Research Article

Software Project Risk Management Practices and Their Effects on Project Success.

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ABSTRACT

Risk Management is one of the main key process areas in the field of Project Management, but unfortunately due to lack of sufficient resources, the software companies of Pakistan don't bat an eye on this impactful and significant activity. Although much research has been conducted previously on the topic of risk management in the context of software companies around the globe stills there exists research gaps that need to be coped to increase the productivity and success rate of software industries of Pakistan. The main objective of our research is to address the key variables in risk management and their impact on the success of a software project. For this goal to achieve we surveyed a total of 160 software organizations of Pakistan and for the evaluation and analysis of the gathered results we utilized SPSS software. This software lends us a hand in the correlation and regression analysis which truly depicted the significant +ve correlation among the dependent and the independent variables of our study. This research will surely pave way for the software organizations of Pakistan to gain the advantages of applying the risk management process as it will ultimately result in a better success rate and provide a defense mechanism against emerging risks.

Keywords: *Risk Identification; Risk Analysis; Risk Response Planning, Risk Monitoring and Control; Project Success.*

1. INTRODUCTION

Computer technology has been swiftly progressing over the past few decades. Mostly due to the high demand, it is likely to continue for a few more years or decades. And we are all getting comfortable with this expansion. In the 21st century, information technology has been the most crucial element in business. Over time technology is growing exponentially now. There's no doubt about it - this is the high-tech world, and technology and innovation are a driving force in today's business. Due to this, there is a high demand for software projects. As the demand for software-based projects increases there is high competition in achieving project success. So, now software projects have to attract organizations and companies are investing increasing resources to manage their software projects for example in the development of any new product or giving new services to handle software projects. According to previous studies most of the projects lack either time or budget or fail to satisfy their customer

and or company expectations which are their major goals (Sauser, 2009). By the means of the project, success is not all about doing in a given time or cost. But it also includes some other effects like gaining the reputation of your organization, gaining confidence in the team, being ready for a future project, and doing it efficiently. As we are all aware of the latest economic crises due to the pandemics (covid-19) that arise in almost every country, the Information Technology industry performs a crucial part in the recovery of the country's economic growth. So, the more focusing gives more added- value services. Some of the previous research data conclude that there is a remarkable increase in the global IT market. Another study concluded that the yearly cost of the information technology sector in

the world has increased from $2.65 trillion to $3.83 trillion from 2005 to 2013, of which $922 billion were used on IT services (Ayat, 2020). According to the Annual CHAOS report stats mentioned by Eveleen and Verhoef (2010), 66% of technology projects fail or may remain uncompleted until their due date (50,000 projects used globally for analysis of this study). Also, this report concludes that 52.7% of software-based projects will cost approximately 189% of the number of their original estimates. Further statistics on software projects show that only one in three software

Projects are meeting their exact requirement or end as a successful project. Most of the project failure is due to not applying risk management strategies in their project and some others include the lack of information and weak project understanding. We depict that the large Software projects are more complex and risk and there should be proper risk management strategies applied to it, which will help to gain success of the project. Information technology is the field in which risk management is based on the six steps, the most important of which are the plan risk management and identification of risks. And the other four steps include performing a qualitative risk analysis, performing a quantitative risk analysis, planning risk responses, and controlling the risk are also the key components of this process. The risk management plan is critical because the decision making by the management is somewhat dependent on the risk by IT organization because it not only helps in that project's success but also helps in future projects and gaining confidence. Risk is the uncertainty in the project. Organizations consider these types as the most critical. In managing the risk, the attitudes of the stakeholders and the organization are based on the three main factors that affect the most.

1.1 PROBLEM IDENTIFICATION

Risk Management is among the major issues that a project manager faces during a project. Most of the projects fail due to a lack of risk assessment, especially in software projects. As there is no focus on managing risks during the development phases. Assessing the significance of risk management in software organizations is the major problem of interest. Determining the relationship of the dependent variable and independent variables will make it easy to judge the influence of risk management on the success rate of software organizations.

