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Managing Software Project Risks with Proposed Regression Model Techniques and Effect Size Technique

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Abstract –Regardless how much effort we put for the success of software projects, many software projects have very high failure rate and Risks are everywhere in life and most assuredly during the life of software projects. Risk is not always avoidable, but it is controllable. The aim of this paper is to present new techniques by which we can study the impact of different control factors and different risk factors on software projects risk and we knew how to deliver good quality solutions. The new technique uses the regression test and effect size test proposed to managing the risks in a software project and reducing risk with software process improvement. Fourteen risk factors and eighteen control factors were used in this paper. The nine of fourteen factors mitigated by using control factors. The study has been conducted on a group of managers. Successful project risk management will greatly improve the probability of project success.

Keywords: Software Project Management, Risk Management, Risk Factors, Risk Controls, Regression model Techniques and Effect Size Technique.

I. Introduction

Despite much research and progress in the area of Software Project Management, software development projects still fail to deliver acceptable systems on time and within budget. Much of the failure could be avoided by managers pro- actively planning for and dealing with risk factors rather than waiting for problems to occur and then trying to react. Project management and risk management has been proposed as a solution to preserve the quality and integrity of a project by reducing cost escalation. Due to the involvement of risk management in monitoring the success of a project, analyzing potential risks, and making decisions about what to do about potential risks, the risk management is considered to be the planned control of risk. Integrating formal risk management with project management is a new phenomenon in software engineering and product management community. It requires that project managers need be involved in a project from the concept phase to the product's retirement [1]. Risk is an uncertainty that can have a negative or positive effect on meeting project objectives. Risk management is the process of identifying, analyzing and controlling risk throughout the life of a project to meet the project objectives [2]. The goal of risk management is to preserve the quality and integrity of a project by reducing cost escalation and project slippage [3]. In the process of understanding the factors that contribute to software project success, risk is becoming increasingly important. This is a result of the size, complexity and strategic importance of many of the information systems currently being developed. In order to find the relation among risks that the software projects confronts and the countermeasures
that should be done to reduce risks, many researchers used different statistical methods. In our paper, we will use regression models technique and effect size proposed. A linear regression estimates statistical techniques is used to investigate the coefficients of the linear equation, involving one or more independent variables that best predict the value of the dependent variable and we can model the relationship of these variables. A good model can be used to predict can model the relationship of these variables, it can be used to predict how many controls will useful. Effect size is a statistical concept that measures the strength of the relationship between two variables, or the effect size is research on a numeric scale. We used new ES method measures the effect size when we used methods like multiple regression. The AbdBurairah's ES measure effect size for multiple regressions is defined as the following:

$$ES = \frac{(N-1)}{(N-C-1)} \times \left(\frac{\text{Adjust R^2}}{\text{1 - Adjust R^2}} \right) \qquad (1)$$

Where N is sample size or population size, C is number of control factors and adjusted R^2 is a modification of R^2 that adjusts for the number of explanatory terms in a model. By convention,

We determined, AbdBurairah's effect sizes of 0-0.3, 0.3-0.6, and more than 0.6 are termed small, medium, and large, respectively.

The objective of this study is to: identify the risks involved in software projects in Jordanian and

Palestinian companies, rank the risks according to their importance and occurrence frequency, and identify the activities performed by project managers to control the risks identified.

The organization of this paper as will be as follows. Section 2 presents an overview of the literature. Section 3 introduces the risks relevant to the study. Section 4 introduces the common controls to these risks. Section 5 presents the empirical work. Section 6 concludes the article and glimpses on future work.

II. Literature Review

Ref. [4] Proposed an industrial case study of implementing software risk management, the results showed that the risk method is practical, added value to the project, and that its key concepts are understood and usable in practice.

Ref. [5] Proposed a framework for a field investigation of risk management in the context of a particular software development organization. It was experimentally tested within several companies. This framework was designed to provide an understanding of software development risk phenomena from a project manager's perspective, and gave an indication of how this perspective affects their perception. According to the author, this study can be used as a precursor to improving research into the creation of new software risk management frameworks.

Ref. [6] Presented concept of security planning processes using a simple model to express conditional risk factors. That analytical work emphasized relationships through major security planning phases. The work discussed the chain of logical events that described dependence in risk propagation and proved the theorem of the causal risk propagation through the subsequent planning phases. That work provided a useful guidance for efficient security planning and risk management applicable to various engineering fields; it can also be applied to multi-disciplinary dependency analyses, quality control, and to development of risk assessment tools and techniques. The risk analysis method also provided a theoretical basis in education of information security.

Ref. [7] Focused on experienced project manager's perceptions of software project risks and controls. This work reports on the more significant risks and controls that are utilized to reduce the occurrence of the risk factors. The effectiveness of various controls to reduce the occurrence of risk factors was also identified and discussed.

Ref. [8] Described a risk management approach for building confidence and trust for Internet users. This approach helps users to build an awareness of the risks they might encounter and to supply them with timely guidance.

Ref. [9] Described a method for risk analysis based on the approach used in CRAMM; it used subjective belief about threats and vulnerabilities as input parameters and used the belief calculus of subjective logic to combine them. Also calculus has the advantage that uncertainty about threat and vulnerability estimates can be taken into consideration and thereby reflecting more realistically the nature of such estimates. As a result, the computed risk assessments will better reflect the real uncertainties associated with those risks.

Ref. [10] Describes key risks identified by a group of Hong Kong project managers working for vendor IT firms who offered package implementation solutions both locally and overseas. In that study a number of new risks from the vendor perspective have been identified, which indicate that vendor project managers typically have a broader focus on risks than their in-house counterparts.

Ref. [11] Explored how different types of risk influence both process and product outcomes in software development projects by analyzing input from more than 500 software project managers representing multiple industries.

Ref. [12] Presented a systematic literature review which purposed is to obtain the state of the art of the applications of Software Process Simulation Modeling (SPSM) in software risk management .They drew the following conclusions from the review results: The number of SPSM studied on software risk management is relatively small, but increasing gradually in recent years. SPSM is mainly applied in risk analysis and risk management planning activities. Software risks related to requirements ,development process and management process are the ones most studied by SPSM. Discrete-Event Simulation and System Dynamics are two most popular simulation paradigms, while Hybrid simulation methods are more and more widely used. Extend , iThink and Vensim are the most popular simulation tools in SPSM. Most of SPSM approaches and models have not been well applied into real-world risk management practices .

