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Risk Assessment and Management in Construction Projects

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Abstract - *The construction of bridges projects is initiated by complex and flexible problems that lead to high levels of uncertainty and risk, compounded by time-consuming and costly constraints. The typical learning method depends largely on the list of questions that will be collected by the contractors who are building the bridge project and the project manager of the various sizes by post or staff meeting. The questionnaire prepared for the survey was developed by identifying relevant literature in the property management area. This study aims to identify risk factors that affect the performance of bridge projects as a whole and analyze them using appropriate tools and techniques and developing a risk management framework. Responses were analyzed as charts below using SPSS software. This questionnaire is divided into two categories namely time and financial management. Number of 25 companies related to the bridge projects industry. In these t-test and ANOVA analyzes were calculated, tabulated and the result was presented in accordance with the relevant recommendations.*

Key Words:*RiskManagement, Construction Management, SPSS, t-test and ANOVA*

1. INTRODUCTION

Risk management is a systematic process of identifying, analyzing and responding to project risks. It involves maximizing the chances and consequences of positive events and minimizing the chances and consequences of adverse events on project objectives. Often, the risk is to choose a place instead of fate. Inherent uncertainty in plans and the possibility of something that may affect the prospects for accomplishment, business or project objectives. Shipping a purse spent overseas was the first example of risky business in the early days of travel. Each activity we perform involves risk, only the amount of risk varies

1.1. DESCRIPTION OF RISK

Risk is defined as “the state in which a person is not informed of its consequences”. In the Macquarie Dictionary, it is defined as “Exposure to change in injury or loss; risk or risk, to put risks ”. In general, “every accident is equal to the expected loss that can be caused by a dangerous event and the chances of this event”.

1.2. RISK VISION AND RISK MANAGEMENT

Risk is the concept of multifaucet. Depending on the context of the construction industry, it may be possible for an incident / specific event to occur during the entire construction process to determine whether a project can be predictable in terms of structural impact or results in a decision or planning situation, uncertainties related to outcome measures - than expected etc. International work is often subject to external risk such as ignorance of social, economic and political conditions, which are unknown. as well as new procedures, regulatory framework and governing authority, etc.,. The main goal is to eliminate as much potential impact as possible and to increase the level of risk management. Additional control of a single risk reduction measure where the measure is most effective the disaster risk management process is not intended to completely eliminate all risks to the project. Its goal is to create a systematic framework to assist decision-makers to manage risks, especially critical ones, effectively and efficiently.

1.3 DANGER DESCRIPTION

The following are a few risk factors.

- **Group size**

The larger the group, the greater the risk. For example, communication can be very difficult as the number of participants grows. The amount of interaction between people is growing and thus requires greater cooperation.

- **History**

New projects are very dangerous because the processes have not been fixed. When a project like this is done over and over again, there is a good chance it will succeed.

- **Staff capacity and knowledge**

If employees do not have specific experience and knowledge of the subject, people will struggle to learn as they progress, wasting time and possibly introducing mistakes.

- **Complexity**

If the project is too complex, there is a high chance of an error or problem.

- **Administrative stability**

Management stability refers to the unity of management, which means achieving goals. Management annoyance can lead to planned and inadequate use of resources.

- **Time pressure**

If the system is too stressed, then the risk increases. Having more time means greater flexibility and the opportunity to prevent or reduce the impact of mistakes.

• Availability of the service
When more resources are available, there is a greater potential for responding to a problem as it arises. Many sources, however, do not guarantee protection from danger; however, they give us ways to respond to it.

1.4. RISK RESOURCES IN CONSTRUCTION PROJECTS

• Misunderstanding contract terms and conditions
• Design changes and errors
• Career planning
• Bad ratings
• Unexplained roles and responsibilities
• Unskilled workers
• Environmental hazards
• Political and legal issues

1.5. THE BENEFITS OF RISK MANAGEMENT

• Slight uncertainty
• Achieving goals
• Honesty
• Reduced capital costs
• Value construction

1.6. RISK MANAGEMENT LIMITS

• If the risk is misdiagnosed and prioritized, time can be wasted in dealing with the risk of possible losses.
• Spending too much time monitoring and managing potential risks can divert resources that can be very profitable.
• Incidents that are likely to occur, but if the risk is not sufficient enough, it may be best to simply keep the risk and deal with the outcome if the loss actually occurs.

2. LITERATURE REVIEW

 Wenzhe Tang, David M.Young (Dec 2007) "Risk Management in the Chinese Construction Industry" studied a powerful Chinese industry study of project risk significance, implementation of risk management strategies, the nature of the risk management system, and barriers. Risk management, which was observed by major project participants. Research shows that: Many project risks are often a concern for project participants; the industry has shifted from risk transfer to risk reduction.

 Eric B. Williamson, David G .Winget (Aug 2004) "Risk Management and Design of Key Bridges for Terrorist Attacks" And the effect of retro installation should be made and extend the time by disrupting traffic and increasing costs with the distribution of work, equipment and safety.