1.2 RESEARCH QUESTIONS

What is the impact of risk identification and project success in Pakistan's software industry?

What is the impact of risk analysis and project success in Pakistan's software industry?

What is the impact of risk response planning and project success in Pakistan's software industry?

What is the impact of risk monitoring and control and project success in Pakistan's software industry?

1.3 RESEARCH OBJECTIVES

The following are the main objectives of this study:

- To determine the relationship between the risk identification and project success in Pakistan's software industry?

- To determine the relationship between risk analysis and project success in Pakistan's software industry?
- To determine the relationship between risk response planning and the project success of Pakistan's software industry?
- To identify the influence the risk monitoring and control and project success in Pakistan's software industry?

1.4 SUMMARY

The purpose of this quantitative survey-based study was to evaluate whether the project success and risk management practices are correlated in the software industry of Pakistan. Four independent variables are part of our research namely RI, RA, RRP, and RMC and the dependent variable is the project success. The previously mentioned variables will help the project managers deal with the major constraints of a software project i.e., cost, time, quality, success to the organization, and customer satisfaction.

2. LITERATURE REVIEW

2.1 RISK MANAGEMENT

The Oxford dictionary defines risk as a probability of danger, misfortune, injury, or any other unfortunate or unfriendly results. The meaning of risk is 'exposed to danger', due to which we can clearly state that risk signifies the negative consequences. Another definition of Hopkins (Hopkins 2018), states that risk is linked with the uncertainty of result.Risk management involves a lifecycle of events which includes, identifying a threat, then assessing and making plans to control the threats. These risks originate from different

sources which are already discussed such as natural disasters, unpredictable accidents, management errors, technological issues, and many more.

2.2 RISK MANAGEMENT IN THE SOFTWARE INDUSTRY

Among many reasons for an unsuccessful software project, the risk management procedure is among the most vital reasons for a failure, due to which adoption of scrum is rapidly increasing but unfortunately, it doesn't specify risk management activities.

Additionally, the result of using the risk management process in the environments of software development, some researchers believe that managing projects and risks are similar hence it shows the importance of analyzing risks in software projects. The usage of risk management becomes more important as the complexity and size of the software grow, moreover, there is a need for metrics that investigates and analyzes risk management for software (Karollay Giuliani de Oliveira Valério, 2020).

2.3 RELATED STUDIES ON RISK MANAGEMENT AND PROJECT SUCCESS

In 2017, research was published that looked into all the organizational factors and risk management techniques that influence the success of an Information Technology project.

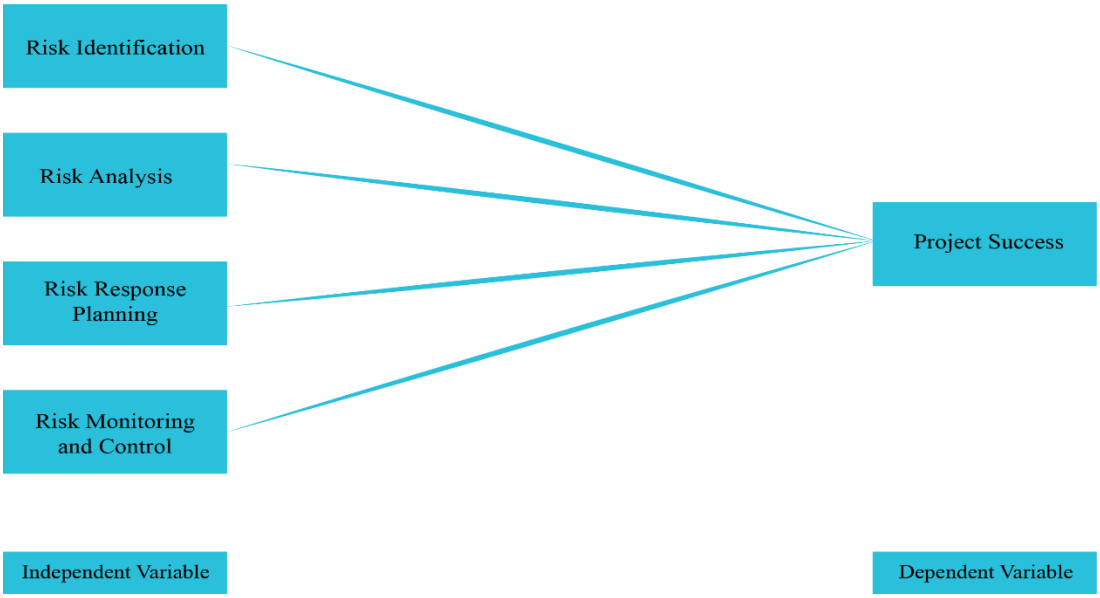
These techniques include the identification of risk, analysis of risk, planning a response to risk, and monitoring and controlling the risk. The success of an IT project is determined by the performance of the product. The data gathering is done with the help of project managers, IT managers, and analysts in software companies with the help of questionnaires and analyzed with the help of statistical models like linear regression. The outcomes in this study show the distinctions in the organizational kinds which influence the success of its projects in all aspects while the distinctions in organizational size affect the project success in the performance of the product. The detect a risk, plan, and response for that risk has a highly positive effect on project success while risk analysis harms the product performance. (Pimchangthong, 2017).