Ref. [13] Found good awareness of risk management, but low tool usage. They offer evidence that the main barriers to performing risk management are related to its perceived high cost and comparative low value. Confirmed barriers that prevent or reduce its application, the main ones being related to the extent of human effort required or the perceived value of that effort. Despite this, none of their sample used dedicated risk management tools .Hence, as future research they investigated how routine risk management actions can be carried out by tools, preferably autonomic ally. Software agents may help because, unlike conventional software components such as objects, they are not passive, and so can act on behalf of people to achieve goals. In this scenario, agents will initiate actions based on their assigned goals and rules, and therefore help in making intelligent judgments and decisions regarding risks .This may involve routine decision making or timely and tailored decision support for humans . Evidence of their value and applicability.

Ref. [14] Described Project structure is a little like infrastructure. It is assumed to be there but, otherwise, it is usually ignored in everyday conscious activity. However, where they may look at infrastructure if something goes wrong (such as when a pothole is encountered on a highway), in projects, they have tended to overlook the possibility of structures as a source of problems. That paper has reported preliminary work in highlighting the potential role and importance of the structural context of projects in successfully delivering software, and has suggested some initial approaches to managing the associated risks.

Ref. [15] In these cases, the case selection was based on product design and the verification of features, not in damage prevention and minimizing the possible risks. However, in practice the shift between approaches was not as clear-cut as it may seem; additional concepts like policies, customers and development methods can also affect the selection. They observed and presented results on how software test cases was selected and how test plans are constructed with different amounts of resources in different types of software organizations. They believed that software organizations can achieve better productivity by defining the test process and by focusing on the critical aspects for test process. By designing the test cases to more closely to fit the needs of the organization and product characteristics, test process issues can be better addressed and more attention can be given to the aspects that need enhancement. Therefore, these results can be used to develop testing practices and generally to promote the importance of designing test plans to fit the process organization.

Ref. [16] Presented a software visualization tool (CodeVizard) that helped researchers and managers to analyzed software repository data. The tool focused on identifying areas of risks in software development projects, such as: Code Smells, degrading architectures, increasing software complexity, lack of documentation, process violations, and issues of code ownership. CodeVizard has been used to support six empirical studies.

Ref. [17] Contributed for a goal-driven software development risk management model to assess and manage software development risk within requirement engineering phase . Also showed that perception of risk varies between stake holders, overtime, within project context and between cultures. They focused to identify the early software development risk factors from Bangladesh having limited IT infrastructure facilities. Furthermore, little work has been undertaken on the potential effects of these risk factors. To address this issue, their survey study not only identifies the risk factors but also quantify the potential effects of these factors. Furthermore they will also implement the proposed model to running software development projects.

Ref. [18] Demonstrated the need for risk management tools in software project since the complexity of risk management in-creases with the complexity of the developed system. The need for risk management tools which are intelligent has also been demonstrated Such tools would have the capacity to be used with any development methodology , whether traditional, agile, or even a combination of them. They also proposed two frameworks for the development of intelligent risk management tools; neural networks and intelligent agent based.

Ref. [19] Aimed to investigate an approach for the assessment of risks in globally distributed software projects. And proposed to apply stochastic simulation technique to analyze project data and identify factors that are likely to impact team productivity and that could affect the team's ability to meet its schedule objective. They aimed to be applied by project management groups to perform risk assessment early in the software development process and to help decision-making process.

Ref. [20] Presented the ability to price (monetize) software development risks can benefit various aspects of software development. Cost estimators predict project cost by adjusting a project's nominal cost on the basis of risk factors' (cost drivers') expected values, but the predicted cost is often inaccurate because risk factors' actual values normally deviate from expectations. Because variability is a widely used risk measure in finance, this risk-pricing method relates risk factor variability to project cost variability. The method estimates two parameters for each risk factor: extra cost incurred per unit exposure and project sensitivity. Several areas can benefit from the benchmark risk-pricing parameters obtained when applying this method with a cost estimator such as Cocomo.

Ref. [21] Focused on measurement of various software project risks, and representation of these various risks through a variety of risk radars. The first examines software project risks reported in literature and classifies software project risks into major categories. They then discussed methods that can be used to quantitatively assess these risks; and introduced several new concepts such as fuzzy risk TOPSIS, logistic and lag indicators of software project risks. A comparison of these methods is presented. They also introduced an innovative framework for risk reporting that has been named the 'risk radar'. Utility of 'radar' format to graphically depict software project risks, and its effectiveness as a multi-criteria decision making (MCDM) method is illustrated through examples that demonstrate the use of different radar formats.

Ref. [22] Described performed a global Web survey of IT departments in 2005 and 2007. the results suggested that the software crisis is perhaps exaggerated and that most software projects deliver. However, the overall project failure rate, including cancelled and completed but poorly performing projects, remains arguably high for an applied discipline.

Ref. [23] Described enterprise resource planning (ERP) systems cannot remain static after their implementation, they need maintenance. ERP maintenance is a key process required by the rapidly changing business environment and the usual software maintenance needs. However, those projects are highly complex and risky. So, the risks management associated with ERP maintenance projects is crucial to attain a satisfactory performance. Unfortunately, ERP maintenance risks have not been studied in depth. For this reason, they presented a general risks taxonomy. It gathers together the risks affecting the performance of ERP maintenance. Moreover, they used the analytic hierarchy process (AHP) methodology to analyze the risks factors identified. It helps managers, vendors, consultants, auditors, users and IT staff to manage ERP maintenance better. Results suggest that the most critical stage in ERP maintenance is the first phase, which received, identified, classified and ranked the software modification. The most important hazards in ERP maintenance are the cooperation and commitment of ERP users and managers.

Ref. [24] Presented a formalized technology for risk management intellectualized with new functions to increase the software process maturity. Intelligent risk management (IRM) is represented by a double spiral with "inner" turns being the processes of expert assessment of IRM objects to support the increased consistency of decisions and the efficiency of IRM participants. They link "outer" turns (the cycles of efficient risk mitigation in a common information environment at the levels of both developing organization and software project) to support the integration of project targets and improvement of software quality and strategic goals of the executing organization.