 Robin K Mcguire (Jun 1999) "Building Hazards Analysis" This study helps to identify the risk factors involved in construction during and after construction in relation to resource allocation, procurement, asset management. Also reduce the time, cost and increase in construction quality by analyzing risk during planning.

 J.De Brito and FABranco (Mar 2006) "Bridge Management Policy Using Cost Analysis" This study helps to make the best use of the resource to make the right decision for ongoing repairs and refinements if it fails to maintain the necessary resources. it has been a loss of structural failure, a loss of time and a loss of financial features.

 E.C.Hambly, Feng Fice and E.A. Hambly (Nov 2009) "Risk assessment and realization" This study helps to calculate the risk of risk assessment strategy in terms of mortality rates. The reality is how the government takes the necessary steps to reform and redesign the process related to time, cost and politics.

 G.MilIer (Jan 2006) "Time and Cost Risk Analysis" This study facilitates a time management method and cost risk analysis with computer-assisted simulation of project evaluation and review. These simulations provide the effect and help to take precautionary measures during the planning itself.

 Seon-Gyoo Kim, Jae-Jun Kim (Apr 2005) "Risk Threshold Calculation Methodology for the Construction Projects Applying Value at Risk" learned how to a bit of the uncertainty surrounding the construction site.

 Roozbeh Kangari (Dec 1995) "Risk Management Perceptions and Trends of U.S. Construction" discusses the attitude of major U.S. construction companies about determining how contractors conduct construction risk management through a study of 100 top contractors. Research has shown that in recent years contractors are more willing to take risks associated with a real and legal problem in the form of risk sharing with the owner.

Mulholl. B and J.Christian (Feb 1999) "Risk Assessment in Construction Schedules" suggested that the definition of a systematic approach to estimating and measuring uncertainty in construction schedules. Construction projects are initiated in complex and flexible environments that lead to high levels of uncertainty and risk, which require time constraints.

 Akin tola S Akintoye and MacLeod (Mar 1997) "Risk Analysis and Management Management" have studied the construction industry's perception of risk related to its functions and the extent to which the industry uses risk analysis and management strategies with the help of questionnaires.General contractors and project managers. The author concludes that risk management is essential to construction activities in reducing losses and improving profits. Construction risk is often seen as events that affect project objectives of cost, time and quality.

3. PLAN AND OBJECTIVES

• Identifying various hazards in the construction of bridge projects.
• Analyze sources of hazardous materials from bridge projects.
• Experimental studies were conducted at various reputable companies.

• Through survey research the list of questions is prepared.
• Research will be done on the construction industry by questionnaire.
• The result will be analyzed in the questionnaire.
• Risks will be resolved using software such as SPSS.
• Outcome and discussion of hazardous alternatives to construction projects

4. METHODOLOGY

The approach adopted for this project is provided below:
• A study of documents related to time risks and financial management.
• Correction of questionnaires.
• A site visit to a major construction project.
• Questionnaire survey and personal interviews with Site Developer, Manager and administrators.
• Analyze list of questions.
• True analysis of locally obtained data and identification of origin.
• Corrective measures should be proposed and current data should be recorded for future use.
• Conclusions, recommendations and suggestions for the upcoming lesson.

4.1. HOW TO TEST

The standard method of this study depends largely on the list of questions that will be collected by the contractors who are the multi-project and the project manager of the various sizes by post or staff meeting. A comprehensive review of the literature was initially conducted to identify the risk factors affecting the performance of the entire construction industry. This study has received a general and comprehensive definition of risk as presented by Shen et al (2001) on china joint ventures and additional risk factors from other publications. Also, some interviews with industry workers were conducted to highlight the list of questionnaires.

4.2. STRUCTURE AND PERFORMANCE OF QUESTIONS

The questionnaire was tested with a test to determine the clarity, ease of use, importance of information that can be collected. The questionnaire is divided into two parts. The first part contains general information such as company type, more information, the value of their project etc., and the second part contains construction risk factors to be evaluated. The risk factor for this study was divided into eight categories, namely: financial risk, legal risk, administrative risk, market risk, policy and political risk, technical risk, environmental risk, social risk.

The survey questionnaire was designed to examine the different behavior patterns of the hazardous construction industry. The questionnaire was prepared for an assessment test compiled by identifying the appropriate literature in the construction hazard area. The interviewer was free to ask additional questions focused on issues that arose during the discussion. The freedom to follow the interviewer, to ask for explanations, and to focus on specific projects, risk processes and information, has made the discussions more meaningful.

4.3. RISK MEASUREMENT

A Likert scale of 1-5 is used in the questionnaire. The Likert scale is a type of psychological response questionnaire, and is the most widely used scale in survey research. When responding to a Likert questionnaire item, respondents clarified their level of agreement in the statement. The scale is named after Rensis Likert, who published a report explaining its use. Respondents were required to demonstrate in-depth comparisons / success rates of risk factors and their impact on management.