The first three components were taken separately, and an intercession relationship was proposed in the theoretical framework for the fourth component. They used questionnaires of previous research to get responses from the targeted audience. In their study, the hypothesis has been supported that an effective risk management system must include a mechanism for risk evaluation, identification, and prioritizing risk response. This study also featured the requirement for effective control of risk and strong control over project risk is the reason for the success of a project (Tahir, 2019).

Another research in 2019 is conducted. This study tackles the issue of selecting Risk Management methods and models while considering the anomaly of IT projects. There are two types of methodologies, Methodologies-Standard and System Development Life Cycle methodologies (SDLC). Then the important characteristics of the project are analyzed. After that, they try to find the abnormalities in the application models in managing the risks of IT projects as compared to

others. The outcomes of this study will be grateful for decision-making whenever doing the IT projects. (Babenko, 2019)

This study was done in 2020 as well and the main objective of this research was to analyze the method of risk management in those Software projects which were managed using Agile methodology. The exploration was led through inside and out-organized meetings on an example of 111 undertaking supervisors, pioneers,



and venture colleagues.

Figure 1.1: Theoretical framework

2.4 THEORETICAL FRAMEWORK

Hypotheses

H1: Risk identification positively impacts IT project success.

H2: Risk analysis positively affects IT project success.

H3: Risk Response positive impacts IT project success.

H4: Risk monitoring and control positively impacts IT project success.

3. METHODOLOGY

3.1 DESIGN OF STUDY

The design of this research is explanatory; it lays the ground for the examination of whether risk management is performed in software organizations or not. The software houses of Rawalpindi and Islamabad are targeted for the assessment of the desired research objective. For this goal to achieve, the

various Project Managers of the selected software companies will be asked to fill out the survey questionnaire mentioning the utilization of risk management in terms of their software projects. On what scale risk management is being performed in their respective organization to cope with the various risks that emerge because of unexpected situations.

3.2 RESEARCH APPROACH

A deductive approach is used in this study to see the effect of the different aspects of risk management on the success of IT projects in Pakistan. In deductive reasoning already existing studies on risk management are used to design the framework of the study. The relationship between the dependent project success and risk related independent variables is used to construct the hypotheses of the study. After that Information will be collected and data is analyzed to examine the validity of these constructed relationships.

3.3 POPULATION AND SAMPLE

The population shows a whole set of individuals or units associated with a research purpose. It is a collection of data or information from individuals for research analysis. Analysis of the entire population is inconvenient for data collection owing to the time and cost constraints; however, it is suggested to obtain a sample so that only relevant information is analyzed (Ranganathan, 2019). In this research analysis, a total of 50 software organizations of

Rawalpindi and Islamabad will be targeted and using a specific sampling method these organizations will be further reduced to 25 in number to evaluate the use of risk assessment practices in these organizations.