Ref. [25] Presented managing software maintenance is rarely a precise task due to uncertainties concerned with resources and services descriptions. Even when a well-established maintenance process is followed, the risk of delaying tasks remains if the new services are not precisely described or when resources change during process execution. Also, the delay of a task at an early process stage may represent a different delay at the end of the process, depending on complexity or services reliability requirements. This paper presents a knowledge-based representation (Bayesian Networks) for maintenance project delays based on specialists experience and a corresponding tool to help in managing software maintenance projects

Ref. [26] Aimed to reduce the gap between the estimated duration of the m-application development project and the actual elapsed time. They found that legacy and proven best practices project management techniques can be successfully employed for schedule risk management. Furthermore, they presented three proven software project management techniques that were successfully adapted to the development of m-applications. The first one is the estimation of m-application project duration using top-down and bottom-up approaches. The second one is the use of a set of performance metrics for project quality assessment. And the last one is the Extended Matrix model, a stochastic project duration estimation model with schedule risk analysis elements.

Ref. [27] They hypothesized that there are situations where more work on risk identification leads to increased over-optimism and over-confidence in software development effort estimates, instead of the intended improvement of realism. Four experiments with software professionals are conducted to test the hypothesis. All four experiments provide results in support of the hypothesis. Possible explanations of the counter-intuitive finding relate to results from cognitive science on "illusion-of-control", "cognitive accessibility", "the peak-end rule" and "risk as feeling." Thorough work on risk identification is essential for many purposes and our results should not lead to less emphasis on this activity. Our results do, however, suggest that it matters how risk identification and judgment-based effort estimation processes are combined. A simple approach for better combination of risk identification work and effort estimation is suggested.

Ref. [28] We put for the success of software projects, many software projects have very high failure rate. And presented a new technique by which they can study the impact of different control factors and different risk factors on software projects risk. The new technique uses the chi-square test to control the risks in a software project. Fourteen risk factors and eighteen control factors were used. The study has been conducted on a group of managers. Successful project risk management will greatly improve the probability of project success.

III. Software Project Risks

The risk factors that are listed below are the ones that are considered in this paper. These factors are the most common factors used by researchers when studying the risk in software projects. These factors need to be addressed and thereafter need to be controlled. These risks are:

Risk 01: Unclear or misunderstand scope and objectives, Risk 02: Failure to fully complete detailed requirements analysis and specification documentation, Risk 03: Unrealistic schedules and budgets, Risk 04: Inadequate knowledge and skills, Risk 05: Absence of quality architectural and design documents, Risk 06: Absence of a complete and detailed software development plan, Risk 07: Lack of senior management commitment to the project,Risk08: Lack of effective project management methodology, Risk 09: Developer gold plating, Risk 10: Continuous requirement changes, Risk 11: Introduction of new technology, Risk 12: Failure to utilize a phased delivery approach, Risk 13: Inadequate technical leadership, and Risk 14: Harmful competitive actions.

IV. Software Project Controls

Through reading the existing literature on risk management, the researchers listed eighteen controls that are considered important in reducing the risks identified; these controls are:

Control 01: Developing and adhering a software development plan, Control 02: Combining internal evaluations by external reviews, Control 03: Involving management during the entire project lifecycle, Control 04: Involving users during the entire project lifecycle, Control 05: Ensuring there is a steering committee in place, Control 06: Assigning responsibilities to team members, Control 07: Developing contingency plans to cope with staffing problems, Control 08: Including formal and periodic risk assessment, Control 09: Dividing the project into controllable portions, Control 10: Utilizing change control board and exercise quality change control practices, Control 11: Utilizing automated version control tools, Control 12: Ensuring that quality deliverables are produced and accept nothing less, Control 13: Implementing and following a communication plan, Control 14: Educating users on the impact of changes during the project, Control 15: Assessing cost and scheduling the impact of each change to requirements and specifications, Control 16: Stabilizing requirements and specifications as early as possible, Control 17: Avoiding having too many new functions on software projects, and Control 18: Reviewing progress to date and setting objectives for the next phase.

The literature review revealed the following question: Do experienced project managers control software project risk factors by using the controls identified in this paper? To answer this question, the following objectives for the empirical work have been set forth: identifying the risks that are involved in a software projects in Jordanian and Palestinian companies, ranking the risks due to their importance and occurrence frequency, identifying the activities performed by project managers to control the risks that are identified.

V. Empirical Strategy

Data collection was achieved through the use of a structured questionnaire, documents, and data for database assist in estimating the quality of software through determine risks that were common to the majority of software projects in the analyzed software companies. Fourteen risk factors and eighteen controls were presented to respondents. The method of sample selection referred to as 'snowball' and regular sampling was used. This procedure is appropriate when members of homogeneous groups (such as IT project managers) are difficult to locate. Forty project managers have participated in this study. The project managers that participated in this survey are coming from specific organizations, mainly IT and Finance. A combination of rank ordering and regression models techniques and effect size has been used to analyze the collected data.

Respondents were presented with various questions, which used Likert-type scales. For presentation purposes in this paper and for effectiveness, the more extreme categories were combined in a way such that five -point scale has been reduced to three-point scale as the following: for choices being headed 'completely unimportant', 'not very important', 'important', 'very important' and 'extremely important': a category called 'not that important' was created, combining the two ratings 'completely unimportant' and 'not very important'. Similarly, a category called 'very important' combined the two ratings 'very important' and 'extremely important'. Similarly, five frequency categories were re-scaled into three sub-categories for presentation purposes. 'Hardly ever' combined the two ratings 'never' and 'seldom'. 'Sometimes' was unchanged, while 'most of the time', combined the two ratings 'frequently' and 'always'.

V.1. Importance of Risk Factors

All respondents indicated that the risk of "Harmful competitive actions" was the highest risk factors and very important. In fact, the risk factors from risk number 14, 11,2,13,9, 3, 5, 7 were identified as very important, the risk factors from risk number 8,12,1,6 ,4,10 in descending means were identified as important , aggregating the responses resulted in the following ranking of the importance of the listed risks (in order of importance):Risk 14, Risk 11, Risk 2, Risk 13, Risk 9, Risk 03, Risk 05, Risk 07, Risk 08, Risk 12, Risk

01, Risk 06, Risk 04, and Risk 10.

