them from the root; and studying more factors may appear by explanation in technology of our life.

Furthermore, Researches show always that risk management is becoming recognized as a best practice in IS industry for reducing the surprise factor. Although future cannot be predicted with certainty, risk management could minimize the potential problems. We hope one day to have a way to predict with certainty as much as possible in order to convert the minimization to not at all.

CONCLUSION

Really, clever people may not accept failure; they are stopping and looking carefully to walk again. Those people who are always trying to keep their work on the safe side… we put this study between your hands.

The best way to keep IS projects on the safe side i.e. to put project on the right track (under control, improve quality and reduce cost) is to ensure as much as possible that project have high people skills for function project utility correct, have nearly a perfect plan, have strong team with the soul meaning of cooperation, have perfect estimation, have clear objective and scope, have pertinence and trying to keep the project on track always and give the permission for a higher priority. In simple words, keep risk assessment steps in front of IS professional worker.

REFERENCES

[1] Jones C., Gray G., Gold A. and Miller D. (2010), *Strategies for Improving Systems Development Project Success*, Issues in Information Systems, Vol. XI No. 1, pp. 164-173.

[2] Schmidt, R., Lyytinen, K., Keil, M. and Cule, P. (2001), *Indentifying software project risks: An international Delphi study*. Journal of Manage-ment Information Systems, Vol. 17 No. 4, pp. 5-36.

[3] Lyytinen K. (1998), *Expection failure concept and systems analysts view of information system failures: Results of an exploratory study*, Information and Management, Vol. 14 No. 1, pp. 45- 56.

[4] Huang S., Chang I., Li S. and Lin M. (2004) "Assessing risk in ERP projects: identify and prioritize the factors", Industrial Management & Data Systems, Vol. 104 No. 8, pp.681 – 688.

[5] Schmidt R., Lyytinen K., Keil M. and Cule P. (2001), *Identifying Software Project Risks: An International Delphi Study*, Journal of Management Information Systems, Vol. 17 No. 4, pp. 5-36.

[6] Grabski S., Leech S. and Lu B.(2001), *Risks and Controls in the Implementation of ERP Systems*, The International Journal of Digital Accounting Research, Vol. 1 No.1, pp. 47- 68.

[7] Sumner M. (2000), *Risk factors in enterprise- wide/ ERP projects*, Journal of Information Technology, Vol. 15 No. 4, pp. 317- 327.

[8] Braki H., Rivard S. and Talbot J. (1993), *Toward an assessment of software development risk*, Journal of Management Information Systems, Vol. 10 No. 2, pp. 203- 225.

[9] Al- Ahmad W., Al- Fagih K., Khanfar K., Alsamara K.Abuleil S. and Abu- Salem H. (2009), *A Taxonomy of an IT Project Failure: Root Causes*, International Manaement Review, Vol. 5 No. 1, pp. 93- 104.

[10] Yeo K. (2002), *Critical failure factors in information system projects*, International Journal of Project Management, Vol. 20 No. 4, pp. 241-246.

[11] Lemon W., Bowitz J., Burn J. and Hackney R. (2002), *Information systems project failure: A comparative study of two countries*, Journal of Global Information Management, Vol. 10 No. 2, pp. 28– 39.

[12] Khan S. (2006) Risk Identification in IS projects, University of Missouri, www.**umsl.edu**/~sauter/analysis/f06Papers/Khan, available on March, 2011.

[13] Keil M. Tiwana A. and Bush A. (2002), Reconciling user and project manager perceptions of IT project risk: a Delphi study, Information Systems Journal, Vol. 12 No. 2, pp.103–119.

[14] Winters F. (2002), The Top 10 Reasons Project Fail, Avaliable june 2011 on: http://www.gantthead.com/article.cfm?ID=147229>http://www.gantthead.com/article.cfm?ID=147229.
[15] Yardley D. 2002, *Successful IT Project Delivery: Learning the lessons of Project Failure*, Pearson Education Ltd., London.
[16] Nicholas J. and Hidding G. (2010), *Management Principles Associated With IT Project Success*, International Journal of Management & Information Systems (IJMIS), Vol. 14, No. 5, pp. 147- 156.
[17] Smith, D., Eastcroft, M., Mahmood, N. and Rode, H. (2006), *Risk factors affecting software projects in South Africa*, South African Journal of Business Management, Vol. 37 No. 2, pp.55-65.
[18] Silva A. (2007), *Information System (IS) Project failures in Developing Countries*, Master of Information Technology –MIT- from Swinburne University of Technology, Hawthorn, Melbourne, May 2007, Available June 2011 on: http://mailman.anu.edu.au/pipermail/easttimorstudies/2007-July/000217.html.
[19] Chua, A. Y. K. (2009), Exhuming IT projects from their graves: An analysis of eight failure cases and their risk factors, Journal of Computer Information Systems, Vol. 49, No. 3, pp. 31–39.
[20] Gemino A., Reich B. and Sauer C. (2008), *A Temporal Model of Information Technology project performance*, Journal of Management Information Systems, Vol. 24, No. 3, pp. 9-44.
[21] Hoermann S., Schermann M. and Krcmar H. (2011), *When to manage risks in IS projects: An exploratory analysis of longitudinal risk reports*, 10th International Conference on Wirtschaftsinformtik, Zurich, Switzerland.
[22] Conboy K. (2010), *Project failure en masse: a study of loose budgetary control in ISD projects*, European Journal Information Systems, Vol. 19 No. 3, pp. 273- 287.
[23] Pan G. and Shan L. (2011), *Transition to IS Project De-Escalation: An Exploration Into Management Executives' Influence Behaviors*, IEEE Xplore, Vol. 58 No.1, pp. 109- 123.
[24] Zikmund W. (2000), *Business Research Methods*, Okahoma Statye University, USA.