4.4. RESEARCH CONDUCT

Respondents were asked to judge the significance or "expected loss" of each accident. There are a number of conditions that respondents must consider.

Another alternative approach adopted by previous research is to consider two characteristics of each risk: the degree of probability of an accident, identified as o; and the degree of impact or degree of loss in the event of an accident stated p. The same type of test is followed in this study as well.Therefore, the risk value, defined as RS, can be defined as the function of the two attributes $RS = f(\alpha, \beta)$. Using this approach, respondents were asked to respond to two aspects of each risk. To consider a, respondents had to judge the probability of a risk by selecting one from five levels namely, very small, small, normal, large and very large. In order to assess p, respondents had to judge the level of impact if the risk involved occurred, by selecting one of the five categories i.e., lowest, lowest and medium, high and very high.

4.5 QUALITY STUDY

A survey of the checklist and follow-up interviews with the local contractors was conducted. The aim was to identify items among the 68 overseas workers who could also work in the construction industry. Small number discussions and question structure structure in die pilot research do not allow for statistical analysis. Responses to interviews were used to identify consistent themes, common processes, and insights provided by active and competent project participants that could provide additional guidance and assistance to the research team. The results of her survey were the basis for preparing the next full-length survey questionnaire. The experimental study attempts to make a short list of relevant features in the area. The short list conditions are that the selected features are important in the local construction industry. As a result, only the most important and important factors can be selected to be included in the full study in the second phase study.

5. REVIEW AND DISCUSSION

The level of various risk factors are plotted with a corresponding bar chart, scale, standard deviation, T-tests and ANOVAs results from the SPSS mathematical tool are also available.

5.1. DEMOGRAPHICAL ANALYSIS & TEST RESUTS

SL NO	AGE	NO OF RESONANCE	PERCENTAGE
1	3O to 35 years	7	28
2	35 to 40 years	12	48
3	Above 40 years	6	24
	TOTAL	25	100

Table 1. Age of the Respondent

The table shows that 28% of respondents are 30 to 35 years old, 48% of respondents are 35 to 40 years old, 24% of respondents are over 40 years old, so most respondents are 35-40 years old. Respondents are 35 to 40 years old.

SL NO	POSITION	NO OF RESONANCE	PERCENTAGE
1	Director	2	8
2	Vice director	12	48
3	Project manager	3	12
4	Site/office engineer	8	32
	Total	25	100

Table 2. Position of the Respondent

The table shows that 8% of respondents are directors, 48% of respondents are Deputy Directors, 12% of respondents are project managers, 32% of respondents are Site Engineers and therefore the majority of respondents are Site Engineers.

Table 3. No of labours in the project

SL NO	NO OF	NO OF	PERCENTAGE
	LABOURS	RESONANCE	
1	50 - 60	2	8
2	60 - 70	6	24
3	70 - 80	8	32
4	80-90	6	24
5	Above 90	2	8
	TOTAL	25	100

The table shows that 8% of respondents are 50-60 employees, 24% of respondents are 60-70, 32% of respondents are 70-80 employees, 24% of respondents are 80-90 employees, 8% of respondents are 90 above.

Table 4. No of projects in hand

SL NO	NO. OF LABOURS	NO OF RESONANCE	PERCENTAGE
1	Below 10	3	12
2	11-20	6	24
3	21 -30	5	20
4	31-40	8	32
5	40 Above	3	12
	TOTAL	25	100

Table 5. Experience The table shows that 12% of respondents are under 10 Projects, 24% of respondents of 11-20 Projects, 20% of respondents of 21-30 Projects, 32% of respondents of 31-40 projects, 12% of the respondents are more than 40 employees so the majority of respondents The project at hand is 31-40**.**

of the Respondent

SL NO	NO. OF LABOURS	NO OF RESONANCE	PERCENTAGE
1	Less than 1 year	4	16
2	From 1 to 3	7	28

	years		
3	More than 3 to 5 years	5	20
4	More than 5 to 10 years	4	16
5	Over 10 year	5	20
	TOTAL	25	100

The table shows that 16% of respondents are less than 1 year of experience, 28% of respondents are 1-3 years of experience, 20% of respondents are 3-5 years of experience, 16% of respondents are 5 years old -10 Sensitivity. , 20% of respondents are over 10 years of Responsibility so most respondents have 3-5 years of Feelings on projects.

5.2. EXPLANATORY ANALYSIS AND TEST RESULTS

In a total of fifty companies a questionnaire was provided, of which 25 had a working answer. Therefore a response rate of 90% is considered a positive response to this type of study. All survey inquiries are conducted by the project manager, local engineer or project contractor.

Even an email response was received as it was difficult to find the right one in the same meeting with the project managers. Problems related to subcontractors, deadlines, and inflation have been major challenges for construction companies.