3.4 SAMPLING TECHNIQUE

The sampling technique that we were using in this research is named "simple random sampling". Random sampling means that a great number of respondents are collected easily and cost-effectively and each member from the population has equal probability from a population (Rizq and Maulabakhsh 2015). Since the total population of software organizations consisted of 250 organizations the sample size that will be considered is 160. The questionnaires are distributed equally, and the collection of samples is available for the analysis that the necessary details can be given.

3.5 DATA COLLECTION SOURCES

Data collection sources are the tools that provide relevant direction for the construction of the framework of the research study. In this research, data is collected from primary sources. Secondary data is not a pure form of data as it may have undergone statistical treatment, but it is easy to collect. Secondary data sources include general publications, websites, internal records, journal articles, and books (Gray, 2019). In this research primary sources of data are used to collect information. Primary data is collected through questionnaires which were filled out by selected project managers of

the organization based on purposive sampling.

3.6 RESEARCH INSTRUMENTS

Research instruments consist of instruments that are used to generate data. In this study, the research instrument will be a survey questionnaire. Source of the questionnaire: (Pimchangthong, 2017). The questionnaire used in this study will include a total of 22 questions that will be related to software risk management and responses will be recorded against a five-point Likert scale in which responses vary from strongly agree to strongly disagree. Frequency distribution includes demographic information based on three units including experience, job title, and education.

3.7 ANALYSIS PROCEDURES

For the analysis of the gathered responses from the collected survey questionnaire filled by the Project Managers of the software organizations the tool named SPSS will be used. The SPSS stands for Statistical Package for the Social Sciences, and it is mainly used by researchers of different types because it can do complex statistical data analysis. With the help of this tool, the gathered information will be analyzed, and desired results will be shown with the help of graphs and figures.

4. DATA FINDINGS AND ANALYSIS

4.1 DESIGN OF STUDY

In this study, the collected data has been formed into multiple categories in order to make it understandable. The sample size consists of different groups which are shown below. The different group contains the following information such as

4.2 DESCRIPTIVE FREQUENCIES

In this research, the collected data has been formed into multiple classes so that it is understandable. The sample size contains a variety of groups which are discussed below. The different group contains the following information, the years of experience, the job title, and the level of education.

Table 1.1: Descriptive Frequencies

Demographics		Frequencies	Percentages	Cumulative Percentage
Years of experience	3-5 years	130	81.3	81.3
	6-10 years	22	13.8	95.0

	11-15 years	2	1.3	96.3
	16-20 years	2	1.3	97.5
	21+ years	4	2.5	100.0
Job title	Project Manager	56	35.0	35.0
	Project Coordinator	24	15.0	50.0
	Project Analyst	16	10.0	60.0
	Project Leader	56	35.0	95.0
	Project Risk Manager	8	5.0	100.0
Level of education	Associate Degree	4	2.5	2.5
	Bachelor's Degree	80	50.0	52.5
	Master's Degree	72	45.0	97.5
	Doctorate Degree	4	2.5	100.0

Out of 160 respondents, we can generalize the data based on year of experience as:

- Data collected from people with 3-5 years of experience were 81.3% (130 people)
- Data collected from people with 6-10 years of experience were 13.8% (22 people)
- Data collected from people with 11-15 years of experience were 1.3% (2 people)
- Data collected from people with 16-20 years of experience were 1.3% (2 people)
- Data collected from people with 21+ years of experience were 2.5% (4 people)

Out of 160 respondents, we can classify the data based on job title as:

- Data collected from project managers were 35.0% (56 people)
- Data collected from project coordinators were 15.0% (24 people)
- Data collected from project analysts were 10.0% (16 people)
- Data collected from project leaders were 35.0% (56 people)
- Data collected from project risk managers were 5.0% (8 people)

Out of 160 respondents, we can classify the data based on level of education as:

- Data collected from people having an associate degree were 2.5% (4 people)
- Data collected from people having a bachelors' degree were 50.0% (80 people)
- Data collected from people holding a masters' degree were 45.0% (72 people)
- Data collected from people having a doctorate were 2.5% (4 people)

4.3 RELIABILITY ANALYSIS

Cronbach's Alpha was considered for analyzing and evaluating the reliability of the structured questionnaire to make sure the level is being consistent with what is it supposed to measure. The questionnaire is thought to be more accurate if repeated interval measurements have lesser variations. To measure the reliability of the questionnaire some factors include questionnaire fidelity, questions uniformity and consistency, and how related the

questionnaire is to measure the reliability of the instrument.