TABLE 1
MEAN SCORE FOR EACH RISK FACTOR

Risk	N	Mean	Std. Deviation	% percent
R 14	40	2.58	.549	86
R11	40	2.55	.504	85
R 2	40	2.53	.679	84.33
R 13	40	2.53	.679	84.33
R9	40	2.40	.810	80
R 3	40	2.35	.834	78.33
R 5	40	2.03	.974	67.66
R 7	40	2.03	.974	67.66
R 8	40	1.98	.891	66
R 12	40	1.95	.783	65
R 1	40	1.90	.900	63.33
R 6	40	1.90	.900	63.33
R 4	40	1.85	.893	61.66
R10	40	1.68	.764	56

As we see, the results in table 1 show that most of the risks are very important and important the overall ranking of importance of each risk factor for the three categories of project managers' experience is shown in table 2. As we see, the results in table 2 reveal that most of risks are very important and important.

TABLE 2
THE OVERALL RISK RANKING OF EACH RISK FACTOR

Risk	Experience 2-5 years	Experience 6-10 years	Experience >10 years
R1	14	11	2
R2	2	3	1
R3	3	14	14
R4	9	2	11
R5	13	3	13
R6	11	9	9
R7	4	5	7
R8	5	7	3
R9	8	8	6
R10	12	12	5
R11	6	6	10
R12	7	4	12
R13	10	1	8
R14	1	10	4

V.2. Frequency of Occurrence of Controls

Table 3 shows the mean and the standard deviation for each control factor. The results of this research show that most of the controls are used most of the time. The three exceptions were control 04, control 06, and control 10.

TABLE 3
THE MEAN SCORE FOR EACH CONTROL FACTOR

Control	N	Mean	Std. Deviation	% percent
c1	40	2.05	.783	68.33
c2	40	2.08	.572	69.33
c3	40	2.05	.677	68.33
c4	40	1.75	.439	58.33
c5	40	2.13	.463	71
c6	40	1.73	.506	57.66
c7	40	2.03	.832	67.66
c8	40	2.23	.800	74.33
c9	40	2.20	.853	73.33
c10	40	1.55	.504	51.66
c11	40	2.03	.768	67.66
c12	40	2.03	.768	67.66
c13	40	2.10	.744	70
c14	40	2.10	.810	70
c15	40	2.55	.597	85
c16	40	2.18	.446	72.66
c17	40	2.60	.545	86.66
c18	40	2.63	.586	87.66

The overall ranking of importance of each control factor for the three categories of project managers' experience is shown in table 4. Table 4 shows that the controls (18, 17, 15, 1, 3, 7, 16 , 2, 8, 9) are the most frequently used by the least experienced (2–5 years) project managers, whereas the controls (15, 13, 11, 12, 4, 06, 14) are used some times by them. Also the controls (15, 17, 18, 08, 13, 14, 05, 16, 11, 07, 09, 12) are the most frequently used by the experienced (6 – 10 years) project managers, whereas the controls (01, 02, 03, 04, 06, 10) are used some times by them. Also the controls (17, 18, 09, 15, 02, 03, 05, 08, 16, 01, 12, 14, 11) are the most frequently used by the most experienced (10 and above years) project managers, whereas the controls (4, 6, 13, 7, 10) are used some times by them.

TABLE 4
OVERALL CONTROL FACTOR RANKING

Control	Experience 2-5 years	Experience 6-10 years	Experience >10 years
C1	18	15	17
C2	17	17	18
C3	15	18	9
C4	1	8	15
C5	16	13	2
C6	3	14	5
C7	7	5	3
C8	2	16	8
C9	8	11	16
C10	9	7	1
C11	5	9	12
C12	13	12	14
C13	11	1	11
C14	12	2	13
C15	4	3	4
C16	6	4	6
C17	14	6	7
C18	10	10	10

V.3. Relationships Between Risks and Control Variables

Regression technique was performed on the data to determine whether there were significant relationships between control factors and risk factors. The pairings resulted in high values of R^2, so interpretation of relationships between the variables is cautious and findings are reported conservatively.
These tests were performed using regression analysis, to compare the controls to each of the risk factors to

determine if they are effective in mitigating the occurrence of each risk factor. Relationships between risks and controls, which were significant and insignificant, Measured effect size by Cohen's technique, any control is no significant, we are not reported, and we will clear that relationship in the impact of matrix.

TABLES (5, 6, 7, AND 8): RISK OF 'UNCLEAR OR MISUNDERSTAND SCOPE AND OBJECTIVES' COMPARED TO CONTROLS.

TABLE 5
ILLUSTRATE THE VALUE OF CORRELATION

Pearson correlation	C4
R1	0.390
Sig.	0.013

TABLE 6
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.390[a]	.152	.130

a. Predictors: (Constant), c4

TABLE 7
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.800	1	4.800	6.8	.013[a]
Residual	26.800	38	.705		
Total	31.600	39			

a. Predictors: (Constant), c4
b. Dependent Variable: r1

TABLE 8
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Beta		
Constant	.500		.904	.371
c4	.800	.390	2.609	.013

a. Dependent Variable: r1

Table(5,6,7, and 8) show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation between control 4 and risk1 .We describe the control 4 has an impact on the risk 1 with a simple regression. In addition, the tables showed that the control 4 has positive impact value is 0.390, and the value of adjusted R^2 is 0.130. This interprets the percentage of 13 % from the dependent variable of risk 1. We not reported any control that has not a relation. However, that model is goodness to predict a risk (the dependent variable) from independent variables such as control 1 and an effect size of 0.153358 is small.

TABLES (9, 10, 11, AND 12): RISK OF 'FAILURE TO FULLY COMPLETE DETAILED REQUIREMENTS ANALYSIS AND SPECIFICATION DOCUMENTATION' COMPARED TO CONTROLS.