Full results are shown in Table 6. With regard to contractors the shortage of skilled workers with high risk and other risk factors with a high level of risk reduction time, problems related to subcontractors, project delays, improper verification of contract documents, and competition from other companies. of skilled workers, project delays, design drawings, poor project planning and budgeting, and losses. Due to fluctuations in inflation.

A small amount of risk is environmental hazards, public hazards, relationships with government departments, environmental protection and industrial conflicts and crisis from nearby projects.

Table 6. Overall ranking of risks

SL. NO	SUB RISK	Mean	STANDRAD DEVIATIO N	T-TEST
1	There is no standing guideline of the numerous resources in India	2	0.913	2.83
2	There are many fake and not original varieties of materials	2.96	1.241	3.21
3	Monopoly of some material types	2.88	1.13	2.82
4	The distance between the project and resources	3.08	1.706	1.42
5	There is no monitoring for high quality	2.72	1.458	3.82
6	There are no regular tests for materials	3.44	1.261	2.42
7	Absence of basic materials in the project	2.68	1.6	1.29
8	Scarcity of resources sometimes, especially basic resources.	1.96	0.841	1.89
9	Some materials do not arrive at the assigned site	2.84	0.898	3.42
10	Agreed-upon, technical specification is not realized	3.28	1.696	2.14
11	The contractor takes into account the resource of lowest price	3.32	1.464	3.42
12	Heavy equipment is not maintained periodically	3.04	0.978	4.14
13	Fluctuating prices of materials	2.64	1.254	3.42
14	There are no guarantees on imported materials	2.56	1.685	4.92

15	Absence of trained local manpower	3.56	1.758	3.21
16	Wages of local manpower rare high	3.08	1.498	4.15
17	Laws of employing foreign manpower are rigid	2.44	1.158	2.82
18	Absence of training centers for local manpower	3.32	1.6	2.74
19	The worker does not abide by regular work-hours	3.48	1.159	3.21
20	Necessary technical skills are not available	2.64	1.254	2.49
21	Public safety rules are not abided by	2.32	0.802	2.64
22	Absence of health insurance	2.56	0.917	2.52
23	Low productive efficiency of the worker	2.52	1.358	2.62
24	There is no care for workmanship	3	1.443	3.42
25	Instability of Cadre in the companies	2.92	1.382	3.16
26	Design bureaus are no monitored	2.24	1.165	1.85
27	There are many design bureaus	2.44	1.261	3.14
28	Providing special Cadre is not abided by	3.24	1.615	1.72
29	The designer does not follow up designs and changes made on them	3.24	1.615	1.72
30	The owner's meddling with the design	3.48	1.229	3.6
31	Recurring design errors	3.2	1.443	2.72
32	Errors in the inventory of quantities	2.96	1.767	2.64
33	Supervising the project is not abided by	3.12	1.563	4.42
34	Plans of design are incompatible with execution	2.4	1.581	2.82
35	Survey processes are not precise	2.72	1.173	2.42
36	Many modifications on designs are made during execution	2.4	1.323	3.82
37	The Company obtains large loans	2.52	1.917	2.42
38	Inability to execute the project within specified timetable	3.04	1.485	3.81
39	The owner lags behind in paying the contractor	3.4	1.414	3.42
40	Contractor expands his work simultaneously in more than one project	2.72	1.242	1.92
41	The contractor does not pay worker wages in due time	3.04	1.306	3.42
42	Incompatibility of work progress (completed work) with cash payments	3	1.658	1.72
43	Weak remitting	3.36	1.655	2.42
44	Construction prices are low	3.36	1.319	2.64
45	Competition in pricing projects	2.68	1.314	1.59
46	Absence of laws governing payment process and protecting contractor's rights	2.84	1.405	1.82
47	Large number of Construction companies in India	2.64	1.411	3.49
48	Deterioration of general economic conditions	2.36	1.15	3.32
49	Specialistsinprojectfinancial analysis are not employed	3.04	1.338	1.76
50	Inability to control project financial	3.48	1.584	3.42

	affairs			
51	Taxes and tax burdens	2.6	1.323	2.72
52	Absence of price standing strategy in the market	3.12	0.833	2.59
53	In experience when pricing tenders	2.6	0.764	1.42
54	Absence of clear financing mechanisms	3.24	1.763	1.39

6. TIME MANAGEMENT

Inflation is very high in India and is growing in proportion to this, resulting in rising prices for items such as cement, steel which pose a financial risk to land developers and construction firms. Banks have also increased interest rates on loans, which have had a significant impact on the housing market. Thus, the financial component of risk is much higher than any other risk. The level of time management risks is given in Table 7.