If the coefficient of reliability is closer to "1" that entails that the internal consistency reliability is higher. The table below shows the results of Cronbach's alpha reliability test of the questionnaire used in the research.

Table 1.2: Reliability Analysis

Variable	Cronbach's Alpha	N of Items
Risk Identification	0.734	4
Risk response planning	0.799	4
Risk monitoring and control	0.686	4
Project success	0.756	4
Risk Analysis	0.773	4

The reliability of risk response planning, risk monitoring, and control, risk analysis, and project success is 0.799, 0. 686, 0.773, and 0.756 respectively. The values of Cronbach's alpha shown by reliability statistics are 0.799, 0. 686, 0.773, and 0.756 respectively, which are thoroughly acceptable concerning our study. The Cronbach's alpha value has given a demonstration of better uniformity and trustworthiness retained with the questionnaire employed in the research to elicit data. Values of Cronbach's alpha are 0.799, 0.686, 0.773, and 0.756 respectively, which are very close to 1 indicating high reliability associated with our questionnaire and data collected with it.

Note: The value of Cronbach's Alpha should be >= 0.70. However, if less than 10 items, it should be > 0.50.

4.4 DESCRIPTIVE STATISTICS

Table 1.3: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
RI	160	7.00	20.00	13.3875	2.92675
RA	160	6.00	20.00	13.5125	2.92890
RRP	160	5.00	20.00	14.4875	3.35338
RMC	160	7.00	20.00	13.7375	2.97471

The above table provides the information which is sufficient to observe all variables of a research study in the context of its mean value. Based on descriptive statistics, mean values of risk related IVs are 13.3875, 13.5125, 14.4875, and 13.7375 respectively. Starting with the variable of risk identification, it has the mean of 13.3875 percent with 2.92675 percent of standard deviation. This recommends that risk identification is impacting risk analysis, risk response planning, and risk monitoring and control with a mean of 13.3875 percent.

Whereas risk analysis has a mean of 13.5125 percent with 2.92890 percent of standard deviation. Similarly, risk response planning and risk monitoring and control have the mean of 14.4875 and 13.7375 percent and standard deviation of 3.35338 and 2.97471 percent respectively.

4.5 CORRELATION ANALYSIS

Correlation analysis helps in examining the linear relationship of variables. We can consider high correlation when there is strong strength between the variables. whereas when the relationship between the variable is low then the correlation is considered to be below. However, there may exist a moderate type of relationship between the variables which results in a moderate level of correlation. If the correlation analysis shows that two characteristics are related, then we can investigate whether one variable can be used to predict the other variable or not. We can check the strength of correlation by determining that the values fluctuate between -1 and +1 of the correlation coefficients.

Table 1.4 Correlation Analysis

		RI	RA	RRP	RMC	PS
RI	Pearson Correlation	1	0.618*	0.714*	0.645*	0.426*

	Sig. (2-tailed)		<0.001	<0.001	<0.001	<0.001
	N	160	160	160	160	160
RA	Pearson Correlation	0.618*				
	Sig. (2-tailed)		<0.001	<0.001	<0.001	<0.001
	N	160	160	160	160	160
RRP	Pearson Correlation	0.714*				
	Sig. (2-tailed)		<0.001	<0.001	<0.001	<0.001
	N	160	160	160	160	160
RMC	Pearson Correlation	0.645*				
	Sig. (2-tailed)		<0.001	<0.001	<0.001	<0.001
	N	160	160	160	160	160
PS	Pearson Correlation					
	Sig. (2-tailed)		<0.001	<0.001	<0.001	<0.001
	N	160	160	160	160	160

4.6 REGRESSION ANALYSIS

Regression analysis is an approach that indicates the impact and relation between features and target variables. Results achieved using regression analysis are discussed below. In simple linear regression, one independent variable infers the dependent variable.

