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Analysis of Risk Management in Construction Projects Using SPSS method

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Abstract

Risk management is about projects Risk analysis, identification like seeing and responding Defined as a formal process. It is negative events Reduce probability and impact While positive events Opportunities and impact includes increasing, among others to meet project objectives. Construction Risk Management is Occurs in construction projects To reduce the impact of risks Evaluate procedures is the process of implementation. This risk the management process is risk management Complete to build project Involves planning, which is planning Managers identify risks, Allows monitoring and mitigation. Project like project manager Management Software Risk Management Makes the process much easier. Full Risk with the feature Gantt chart Develop a management plan, then real-time dashboards and manage your projects with reports Monitor. Try it for free today of the construction planning process Construction risk management in early stages The project was created. What is this project Risks can occur and take them Describes the risk response to judgment? And to take ownership of the problem Someone on the team to resolve it This includes recruiting. Construction Risk Management and Fire Prevention Plan There are many benefits to creating, including: Increased safety and workers well being of improved company Reputation. with workplace accidents Avoid associated costs. Construction Projects are a building or to build a structure It is an organized effort. Civil Engineering and Architecture In the fields, construction Projects are an infrastructure or Integrates the building firmly involves the process. Evaluation parameters: Political instability risk, Stakeholder's risk.

Keywords: Risk Management in Construction Projects, Political instability risk, Economic risk, Social risk, spss.

Introduction

Like construction projects some things are dangerous. Heavy equipment, dangerous situations Working groups and complexity logistics, security risks and There are risk factors. That When managing risk your How will you meet deadlines The answer is construction risk management. It is mental can be fascinatingly complex, That's why you elaborate construction Develop a risk management plan. Responsibility of the Construction Project Manager What happens in construction projects Types of risk and success How to deliver the project Let's look at the basics. In recent decades, global Diversification of activities of companies Because of the Construction projects are become extremely risky and complicated. In comparison to other industries, different construction techniques, working conditions, mixed cultures in the host country and between home nations as a result of political unpredictability, construction projects face greater risks. Therefore, in this case, the development of the project's decision-making processA key area is risk management may be considered. These programs are many May include stakeholders, project Uncertain socio-economic status In addition to conditions, recent Big for career coaches in decades Brings challenges. Construction project Failure results in high costs and which may lead to overruns of time, systematic risk evaluation, categorization, and adjustmentsAn evaluation process is required. Construction projects are many sub-projects an inclusive construction project is a Not action. Large construction projects are often managed and built under the supervision of a project manager. Large-scale construction projects necessitate human multitasking. Additionally, this type of large construction Projects Design Engineer, Construction Engineer or certified are supervised by the Project Architect. Construction projects in a cost effective manner Implementation requires effective planning.

Risk Management in Construction Projects

In construction projects, risk of the occurrence of certain consequences of events Sufficient to calculate probability Objective data are generally lacking; Generally Some subjective judgment is required. Techniques for risk analysis Theoretically established over the years, But in construction projects Their practical use is limited, Mainly large in the private sector Multi-order customers and a few more Special or large multi-order For consultants only. discussed below Techniques, too, for construction projects The authors believe that they are relevant. Two of these are sensitivity and Probability, explained in more detail, Andtheir by the teachers Examples of use are risk are given under management applications[1]. Regarding the characteristics of the construction sector Productspecification, on-site With productivity and high rate of return Ad hoc project committees were also formed including Subsequently, to the company and received between its individuals Integrating, storing and storing knowledge Recycling is for the construction industry is difficult. Therefore, construction