Table 7. Ranking of Time management

SL NO	SUB RISK	MEAN	STANDARD DEVIATION
1	Scarcity of resources sometimes, especially basic resources	1.96	0.841
2	There is no standing guideline of the numerous resources in India	2	0.913
3	Design bureaus are no monitored	2.24	1.165
4	Public safety rules are not abided	2.32	0.802
5	Plans of design are incompatible with execution	2.4	1.581
6	Many modifications on designs are made during execution	2.4	1.323
7	Laws of employing foreign manpower are rigid.	2.44	1.158
8	There are many design bureaus	2.44	1.261
9	Low productive efficiency of the worker	2.52	1.38
10	There are no guarantees on imported materials	2.56	1.685
11	Absence of health insurance	2.56	0.917
12	Fluctuating prices of materials	2.64	1.254
13	Necessary technical skills are not available	2.64	1.254
14	Absence of basic materials in the project	2.68	1.6
15	There is no monitoring for high quality	2.72	1.458
16	Survey processes are not precise	2.72	1.173
17	Some materials do not arrive at the assigned site	2.84	0.898
18	Monopoly of some material types	2.88	1.13
19	Instability of Cadre in the companies		1.382
20	The designer does not follow up designs and changes made on them	2.92	1.187
21	There are many fake and not original varieties of materials	2.96	1.241
22	Errors in the inventory of	2.96	1.767

	quantities		
23	There is no care for workmanship	3	1.443
24	Heavy equipment are not maintained periodically	3.04	0.978
25	The long distance between the project and resources	3.08	1.706
26	Wages of local manpower are high	3.08	1.498
27	Supervising the project is not abided by	3.12	1.563
28	Recurring design errors	3.2	1.443
29	Providing special Cadre is not abided by	3.24	1.615
30	Agreed-upon technical specification are not realized	3.28	1.696
31	The contractor takes into account the resource of lowest price	3.32	1.464
32	Absence of training centers for local manpower	3.32	1.6
33	There are no regular tests for materials	3.44	1.261
34	The worker does not abide by regular work-hours	3.48	1.159
35	The owner's meddling with the design	3.48	1.22
36	Absence of trained local manpower	3.56	1.758

7. FINANCIAL MANAGEMENT

Inflation rates are very high in India and are rising steadily over time, resulting in rising prices for items such as cement, steel which causes interns to pose a time risk to land developers and construction firms. Banks have also increased interest rates on loans, which have had a significant impact on the housing market. So the share of risk is much higher than any other risk. The level of financial management risk is given in Table 8.

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Table 8. Ranking of Financial management

SL NO	SUB RISK	MEAN	STANDARD DEVIATION
1	Deterioration of general economic conditions	2.36	1.15
2	The Company obtain large loans	2.52	1.917
3	Taxes and tax burdens	2.6	1.323
4	In experience when pricing tenders	2.6	0.764
5	Large number of Construction companies in India	2.64	1.411
6	Competition in pricing projects	2.68	1.314
7	Contractor expands his work simultaneously in more than one project	2.72	1.242
8	Absence of laws governing payment process and protecting contractor's rights	2.84	1.405
9	Incompatibility of work progress (completed	3	1.658

	work) with cash payments		
10	Inability to execute the project within specified timetable	3.04	1.485
11	The contractor does not pay worker wages in due time	3.04	1.306
12	Specialists in project financial analysis are not employed	3.04	1.338
13	Absence of price standing strategy in the market	3.12	0.833
14	Absence of clear financing mechanisms	3.24	1.763
15	Weak remitting	3.36	1.655
16	Construction prices are low	3.36	1.319
17	The owner lags behind in paying the contractor	3.4	1.414
18	Inability to control project financial affairs	3.48	1.584

S - significants

The table above clearly shows that the group under the age of 40 achieved a higher average score (104.92) than other groups. The calculated F value (4.182) to confirm the median difference between the groups, is significant. So regardless of age group all respondents have the same view of time management

Table 9. Showing the One-way ANOVA for time management on the basis of their Age

SL NO	AGE	NO	MEAN	SD	F-VALUE	P-VALUE
1	30 to 35 years	7	95.86	31.17		
2	35 to 40 years	12	104.92	30.95		
3	Above 40	6	104.83	41.21		
		25	102.36	32.45		

S -significant

The table above clearly shows that the group under the age of 40 achieved a higher average score (104.92) than other groups. The calculated F value (4.182) to confirm the median difference between the groups, is significant. So regardless of age group all respondents have the same view of time management

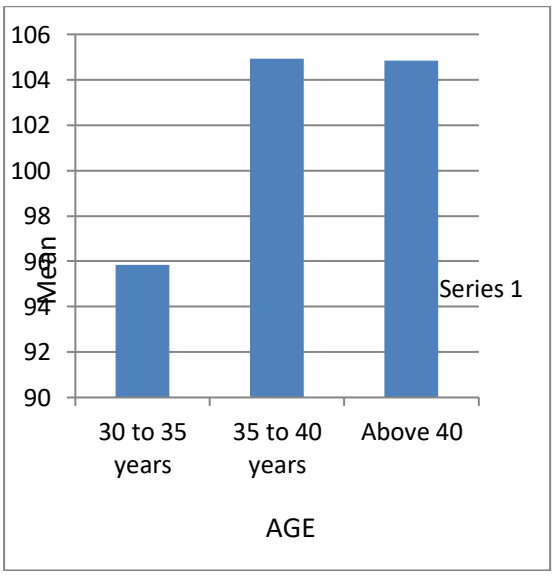

Fig 1. Time management on the basis of their Age

Table 10. Showing the One-way ANOVA for time management on the basis of their position