4.7 RELATIONSHIP BETWEEN RISK IDENTIFICATION AND SOFTWARE PROJECT SUCCESS

4.7.1 Model Summary

Table 1.5: Model Summary (H1)

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.426[a]	.181	.176	2.26523

a. Predictors: (Constant), RI

Variance in a dependent variable (Project Success) caused because of predicting variables (Risk Identification) is represented by R square whose value in the model shows that level

of risk identification accounted for 18.1% (R square * 100) variance in product

performance.

Whereas, adjusted R square error explains how accurate the theoretical model was, and we can see that Adjusted R square is 17.6% fit.

4.7.2 ANOVA

Table 1.6: ANOVA Analysis (H1)

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	179.632	1	179.632	35.007	<.001[b]
Residual	810.743	158	5.131		
Total	990.375	159			

a. Dependent Variable: Project Success

b. Predictors: RI (Risk Identification)

Results achieved by ANOVA show that the significance value is less than 0.05 and the F value of the model is greater than 4 which means the model is statistically significant.

4.7.3 Coefficients

Table 1.7: Coefficients (H1)

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	10.451	.841		14.426	<.001
RI	.363	.061	.426	5.917	<0.01

a. Dependent Variable: PS (Project Success)

Table 1.7 represents that the level of RI has a considerable influence on project performance. In the model, the value of significance of risk identification for project success is less than 0.05. We can then state that both variables have a substantial relationship.

Project success (b=0.363) is considerable, and the coefficient is positive which implies that a great level of project success is related to a high level of RI.

4.8 RELATIONSHIP BETWEEN RISK ANALYSIS AND SOFTWARE PROJECT SUCCESS

4.8.1 MODEL SUMMARY

Table 1.8: Model Summary (H2)

Model	R	R Square	Adjusted R Square	Std Error of the estimate
1	.515[a]	.265	.260	2.14634

a. Predictors: (Constant) Risk Analysis

Variance in a dependent variable (Project Success) caused because of predicting variables (Risk Analysis) is represented by R square. The R square value in the model depicts that level of RI reported for 26.5% (R square * 100) variance in product performance. Whereas, adjusted R square error explains how accurate the theoretical model was, and we can see that Adjusted R square is 26.0% fit.

4.8.2 ANOVA

Table 1.9: ANOVA Analysis (H2)

	Sum of Squares	df	Mean Square	F	Sig
Regression	262.507	1	262.507	56.983	<.001[b]
Residual	727.868	158	4.607		
Total	990.375	159			

a. Dependent Variable: Project Success

b. Predictors: RI (Risk Analysis)

Results achieved by ANOVA show that the significance value is < 0.05 and the F value of the model is greater than 4 which means the model is statistically significant.

4.8.3 COEFFICIENTS

Table 2.0: Coefficients (H2)

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.

(Constant)	9.385	.803		11.681	<.001
RA	.439	.058	.515	7.549	<.001

a. Dependent Variable: PS (Project Success)

Table 2.0 depicts that the level of RA has a substantial impact on project performance. In the model, the value of significance of RA for project success is less than 0.05 which depicts a substantial relation between both variables. Project success (b = 0.439) is important, and the coefficient is +ve which suggest that a superior level of project success is related to a high level of RA.

4.9 RELATIONSHIP BETWEEN RISK RESPONSE PLANNING AND SOFTWARE PROJECT SUCCESS

4.9.1 MODEL SUMMARY

Table 2.0: Model Summary (H2)

Model	R	R Square	Adjusted R Square	Std Error of the estimate
1	.515[a]	.265	.260	2.14634

a. Predictors: (Constant) Risk Analysis

Variance in a dependent variable (Project Success) caused because of predicting variables (Risk Analysis) is represented by R square. The R square value in the model depicts that level of RI reported for 26.5% (R square * 100) variance in product performance. Whereas, adjusted R square error explains how accurate the theoretical model was, and we can see that Adjusted R square is 26.0% fit.