APPENDIX A

Several factors contribute to effect of Information System (IS) projects. Understanding the reasons of successful/ failure of Information System projects- especially the failure ones- This will assist professionals, doer of these projects and senior management in preventing the same mistakes from recurring, thus improving efficiency and decreasing costs.

This study is tailored to your experience in Jordanian environment. We would appreciate knowing your opinion of the factors causing IS projects in the risk by asking you to fill out the short survey below along with any additional comments you feel would be helpful. Thank you for your cooperation.

Section 1:

The division of risk factors is into two main categories: Inside risk, outside risk, each category holds two groups for desiccations, as you will see later on:

INSIDE RISKS			
Self	**Rating (1-100)%**	**Task**	**Rating (1-100)%**
Not managing change properly		Bad Estimation	
Lack of Effective Project Management Skills		Lack of Effective Development Process/Methodology	
Lack of Effective Project Management Methodology		Trying New Development Method/Technology During Important Project	
Improper Definition of Roles and Responsibilities		Lack of Required Knowledge/Skills in the project personnel	
Misunderstanding the Requirements		Poor team Relationship	
Poor or Non- Existent Control		Insufficient Staffing	
Poor Risk Management		Excessive Use of Outside Consultants	
Choosing the wrong Development Strategy		Lack of Available Skilled Personnel	
Lack of "People Skills" in Project Leadership		Introduction of New Technology	
Project Not Based on Sound Business Case		Stability of Technical Architecture	
No Planning or Inadequate Planning		Multi-Vendor Projects Complicate Dependencies	

OUTSIDE RISKS			
Client	**Rating (1-100)%**	**Environment**	**Rating (1-100)%**
Lack of Top Management Commitment to the Project		A Climate of Change in the Business and Organizational Environment that Create Instability in the Project	
Failure to Gain User Commitment		Mismatch between Company Culture and Required business Process Changes Needed for New System	
Conflict Between User Departments		Project Intended to Fail	
Failure to Get Project Plan Approval from all parties		Unstable Corporate Environment	
Failure to Manage End User Expectations		Change in Ownership or Senior Management	
Lack of Adequate User Involvement		Changing Scope/objectives	
Lack of Cooperation from Users		Preemption of project by higher Priority Project	
Failure to Identify All Stakeholders		Staffing Volatility	
Growing Sophistication of Users Leads to Higher Expectations		External Dependencies Not Met	
Managing Multiple Relationships with Stakeholders		Lack of Control Over Consultants, Vendors and Sub- Contractor	
Lack of Appropriate experience of the User Representative			
Unclear/Misunderstood Scope/Objectives			
Number of Organizational Units Involved			
Lack of Frozen Requirement			
New and/or Unfamiliar Subject Matter for both users and Developers			
Under Funding of Development			
Under Funding of Maintenance			
"All or Nothing"			
Artificial Deadlines			

Comments:

_____

_____

Section 2:

What are your suggestions to face IS risks and avoid failure situations in order to improve quality and reduce cost? Depending on your answers in Section 1:

_____

_____

Section 3:

Please check the appropriate answer:

- **Position:** ❑ **CEO** ❑ **CIO** ❑ **Programmer** ❑ **Others**
- **Education degree:** ❑ **B.S** ❑ **M.S** ❑ **Ph. D** ❑ **Others**
- **Education area:** ❑ **MIS** ❑ **CIS** ❑ **CS** ❑ **Management** ❑ **Others**
- **Gender:** ❑ **Male** ❑ **Female**
- **Experience (years):** ❑ **< 5** ❑ **5-9** ❑ **10-20** ❑ **> 20**
- **Company Class:** ❑ **Public** ❑ **Private**

Please return this Questionnaire to the Reference Desk when completed.