SL NO	AGE	NO	MEAN	SD	F-VALUE	P-VALUE
1	Director	2	109.50	28.991		
2	Vice director	12	108.83	35.396		
3	Project Manager	3	117.00	25.981		
4	Site/ Office engineer	8	85.38	28.645		
		25	102.36	32.450		

S -important

The table above clearly shows that the project manager team received a much higher value (117.00) than the other teams. The calculated F rating (4.146) to confirm the median difference between the groups, is significant. So regardless of the group of positions all respondents have the same view of time management.

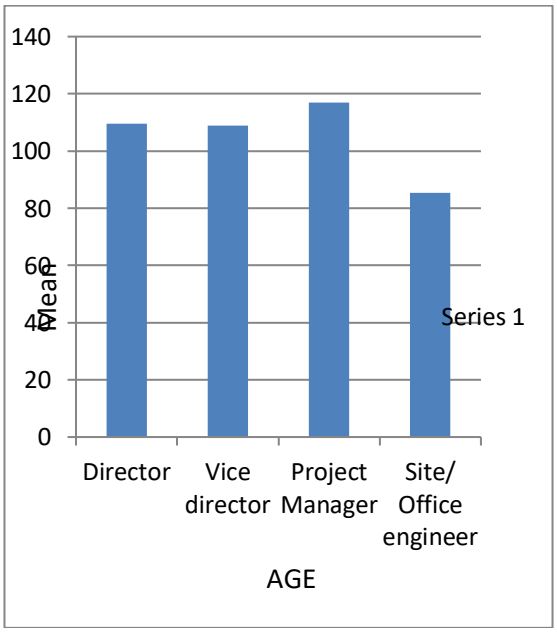

Fig 2. Time management on the basis of their position

Table. 11 Showing the One-way ANOVA for time management of the basis of their experience

SL NO	AGE	NO	MEAN	SD	F-VALUE	P-VALUE
1	Less than 1 year	4	96.5	27.086		
2	From 1 to 3 year	7	96.86	35.396		
3	More than 3 to 5 year	5	120.40	29.492		
4	More than 5 to 10 year	4	80.50	24.839		
	Over 10 year	5	114.20	38.271		
		25	102.38	32.450		

S - Important

The table above clearly shows that more than 3 to 5 years of experience experience achieved a higher average score (120.40) than other groups. The calculated F rating (4.109) to confirm the median difference between the groups, is significant. So regardless of the experience team all respondents have the same opinion about time management.

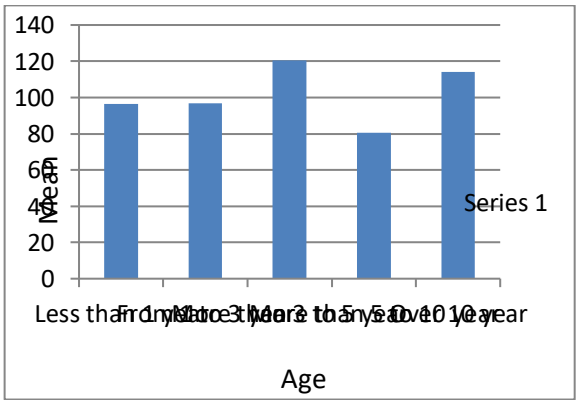

Fig 3. Time management on the basis of their Experience

SLNO	AGE	NO	MEAN	SD	F-VALUE	P-VALUE
1	30 to 35 years	7	51.34	29.5		
2	35 to 40 years	12	53.38	24.8		
3	Above 40	6	53.67	27.0		
		25	52.67	27.1		

S - Important

The table above clearly shows that the under-40 age group achieved a higher average score (53.83) than other groups. The calculated F value (3.04S) to ensure the median difference between the groups, is significant. So regardless of age group all respondents have the same view of financial management.