Table 2.1: Model Summary (H3)

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.565[a]	.319	.315	2.06601

a. Predictors: (Constant), RRP

Variance in a dependent variable (Project Success) caused because of predicting variables (Risk Response Planning) is represented by R square. In the model the R^2 value represents that level of RRP accounted for 31.9% (R square * 100) variance in product performance. Whereas, adjusted R square error explains how accurate the theoretical model was, and we can see that Adjusted R square is 31.5% fit

4.9.2 ANOVA

Table 2.2: ANOVA Analysis (H3)

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	315.966	1	315.966	74.024	<.001[b]
Residual	674.409	158	4.268		
Total	990.375	159			

a. Dependent Variable: Project Success

b. Predictors: RI (Risk Response Planning)

Results achieved by ANOVA show that the significance value is < 0.05 and the F value of the model is greater than 4 which means the model is statistically important.

4.9.3 Coefficients

Table 2.3: Coefficients (H3)

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	9.222	.726		12.695	<.001
R|	.420	.049	.565	8.604	<.001

a. Dependent Variable: PS (Project Success)

Table 2.3 represents the level of RRP that has a substantial impact on project performance. In the model, the value of significance of RRP for project success is less than 0.05 which depicts a strong relationship among both the variables. Project success (b = 0.420) is substantial, and the coefficient is +ve which would imply that a great level of project success is related to a high level of RRP.

4.10 RELATIONSHIP BETWEEN RISK MONITORING & CONTROL AND SOFTWARE PROJECT SUCCESS

4.10.1 Model Summary

Table 2.4: Model Summary (H4)

Model	R	R Square	Adjusted R Square	Std Error of the Estimate

1	.501[a]	.251	.246	2.16710	

a. Predictors (Constant): Risk Monitoring & Control

Variance in a dependent variable, Risk Monitoring & Control caused because of predicting variable of Project Success is represented by R-square which indicates that level of RMC accounted for 25.1% in project success. In other words, R squared describes the level and dependence of project success on risk monitoring and control. Whereas, adjusted R square error explains how accurate the theoretical model was, and we can see that Adjusted R square is 24.6% fit.

4.10.2 ANOVA

Table 2.5: ANOVA Analysis (H4)

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	248.355	1	248.355	52.883	<.001[b]
Residual	742.020	158	4.696		
Total	990.375	159			

a. Dependent Variable: Project Success

b. Predictors (Constant): Risk Monitoring & Control

Results achieved by ANOVA show that the significance value is < 0.05 and the model's f- value is greater than 4 which means the model is statistically significant.

4.10.3 Coefficients

Table 2.6: Coefficients (H4)

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	9.541	.812		11.750	<.001
R|	.420	.058	.501	7.272	<.001

a. Dependent Variable: PS (Project Success)

The above table shows the level of RRP has a substantial effect on project performance. In the model, the value of significance of RRP for project success is less than 0.05 which displays a strong association among them. Project success (b = 0.420) is considerable, and the coefficient is +ve which reveal that a great level of project success is related to a high level of RA.

4.11 DATA FINDINGS

In Hypothesis 1 we can conclude that a +ve relationship is present between risk identification and software project success which results in acceptance of the hypothesis in both analyses (correlation and regression). In correlation analysis, risk identification has a +ve influence on the project success and the magnitude is .426 which is has been proved significant.

In Hypothesis 2 we can conclude that a +ve relationship exists in the middle of risk analysis and software project success which results in acceptance of the hypothesis in both analyses (correlation and regression). In correlation analysis, risk analysis has a +ve impression on the project success and the magnitude is .515 which is has been proved that it is highly significant.