Department performance of the scheme Acquire, store and increase knowledge Must be reused, previous Studies, project reports or learned Knowledge through methods of subjects Management to run the company had suggested that [2]. Risk management in every project How it was carried out In order to study the construction Plans were made. Purchase Regardless of preference, either or affect more actors Many projects due to variations in cost affected. Throughout the project phases Risk management is not done properly. However, the cast's early involvement, the project Throughout their participation and openness Opportunities for dialogue and collaboration Among them, the most absolute risk Management process identified. Project delivery methods are systemic risk While defining quota, Incentives and cooperation or Use of partnership arrangements A partnership for risk management Helps to establish attitude [3]. To develop, through an international study With international construction projects Identify and categorize relevant risks; Model to represent Check the model, in developing countries Related to construction projects Identify critical risks Evaluate. These risks To reduce, work in developing countries International construction including Singaporean companies looking for Acceptable risk by companies To create a management framework [4]. JRM implementation In two building projects, a balance between cast control and flexibility was successfully established in the first project, paying the way for JRM. Extensive usage of control Prevents in the second plandegradation and Restricted use of JRM. Identified to JRM Control to manage risk and to deal with unexpected events That flexibility is both required We decide. A machine When attitude dominates, risk Management is not a collaborative effort A method carried out individually It will be a process [5]. Overseas construction projects Contracting is usually 'more Considered a 'risky business', Often foreign enough Environmental Information and Foreign Lack of construction experience. The same Such construction projects are different Regions are quite different May have hazardous properties. New risks in a new environment Identification is difficult for a new person. These risks and the in between The subtle influence of relationships Very difficult to estimate. On the one hand, disregarding these dangers leads to careless, irrational, and unrealistic outcomes. On the other side, the process of estimating all new risks and learning about their linkages is time-consuming, difficult, and expensive. For most projects The process is almost impossible. Especially enough information And when there is no time. Such complexity When faced with the situation, foreign This is the primary risk in projects.control factors Very important. In this thesis, For overseas construction projects A system has been developed to manage various risks [6]. Construction is all about risk management Relatively poor reputation It is a highly risk-oriented industry. The Both the construction sector and construction project operations include risk. Construction project success in the field mostly depends on the amount of risk. Contractors, sub-contractors, Suppliers, Owners and Many such as designers With the increasing interaction of contracting parties, The level of risk increases. Risk Management practices Measure this risk by following can reduce of construction sector Projects come in small, large, and medium sizes Differ, it's different size Includes risk of impact. Often, Due to inadequate risk management, the industry is doing poorly[7]. Construction, a free enterprise Many professions in the system Likewise, its profit structure is substantial contains risk, in the beginning From end finally, features of the construction process include Complexity and Numerous Uncertainties. The thesis' primary goal is to build a risk management system (CRMS). aims to present a fresh risk model. The suggested model is structured, logical, and methodical.Provides, it is a construct Identify risks in the project, Analyze and manage Assisting contractors [8]. In recent decades, global A variety of activities of the companies In the construction industry due to nature Projects are more complex, have also become dangerous. Other Compared to sectors, different building techniques, labour circumstances, and host and between own nations culturesUncertainty due to political conditions Construction projects are more by nature face risks. So, this In situation, construction projects Key to the decision-making process Risk management can be considered as part of this [9]. In the present paper, from 1960 to 1997 of the construction risk literature during the period An analytical study is completed. Three, construction and project risk knowledge: A Temporal and Epistemological Review, Examines Perspectives and Applications of Analysis in ConstructionSystematic for project/construction risk management Creating Attitudes; and a `soft Origins of organizations' risk management perspective. Through this analysis, the construct and in project risk knowledge Gaps and inconsistencies in may be exposed. At this point Hence, potential for future research A conclusion about fruitful areas Discussion is possible. This is the purpose of the paper Analytical review is the means to achieve that [10]. Related within construction project companies Fundamentals of risk management The processes are largely unknown. A very strong theoretical foundation Understanding of management structure and Improve communication. With this aim, The present paper deals with risk and risk Explores some fundamentals of management Associated risk and its consequences How are perceived, and In a joint construction project How the associated risk is managed [11]. The GRMM presented in this article is Risk Evaluating and improving management For practitioners in construction projects by Aims to help. Additionally, For cross-project analysis for learning purposes It can be used. Two focus The results of the group sessions are also a GRMM Current of risk management in the project Provides insight into the situation Confirmed that. In addition, project Risk management among members It facilitates the discussion of development. GRMM incorporates the limitations of other RMMs, ie, theoretical and/or Lack of practical background and Lack of validation of samples. of a report Due to the weighting factors, GRMM In all types of construction projects Suitable for use regardless of their size[12]. Only a few studies have looked specifically at Singapore's modest building projects to determine their level of activity and effects. By exploring this study existing Expanding literature. Rather than this study implicit RM Systematized and standardized RM It is worth noting that focuses on Because the risk in previous studies Management skills or maturity As an important attribute to measure formalized and standardized The risk management process is widely seen [13]. Construction projects are inherently different and come from a variety of sources. They are also complex, dynamic, and include feedback mechanisms. Numerous participants, including individuals and businesses, are actively involved in building projects. They are engaged in them and interested in them, whether the project is favourable or negative. They often have various expectations and interests since they have varied levels of experience and expertise. This programme is quite seasoned, which inevitably leads to issues and miscommunication among management and contractors[14]. Projects internal risks such as financial, Design, Contract,