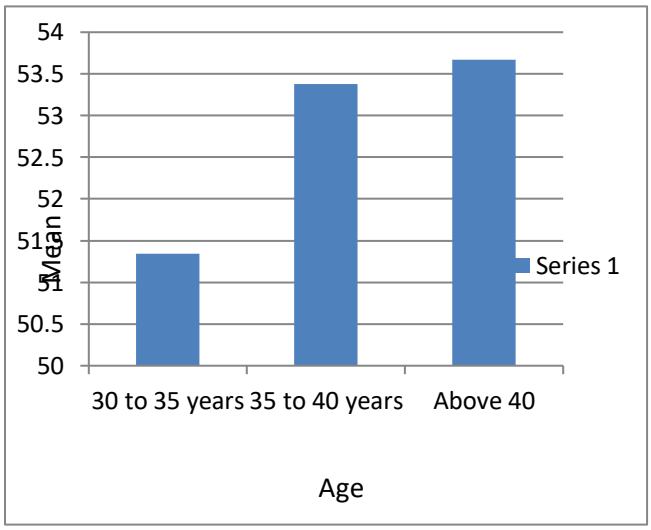

Fig 4. Financial management on the basis of their Age

Table 13. Showing the One-way ANOVA for financial management on the basis of their position

SLNO	AGE	NO	MEAN	SD	F-VALUE	P-VALUE
1	Director	2	52.50	19.1		
2	Vice director	12	55.42	20.9		
3	Project Manager	3	62.33	14.4		
4	Site/ Office engineer	8	46.122	15.6		
		25	53.04	18.3		

S - Important

The table above clearly shows that the project manager team received a much higher score (62.33) than the other teams. The calculated F value (3.677) to confirm the median difference between the groups, is significant. So regardless of the group of positions all respondents have the same opinion about financial management.

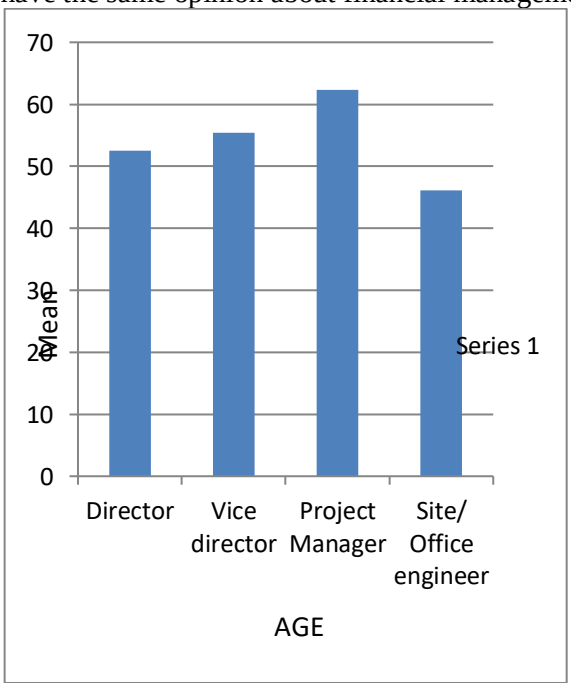

Fig 5. Financial management on the basis of their position

Table 14. Showing the One-way ANOVA for Financial management on the basis of their Experience

SL NO	AGE	NO	MEAN	SD	F-VALUE	P-VALUE
1	Less than 1 year	4	46.25	17.443		
2	From 1 to 3 year	7	51.43	19.060		
3	More than 3 to 5 year	5	62.00	18.358		
4	More than 5 to 10 year	4	45.25	10.751		
	Over 10 year	5	58.00	23.948		
		25	53.04	18.315		

S -significant

The above table clearly shown that more than 3 to 5 years of experience group scored higher mean value (62.00) than the other groups. The calculated F-ratio (3.685) to confirm the mean difference between the groups, which is significant. Therefore irrespective of the experience group all the respondents have same opinion about the financial management

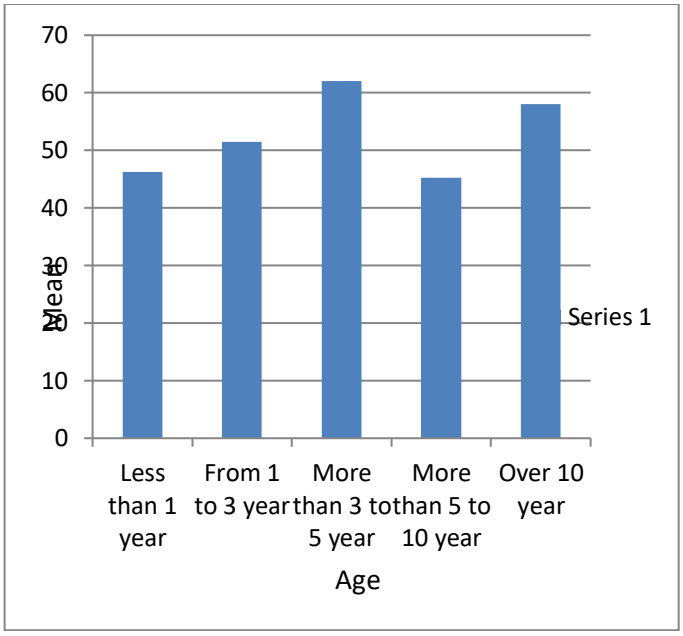

Fig 6. Financial management on the basis of their Experience

Table 15. Showing the Stepwise regression analysis predicting Risk analysis of time & cost in Bridge projects and factors

SL NO	Source	Un standardized coefficients Beta	Std Error	Standardized coefficients Beta	Step t	P
1	Time management	1.814	0.724	0.849	3.584	0.01
2	Financial management	2.349	0.692	0.589	2.892	0.01

Two variables namely Time Management and Financial Management have been instrumental in predicting the Risk and Time Risk analysis of the Bridge. The initial flexibility of Work at Time management appears to be 3.584, while the second financial management combination is 2,892. The prediction value of these variables is 0.01.