TABLE 9
ILLUSTRATE THE VALUE OF CORRELATION

	C5	C7	C14
R2	0.357	-.478	-0.424
Sig.	0.024	0.002	0.006

TABLE 10
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.633[a]	.400	.350

a. Predictors: (Constant), c14, c5, c7

TABLE 11
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	7.196	3	2.399	8.01	.000[a]
Residual	10.779	36	.299		
Total	17.975	39			

a. Predictors: (Constant), c14, c5, c7
b. Dependent Variable: r2

TABLE 12
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	2.597		5.149	.000
c5	.470	.321	2.479	.018
c7	-.284	-.348	-2.489	.018
c14	-.237	-.282	-2.026	.050

a. Dependent Variable: r2

Tables (9, 10, 11, and 12) show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation between control 5 and risk1, whereas a negative relation among control 7, 14 and risk 2. We describe the control 5,7,14 have an impact on the risk 1with a multiple regression. In addition, the tables showed that the control 7 and 14 have negative impact value is 0.478, and 0.424 respectively ,also the control 5 has positive impact value is 0.357, and the value of adjusted R^2 is 0.35. This interprets the percentage of 35 % from the dependent variable of risk 2. We not reported any control that has not a relation (no significant). However, that model is goodness can be used to predict a risk 2 (the dependent variable) from independent variables such as control 5, 7, and 14. Also an effect size of 0.583333 is medium.

TABLES (13 AND14): RISK OF 'UNREALISTIC SCHEDULES AND BUDGETS' COMPARED TO CONTROLS.

TABLE 13
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.591[a]	.349	-.209

a. Predictors: (Constant), c18,c3,c17,c6,c5,c11,c14,c10,c9,c4,c13,c15,c1,c16,c12,c7,c8

TABLE 14
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9.456	18	0.525	0.625	.841[a]
Residual	17.644	21	.840		
Total	27.100	39			

a.Predictors:(Constant),c18,c3,c17,c6,c5,c11,c14,c10,c9,c4,c13,c15, c1,c16,c12,c7,c8
b. Dependent Variable: r3

Tables (13 and14) show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is no relation among controls and risk3, We not reported controls that have not a relation (no significant) . Also we found the model is not fit.

TABLES (15, 16, 17, AND 18): RISK OF 'INADEQUATE KNOWLEDGE AND SKILLS' COMPARED TO CONTROLS.

TABLE 15
ILLUSTRATE THE VALUE OF CORRELATION

	C6	C14	C16	C18
R4	-0.434	-0.333	-0.318	0.429
Sig.	0.005	0.036	0.045	0.006

TABLE 16
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.628a	.395	.326

a. Predictors: (Constant), c18, c6, c14, c16

TABLE17
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.276	4	3.069	5.7	.001[a]
Residual	18.824	35	.538		
Total	31.100	39			

a. Predictors: (Constant), c18, c6, c14, c16
b. Dependent Variable: r4

TABLE 18
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	3.380		2.228	.032
c6	-.678	-.384	-2.882	.007
c14	-.246	-.223	-1.615	.115
c16	-.348	-.174	-1.015	.317
c18	.348	.229	1.290	.206

a. Dependent Variable: r4

Tables (9, 10, 11, and 12) show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation between control 18 and risk4, whereas a negative relation among controls 6, 14, 16 and risk 1. We describe the controls 6, 14, 16, and 18 have an impact on the risk 4 with a multiple regression. In addition, the tables showed that the control 6,14, and 16 have negative impact value is 0.434, 0.333 ,and 0.318 respectively , also the control 18 has positive impact value is 0.429 but table 18 showed control 14 , 16 and 18 must delete because the significant value is greater than the assumption value at the α = 0.05 level of significance , but the value of adjusted R^2 is 0.326. This interprets the percentage of 32.6 % from the dependent variable of risk 4. We not reported any controls that have not a relation (no significant). However, that model is goodness can be used to predict a risk 4 (the dependent variable) from independent variables such as control 6. Also an effect size of 0.538957 is medium.

TABLES (19, 20, 21, AND 22): RISK OF 'ABSENCE OF QUALITY ARCHITECTURAL AND DESIGN' COMPARED TO CONTROLS.

TABLE 19
ILLUSTRATE THE VALUE OF CORRELATION

	C5	C15
R5	0.391	-.333
Sig.	0.013	0.036

TABLE 20
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.546a	.298	.260

a. Predictors: (Constant), c15, c5

TABLE 21
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	11.007	2	5.503	7.842	.001[a]
Residual	25.968	37	.702		
!!Total	36.975	39			

a. Predictors: (Constant), c15, c5
b. Dependent Variable: r5

TABLE 22
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	1.677		2.078	.045
c5	.914	.435	3.137	.003
c15	-.625	-.383	-2.764	.009

a. Dependent Variable: r5

Tables (19, 20, 21, and 22) show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation between control 5 and risk 5, whereas a negative relation between control 5 and risk 15. We described the controls 5 and 15 have an impact on the risk 5 with a multiple regression. In addition, the table showed that the control 15 has negative impact value is 0.333, also the control 5 has positive impact value is 0.391, and the value of adjusted R^2 is 0.26.This interprets the percentage of 26 % from the dependent variable of risk 5. We not reported any control that has not a relation (no significant). However, that model is goodness can be used to predict a risk 5 (the dependent variable) from independent variables such as control 5 and 15. Also an effect size of 0.370343 is medium.

TABLES (23, 24, 25, AND 26): RISK OF 'ABSENCE OF A COMPLETE AND DETAILED SOFTWARE DEVELOPMENT PLAN' COMPARED TO CONTROLS.

TABLE 23
ILLUSTRATE THE VALUE OF CORRELATION

	C7	C10	C12	C15	C17	C18
R6	-.408	-.441	0.338	-0.372	-0.345	-0.462
Sig.	0.009	0.004	0.033	0.018	0.029	0.003

TABLE 24
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.762	.581	.504

a. Predictors: (Constant), c18, c7, c10, c15, c12, c17

TABLE 25
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	18.346	6	3.058	7.61	.000[a]
Residual	13.254	33	.402		
Total	31.600	39			

a. Predictors: (Constant), c18, c7, c10, c15, c12, c17
b. Dependent Variable: r6

TABLE 26
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	t	Sig.
Constant	5.092		5.890	.000
c7	-.384	-.355	-2.748	.010
c10	-.564	-.316	-2.344	.025
c12	.258	.220	1.515	.139
c15	-.036	-.024	-.173	.863
c17	-.136	-.082	-.534	.597
c18	-.616	-.401	-3.110	.004

a. Dependent Variable: r6

Tables (23,24 ,25, and 26) show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation between control 12 and risk 5 , whereas a negative relation among control 7,10,15,17,18 and risk 1. We described the control 7, 10,12,15,17, and 18 have an impact on the risk 6 with a multiple regression. In addition, the tables showed that the control 7,10, 15,17 ,and 18 have negative impact value is 0.408, 0.441, 0.372, 0.345, and 0.462 respectively ,also the control 12 has positive impact value is 0.338 , and the value of adjusted R^2 is 0.504. This interprets the percentage of 50.4 % from the dependent variable of risk 5. We not reported any control that has not a relation (no significant). Also we found that control 12 ,15, 17 have no significant so those must be deleted from the model, However, that model is goodness can be used to predict a risk 6 (the dependent variable) from independent variables such as control 7, 10, and 18. Also an effect size of 1.20088 is large.