In Hypothesis 3 we can conclude that there exists a positive relationship between risk response planning and the success of software projects which results in acceptance of the

hypothesis in both analyses (correlation and regression). In correlation analysis, risk response planning has a beneficial effect on the software project success and the magnitude is .565 which is has been proved that it is highly significant.

In Hypothesis 4 we can conclude that there exists a positive relation amongst risk monitoring and control and software project success which results in acceptance of the hypothesis in both analyses (correlation and regression). In correlation analysis, risk monitoring and control have a confident influence on the success of software projects and the magnitude is .565 which is has been proved that be highly significant.

5. DISCUSSION AND CONCLUSION

5.1 INTRODUCTION

This chapter is related to the discussion and conclusion. The content in this chapter includes a discussion of results, limitations, future recommendations, and finally the conclusion of the study.

5.2 DISCUSSION

The goal or major objective of this work is to assess the relationship between risk management and project success. The focused zone in this research is the

software industry of Pakistan. In the context of analysis of the data concerning hypothesis and RQ's mentioned in the 1st and 2nd chapters of the study, the following results and interpretations can be drawn. We are measuring project success meanwhile; Pakistan software companies in the area were selected for examining the connection between the above-mentioned variables. To collect feedback from the respondents, an adoptive structured questionnaire is employed.

This research study has aimed to assess the relationship between risk management practices which includes our four independent variables, and our dependent variable which is project success in the software industry of Pakistan. Meanwhile, the software industry of Pakistan is chosen to investigate the correlation between the independent and the dependent variable. The collection of responses from the respondents which are project managers, project coordinators, project lead, project analysts, and project risk managers working in the software industry of Pakistan is our main target. To get the response from them we used an adoptive structured questionnaire.

5.3 IMPLICATIONS

To cope the huge losses of IT sector due to lack of risk management practices as manager just don't bat an eye on the risk management, the purpose of this study is to find if there exists any association amid risk management practices and success of project. The implication of this decision suggest that the project success and risk management technique has positively affect in the success ratio of the software projects. When we move towards risk management regarding success of projects in software projects, previous reports have underlined +ve connections among these 2 concepts. For instance, earlier examination has underscored how hypothetical examples also assist in risk management and project triumph such as effort done by Kommunuri et al (2016) who has centered on the ERM model. ERM facilitates in supporting corporations in forecasting risks and tackling policies to take on business goals. Our research will pave way for the project managers of software organizations to adopt risk management practices as this will help them in managing the scope and dealing with the project risks in the best possible manner. Implementing these risk strategies will ultimately result in reduction of cost, increase in project quality and improved customer satisfaction. So, the project managers must consider these practices as they will assist them in dealing with different contingency risks.

5.4 LIMITATION AND FUTURE RECOMMENDATIONS

The current survey is limited to three cities of Pakistan (Islamabad, Rawalpindi, Wah Cantt). project managers, project coordinators, project lead, project analysts, and project risk managers of only software houses were researched. The research context is limited to Islamabad, Rawalpindi, and Wah Cantt-based software houses due to inadequate resources. However, future studies can extend to other cities of Pakistan to get more significant results. The impact of top management support and working environment on project success

is another area of research that impacts product performance, and it is suitable for future research relevant to the relationship with project success. Future research needs to explore the factors that are involved in the working environment and impact the relationships between manager and employee and performance respectively.

5.5 CONCLUSION

In this study, it is concluded that RI, RRP, RA, RM&C in the software industry of Pakistan, and the success of the project are interlinked with each other. For a successful project, an organization must identify, analyze the project needs, and plan and monitor the project accordingly. We

collected the data from 160 people from the Project Managers, Project coordinators, Project leaders, Project Analysts, and Project Risk Manager across multiple software houses of Rawalpindi, Islamabad, and Wah Cantt. We set four different independent variables which are risk identification, risk analysis, risk response planning, risk monitoring, and control, and our dependent variable is the project success. After collecting the data, we performed two types of analysis correlation and regression analysis. We measured the project success on the various elements which include time, cost, quality, success to the organization, and customer satisfaction. After performing the analysis on all four independent variables, we can determine that there is a significant relationship between Risk and project success.

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