8. SUGGESTIONS

Data collected from the questionnaire were analyzed by the SPSS software and found that the most dangerous features the following points would help to overcome the risk:

• Contract documents to be officially registered

• The duration of the contract should be specified in the adjustment in the event of a natural disaster
• Payment mode will be determined based on progress or duration
• Specifications or changes in size should be recorded in the register
• Disputes and errors will be resolved through documentary evidence
• The meeting is held periodically
• Equipment, Equipment and Personnel insurance which must be pre-determined
• Political and environmental issues to be resolved by who should be decided in advance
• Repetition must be shown under its error-based scope.
• The customer who is to be paid pays the fee according to the methods of the contractor
• Client payment must be made through BANK
• The client can monitor contract payments to employees
• Employee salaries must also be paid through BANK transactions
• Employee salaries will be paid weekly or monthly
• Reducing pay for employees will affect progress
• Do not delay or reduce salaries based on contractors' financial difficulties
• Grants or Bonuses from profits will delight employees
• An increase based on experience or efficiency will lead employees to retain
• Low payment by the customer for completed work will affect the contractor's payment for the work
• Skilled staff will be deployed to tender
• A person with technical skills who will carry out the work
• A person with extensive technical knowledge who will manage the project
• Adequate technical information will be provided in drawings and documents
• Required technical training provided to staff
• High technology and equipment will be used for quick and accurate access.
• Do not outsource work to contractors who do not have sufficient experience.

9. CONCLUSION

This research should assist management in identifying activities where there is a risk of time and financial factors and thus provides a basis for management to make informed decisions about risk reduction to an agreed level. These findings are very important in implementing other practical steps to ensure a proper indicator of future development. Risk management should be considered as a key tool for project evaluation.

9.1. DURING THE ASPECT MANAGEMENT:

1. Lack of average number of local qualified staff (3.56) and SD value (1.758).
2. The agreed technical specifications are not available for medium value (3.28) and SD value (1.696).
3. Providing a special card is a limited value (3.24) and an SD value (1.615).
4. Lack of training facilities for the average number of local staff (3.32) and SD value (1.600).
5. Long distance between project site and value-added resources (3.08) and SD value (1.706). The conclusion of the above feature is as follows:

• The meeting should be held periodically to ensure that the service provided is good.
• Appropriate training should be assigned to tasks.
• Appropriate guidance should be provided to management.
• Proper supervision should be monitored by management during ongoing work.
• Weaknesses when work progress report should be submitted to ensure that work is done under the appropriate details.
• The person must have proper record keeping.
• Progress record will be checked for proper record keeping.
• Site engineers and managers are responsible for training staff.
• Managing staff performance after training.
• Night shifts are allowed as there will be a decrease in traffic.
• Day and night work should be helpful in the construction of bridges.

9.2. IN FINANCIAL MANAGEMENT

1. Inconsistency with work progress with cash payment rate (3.00) and SD value (1.658).
2. The owner is in arrears with payment of the contractor rate (3.04) and SD (1.306).
3. Weak payment definition value (3.36) and SD value (1.655).
4. Inability to control the financial affairs of the project means value (3.48) and SD value (1.584).

The conclusion of the above feature is as follows:

• Depending on the collateral and bank statements the purity of the fund must be maintained.
• Funding for a specific project that will be provided to promote jobs and eliminate ongoing work as soon as possible.
• Subscribers should be provided with at least 50% funding for their work,
• During work 30% of the money should be given to continuous work.
• Upon graduation, the examination should be considered for full payment.
• Proper weekly record keeping to pay employees.
• This aspect must be taken into account during the budget period.
• This cannot be controlled unless a successful record is to be kept.
• Shift work should be helpful in weak posting.
• The purpose of this thesis was to identify the perceived risks of bridge construction projects of those people involved in it as consultants, contractors to determine

the difference in the perceived risks of contractors, consultants.

• The objectives of the thesis were information on bridge construction projects that were collected through the management of questionnaires in interviews with respondents including directors, Deputy Directors, Local Engineers and Project Managers.

• Collected data is less than 5-scale Impact Grid with risk scores. Those points were used to determine the difference in the perceived risks of directors, Deputy Directors, Local Engineers and Project Managers which were then analyzed using SPSS software using ANOVA evaluation and evaluation formulas.

• The results of the construction risk analysis revealed that, at high risk, it was the inefficiency of subcontractors.

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