TABLES (27, 28, 29, AND 30): RISK OF 'LACK OF SENIOR MANAGEMENT COMMITMENT TO THE PROJECT' COMPARED TO CONTROLS.

TABLE 27
ILLUSTRATE THE VALUE OF CORRELATION

	C10
R7	0.337
Sig.	0.033

TABLE 28
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.337[a]	.114	.090

a. Predictors: (Constant), c10

TABLE 29
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.202	1	4.202	4.873	.033[a]
Residual	32.773	38	.862		
Total	36.975	39			

a. Predictors: (Constant), c10
b. Dependent Variable: r7

TABLE 30
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	1.015		2.113	.041
C10	.652	.337	2.207	.033

a. Dependent Variable: r7

Tables (27, 28, 29, and 30): show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation between control 5 and risk 7. We described the control 10 has an impact on the risk 7 with a simple regression. In addition, the tables showed that the control 10 has positive impact value is 0.337, and the value of adjusted R^2 is 0.09. This interprets the percentage of 9 % from the dependent variable of risk 7. We not reported any control that has not a relation (no significant), that model is goodness can be used to predict a risk 7 (the dependent variable) from independent variables such as control 10. Also an effect size of 0.101504 is small.

TABLES (31, 32, 33, AND 34): RISK OF 'LACK OF EFFECTIVE PROJECT MANAGEMENT METHODOLOGY' COMPARED TO CONTROLS.

TABLE 31
ILLUSTRATE THE VALUE OF CORRELATION

	C7	C10	C13	C16	C17	C18
R8	0.520	0.374	0.506	0.462	0.454	-0.362
Sig.	0.001	0.017	0.001	0.003	0.003	0.022

TABLE 32
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.774[a]	.599	.526

a. Predictors: (Constant), c18, c7, c10, c13, c17, c16

TABLE 33
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	18.543	6	3.090	8.203	.000[a]
Residual	12.432	33	.377		
Total	30.975	39			

a. Predictors: (Constant), c18, c7, c10, c13, c17, c16
b. Dependent Variable: r8

TABLE 34
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	-1.168		-1.031	.310
c7	.368	.343	2.581	.014
c10	.026	.015	.110	.913
c13	.351	.293	2.208	.034
c16	.546	.274	1.760	.088
c17	.349	.214	1.513	.140
c18	-.180	-.119	-.783	.439

a. Dependent Variable: r8

Tables (31,32 , 33 ,and 34): show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation among control 7 ,10,13,16 ,17 and risk 8 , whereas a negative relation between control 18 and risk 8. We described the controls 7, 10, 13, 16, 17, 18 have an impact on the risk 8 with a multiple regression. In addition, the tables showed that the control 18 has negative impact value is 0.362 , also the control 7,10,13,16,17 have positive impact value is 0.520, 0.374, 0.506, 0.462 , 0.454 respectively and the value of adjusted R2 is 0.526. This interprets the percentage of 52.6 % from the dependent variable of risk 8. We not reported any control that has not a relation (no significant). Also we found that control 10,16,17,18 have no significant so must be delete from model , However , that model is goodness can be used to predict a risk 8 (the dependent variable) from independent variables such as control 7 and 13. Also an effect size of 1.311469 is large.

TABLES (35, 36, 37 AND 38): RISK OF 'DEVELOPER GOLD PLATING' COMPARED TO CONTROLS.

TABLE 35
ILLUSTRATE THE VALUE OF CORRELATION

	C10	C11	C16	C17
R9	0.490-	0.355	-0.411	-0.441
Sig.	0.001	0.025	0.008	0.004

TABLE 36
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.728[a]	.530	.476

a. Predictors: (Constant), c17, c11, c16, c10

TABLE 37
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.557	4	3.389	9.85	.000[a]
Residual	12.043	35	.344		
Total	25.600	39			

a. Predictors: (Constant), c17, c11, c16, c10
b. Dependent Variable: r9

TABLE 38
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	4.600		7.129	.000
c10	-.539	-.335	-2.652	.012
c11	.388	.368	3.171	.003
c16	-.492	-.271	-2.252	.031
c17	-.416	-.280	-2.241	.031

a. Dependent Variable: r9

Tables (35, 36, 37, and 38): show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation between control 11 and risk5, whereas a negative relation between control 10, 16, 17 and risk 9. We described the controls 10, 11, 16, and 17 have an impact on the risk 9 with a multiple regression. In addition, the tables showed that the control 10,16,17 has negative impact value is 0.490, 0.411 ,and 0.441 respectively also the control 11 has positive impact value is 0.355, and the value of adjusted R^2 is 0.476. This interprets the percentage of 47.6 % from the dependent variable of risk 9. We not reported any control that has not a relation (no significant). However, that model is goodness can be used to predict a risk9 (the dependent variable) from independent variables such as control 10, 11, 16, and 17. Also an effect size of 1.012214 is large.

TABLES (39, 40, 41 AND 42): RISK OF 'CONTINUOUS REQUIREMENT CHANGES' COMPARED TO CONTROLS.

TABLE 39
ILLUSTRATE THE VALUE OF CORRELATION

	C1	C15	C16
R10	-0.315	-0.385	0.321
Sig.	0.048	0.014	0.043

TABLE 39
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.529[a]	.280	.220

a .Predictors: (Constant), c16, c15, c1

TABLE 40
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	6.371	3	2.124	4.661	.007[a]
Residual	16.404	36	.456		
Total	22.775	39			

a. Predictors: (Constant), c16, c15, c1
b. Dependent Variable: r10

TABLE 41
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	2.931		2.943	.006
c1	-.275	-.281	-1.810	.079
c15	-.482	-.376	-2.591	.014
c16	.246	.144	.913	.367

a. Dependent Variable: r10

Tables (39,40 ,41 , and 42): show that the significant value is less than the assumption value at the α = 0.05 level of significance, so there is a positive relation between control 16 and risk10 , whereas a negative relation among control 1,15 and risk 1 We described the controls 1 15, and 16 have an impact on the risk 10 with a multiple regression. . In addition, the tables showed that the control 1, 15 have negative impact value is 0.315 and 0.385 respectively; also the control 16 has positive impact value is 0.321, and the value of adjusted R^2 is 0.220. This interprets the percentage of 22 % from the dependent variable of risk 10. We not reported any control that has not a relation (no significant). Also we found control 1, 16 no significant so those controls must be deleted. However, that model is goodness can be used to predict a risk 10 (the dependent variable) from independent variables such as control 15. Also an effect size of 0.305556 is small.

TABLES (42, 43, 44, and 45): RISK OF 'INTRODUCTION OF NEW TECHNOLOGY' COMPARED TO CONTROLS.

TABLE 42
ILLUSTRATE THE VALUE OF CORRELATION

	C1	C8	C9	C10	C16	C18
R11	-0.462	0.321	-0.322	0.394	0.473	-0.587
Sig.	0.003	0.043	0.043	0.012	0.002	0.000

TABLE 43
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.724[a]	.524	.438

a. Predictors: (Constant), c18, c10, c8, c9, c1, c16

TABLE 44
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.189	6	.865	6.059	.000[a]
Residual	4.711	33	.143		
Total	9.900	39			

a. Predictors: (Constant), c18, c10, c8, c9, c1, c16
b. Dependent Variable: r11

TABLE 45
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	2.836		4.058	.000
c1	-.004	-.007	-.042	.967
c8	.128	.204	1.464	.153
c9	-.066	-.112	-.823	.416
c10	.305	.305	2.365	.024
c16	.069	.062	.373	.712
c18	-.397	-.461	-2.487	.018

a. Dependent Variable: r11

Tables (42,43 ,44 , and 45): show that the significant value is less than the assumption value at the $\alpha = 0.05$ level of significance, so there is a positive relation among control 8,10,16 and risk 11 , whereas a negative relation among control 1,9,18 and risk 11. We described the controls 1, 8, 9, 10, 16, and18 have an impact on the risk 11 with a multiple regression. In addition, the tables showed that the controls 1,9,18 have negative impact value is 0.462, 0.322, 0.587 respectively, also the control 8, 10, 16 has positive impact value is 0.321, 0.394, 0.473 respectively and the value of adjusted R^2 is 0.438.This interprets the percentage of 43.8 % from the dependent variable of risk 11. We not reported any control that has not a relation (no significant). Also we found that control 1 ,8,9,16 have no significant we must be deleted c1,c8,c9,c16 from model , However , that model is goodness can be used to predict a risk 11 (the dependent variable) from independent variables such as control 11 and 18 . Also an effect size of 0.921061 is large.

TABLES (46, 47, 48, AND 49): RISK OF 'FAILURE TO UTILIZE A PHASED DELIVERY APPROACH' COMPARED TO CONTROLS.

TABLE 46
ILLUSTRATE THE VALUE OF CORRELATION

	C1	C5	C8	C10	C13	C16	C17
R12	-0.414	0.512	0.469	0.527	0.361	-0.392	0.492
SIG.	0.008	0.001	0.002	0.000	0.022	0.012	0.001

TABLE 47
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.791a	.625	.543

a. Predictors: (Constant), c17, c1, c13, c5, c16, c10, c8

TABLE 48
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	14.939	7	2.134	7.620	.000[a]
Residual	8.961	32	.280		
Total	23.900	39			

a. Predictors: (Constant), c17, c1, c13, c5, c16, c10, c8
b. Dependent Variable: r12

TABLE 49
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	-1.357		-1.649	.109
c1	-.178	-.178	-1.185	.245
c5	.562	.333	2.697	.011
c8	.032	.033	.213	.833
c10	.351	.226	1.664	.106
c13	.137	.130	1.045	.304
c16	.132	.075	.600	.553
c17	.495	.345	2.392	.023

a. Dependent Variable: r12

Tables (46,47,48 ,and 49): show that the significant value is less than the assumption value at the $\alpha = 0.05$ level of significance, so there is a positive relation between control 1,16 and risk 12 , whereas a negative relation between control 5,8,10,13,17 and risk 12 . We described the controls 1, 5, 8,10,13,16, and 17 have an impact on the risk 12 with a multiple regression. In addition, the tables showed that the control 1,16 have negative impact value is 0.414, 0.392 respectively , also the controls 5,8,10,13, and 17 have positive impact value is 0.512, 0.469 , 0.527, 0.361, and 0.492 respectively. The value of adjusted R^2 is 0.543. This interprets the percentage of 54.3 % from the dependent variable of risk 12. We not reported any control that has not a relation (no significant). also we be delete control 1,8,10,13,16 from model , However , that model is goodness can be used to predict a risk 12 he dependent variable) from independent variables such as control 5 and 17 Also an effect size of 1.448099 is large.

TABLES (50, 51, 52, AND 53): RISK OF 'INADEQUATE TECHNICAL LEADERSHIP' COMPARED TO CONTROLS.

TABLE 50
ILLUSTRATE THE VALUE OF CORRELATION

	C2	C7
R13	-0.434	0.385
Sig.	0.005	0.014

TABLE 51
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.564a	.318	.281

a. Predictors: (Constant), c7, c2

TABLE 52
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.718	2	2.859	8.631	.001a
Residual	12.257	37	.331		
Total	17.975	39			

a. Predictors: (Constant), c7, c2
b. Dependent Variable: r13

TABLE 53
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	2.945		6.950	.000
C2	-.490	-.413	-3.037	.004
C7	.295	.361	2.654	.012

a. Dependent Variable: r13

Tables (50, 51, 52, and 53) show that the significant value is less than the assumption value at the $\alpha = 0.05$ level of significance, so there is a positive relation between control 7 and risk 13, whereas a negative relation between control 2 and risk 13 We described the controls 2 and 7have an impact on the risk 13 with a multiple regression. In addition, the table showed that the control 2 has negative impact value is 0.434, also the control 7 has positive impact value is 0.385, and the value of adjusted R^2 is 0.281. This interprets the percentage of 28.1 % from the dependent variable of risk 13. We not reported any control that has not a relation (no significant). However, that model is goodness can be used to predict a risk 13 (the dependent variable) from independent variables such as control 2 and 7. Also an effect size of 0.411946 is medium.

TABLES (54, 55, 56, AND 57): RISK OF 'HARMFUL COMPETITIVE ACTIONS' COMPARED TO CONTROLS.

TABLE 54
ILLUSTRATE THE VALUE OF CORRELATION

	C1	C7	C17	C18
R14	-0.367	-0.481	-0.325	-0.349
Sig.	0.020	0.002	0.041	0.027

TABLE 55
ILLUSTRATE THE VALUE OF CORRELATION AND R SQUARE AND ADJUSTED R SQUARE

R	R Square	Adjusted R Square
.616[a]	.379	.308

a. Predictors: (Constant), c18, c7, c17, c1

TABLE 56
ILLUSTRATES AN ANALYSIS OF VARIANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.465	4	1.116	5.344	.002[a]
Residual	7.310	35	.209		
Total	11.775	39			

a. Predictors: (Constant), c18, c7, c17, c1
b. Dependent Variable: r14

TABLE 57
ILLUSTRATES THE COEFFICIENTS AND DISTRIBUTED T

Model	B	Beta	T	Sig.
Constant	4.290		9.156	.000
c1	-.084	-.119	-.741	.464
c7	-.275	-.416	-2.596	.014
c17	-.099	-.098	-.636	.529
c18	-.278	-.296	-1.880	.068

a. Dependent Variable: r14

Tables (54,55,56, and 57) show that the significant value is less than the assumption value at the $\alpha = 0.05$ level of significance, so there is a negative relation among control 1,7,17,18 and risk 14 .We described the controls 1,7,17 ,and 18 have an impact on the risk 14 with a multiple regression. In addition, the tables showed that the controls 1, 7, 17, 18 have negative impact value is 0.367, 0.481, 0.325, 0.349 respectively and the value of adjusted R^2 is 0.208. This interprets the percentage of 20.8 % from the dependent variable of risk 14. We not reported any control that has not a relation (no significant). Also we must be delete controls 1, 17, 18 from model, however, the model is goodness can be used to predict a risk 14 (the dependent variable) from independent variables such as control 7. Also an effect size of 0.495954 is medium.

VI. IMPACT MATRIX

TABLE 58.A
ILLUSTRATES THE IMPACT MATRIX

C6		C5		C4		C3		C2		C1		
				+	0.4							R1
		+	0.4									R2
												R3
-	0.4											R4
		+	0.4									R5
												R6
												R7
												R8
												R9
										-	0.3	R10
										-		R11
		+	0.5							-		R12
								0.4	-			R13

TABLE 58.B
ILLUSTRATES THE IMPACT MATRIX

C12		C11		C10		C9		C8		C7		
												R1
										0.5	-	R2
												R3
												R4
												R5
	+			0.4	-					0.4	-	R6
				0.3	+							R7
					+					0.5	+	R8
		0.4	+	0.5	-							R9
												R10
				0.4	+		-		+			R11
					+				+			R12
										0.4	+	R13
										0.5	-	R14

TABLE 58.C
ILLUSTRATES THE IMPACT MATRIX

C17		C16		C15		C14		C13		
										R1
						0.42	-			R2
										R3
			-				-			R4
				0.3	-					R5
	-				-					R6
										R7
	+		+					0.5	+	R8
0.4	-	0.4	-							R9
			+	0.4	-					R10
			+							R11
0.5	+		-						+	R12
						0.4				R13
	-									R14

TABLE 58.D
ILLUSTRATES THE IMPACT MATRIX

Explain	ES	Adjust R^2	C18		
Small	0.153358	0.13			R1
Medium	0.583333	0.35			R2
					R3
Medium	0.538957	0.326		+	R4
Medium	0.370343	0.26			R5
Large	1.20088	0.504	0.5	-	R6
Small	0.101504	0.09			R7
Large	1.311469	0.526		-	R8
Large	1.012214	0.476			R9
Small	0.305556	0.22			R10
Large	0.921061	0.438	0.6	-	R11
Large	1.448099	0.543			R12
Medium	0.411946	0.281			R13
Medium	0.495954	0.308		-	R14

Tables (58.a,58.b, 58.c ,and 58.d) show that five states of relations between controls and risks: the first state (+) that meaning a relation is positive at risk 1 (R1) by value (0.4), the second state (-) that meaning a relation is negative such as: the control 7 (C7) effects negative at risk 2 (R2) by value (0.5), the third state blank ( ) that meaning a relation is blank such as: the control 18 (C18) not effects at risk 1 (R1), the fourth state is positive without effective such as: the control 18 (C18) effects positive at risk 4(R4) without any value, the finally state is negative without effective such as: the control 16 (C16) effects negative at risk 4 (R4) without any value.

Also calculated adjust R^2 form model and got value from effect size techniques proposed and categorized to large, medium, and small.

VII. Conclusion

The concern of this study is the managing risks of software projects. The results showed that all risks were very important and important in manager perspective,
Whereas all controls are used most of time, and sometimes. Also the nine of fourteen factors mitigated by using control factors. Based on the results, the important control factors were control 4, control 5, control 7, control 10, control 11, control 13 and control 17, and that reduce impact some of risks. Through the results we found out that some control haven't impact, so the important controls should be considered by the software companies in Jordanian and Palestinian. And the models is goodness can be used to predict a risk (the dependent variable) from independent variables expect risk 3. Also calculated adjust R^2 form model and got value from effect size techniques proposed and categorized to large, medium, and small. Finally there are three small , five medium, five large.
The limitations of this study should be noted, that a few of managers didn't gave us opportunity to follow up software project.
As future work, we will intend to apply these study results on a real-world software project to verify the effectiveness of the new techniques and approach on software project

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