Construction, Custom, concerned parties and operational risks and External risks are economic, social, Political, legal, public, logistical and For both environmental hazards will emerge. All risks are negative Cost of project in ways, schedule or May affect quality. Hence, risk Integrated management of project management Well recognized as a function to be dealt with. Vietnam is a growing Coming economy, GDP Increasing construction Industry recently in construction projects Many have negative impacts Has faced problems, among them One is formal and effective risk Lack of management system[15]. In construction projects, participants Principal on contractual basis Engaged in agency relationships. The contracting parties shall complete the project rather than maximizing their own utility Agency theory focuses on that suggests, that is, their The relationship is adversarial. Because of this, Contracts and systemic risk There is a lot of faith in quotas, this Often not optimal. For example, contractors with confidence Be and contract Some when making a deal to win Risks can be ignored. In addition, initial Risks are subject to change and plans New risks may emerge during the life cycle [16]. The construction industry (CI) is dynamic and turbulent And the complexity of construction For more uncertainty in projects leads to and uncertainty exactly Construction if not managed It can adversely affect the performance of companies. Risk Management (RM), which is uncertain Identifying sources is a risk Uncertainty in identification, project Probability of events conditions and impact assessment risk analysis Developing response strategies and Finally, occur during a project Monitoring risks. Construction A serious concept for companies [17]. Proper tools and techniques Use wisely, plan For RM's performance in delivering objectives Add value. Construction and For managing risk in engineering A wide range of tools and There are techniques. These tools and techniques Several studies have examined the use of The most common tools and techniques checklists, Brainstorming, probabilistic impact matrices, Subjective judgment, decision tree analysis, Sensitivity analysis and Monte Carlo simulations [18]. The construction industry, perhaps most than, afflicted with danger, But often this risk is enough Size is not handled, as a result with increased costs and time delays Poor performance results. Construction projects in their nature increasingly complex, are becoming energetic, And by introducing new procurement methods, Many contractors have their projects and Risks within organizations Their approach to handling It means reconsideration. [19]. In accordance with these findings, the contg Basically construction services Rental customers Not using RM practices properly Previous research results that Show, it is the projects in Chile Negative effects on performance caused Primary for this condition One of the reasons is risk management Lack of skills and construction RM is not really applicable to project management The industry's expanded belief that [20]. Skyscraper, Hub Airport and A large scale like rail network Complex interfaces in construction projects, Types and products of stockholders and integration of technologies, which is uncertain causes characteristics and associated risks. Clients and construction contractors' Effective RM for key participants like It is always important and challenging to relate [21]. It is asbestos removal and bridges, schools, Apartments, Hotels and include office buildings At around 20 real-life construction project sites Tested and relevant Project management of construction companies Better in collaboration with groups is designed. Belgium In various sectors of construction industry[22].

Political instability risk: between political parties Disputes often occur in governance Changes, unpredictability of local government A change in law due to new regulations, Court regarding project disputes of local government in activities Undue influence. Political instability Mostly climate induced As a result of disruptions to agricultural systems, But responses to disasters When and where conflicts may occur are the main determining factors. Political elites rightly so By failing to respond, their Political economy that has hidden the reasons Famines have historically been worse by theory as well.

Economic risk: Fluctuations in currency exchange rates, Predicted by immature banking systems Impossible inflation, for the project In paying with poor finance Delay, insufficient forecast of market demand. Economic risk is business Changes in conditions or of macroeconomic factors will be done abroad due to adverse effects Referred to as the risk exposure of the investment. Government policies or current Read more about Significant Oscillation.

Social risk: Ethnic tension and work culture and foreign and local Language differences between partners. Social Risk Management (SRM) is a global A concept created by the bank structure, especially in the late 1990s Led by Robert Holzman Its Social Security and Labor Department. The objective of SRM is to provide basic livelihoods To protect and encourage risk taking Prevention, mitigation and coping of social security including strategies It is an extension of the traditional structure. SRM focuses especially on the poor Pays, they risk too much Vulnerable and economic Chances of facing shocks are high

Work quality risk: Corruption including bribery on sites Obsolete of local partner Technology and Practices Poor skills or inadequate supervision Due to less local labor force productivity; Improper quality control Local partner defects and quality Low tolerance. What is Quality Risk Management A methodology for quality management, A risk-based approach. Process evaluation, control, communication and review of quality risks contains In the field of pharmaceuticals It is very important, there preparation Quality greatly affects consumer health and safety.

Time and cost risk: Disputes with contractors, nature Disasters and Applications Delays due to lack of labor Risk of disputes and strikes Inadequate cash flow, improper measurements, Improperly planned schedules and Delay in payment; Correct Criteria and construction measures Lack of surveillance. Cost risk It is more than a budget for the project Risk of overspending. Basic Try to stay on budget Cost to reduce scope or quality If violations lead to cost risk lead to performance risk.

Technological risk: Inadequate technology, improper design, Risk of unexpected design changes Adequate site investigation; In construction practices Change and lack of adequate resources. Technical Risk, Information Technology Also known as risk, it is a No technical risk to the business Failure can also disrupt a business Defined as possible. Information Security Incidents, Web Attacks, password theft, service Many types of malfunctions such as Technology risks companies facing Appropriate event Without the answer, every kind of technical Risk is financial, reputational, regulatory or capable of causing strategic risk.

Documents and information risk: Former local employees, partners and from third parties Intellectual property protection risk Unexpected increase in income, finance Unexpected resignations of consultants, Auditors, bankers or credit Intentional or Corporate including accidental negligence Fraud Information Security Risk A more accurate definition is Confidentiality, integrity or After the availability of information is threatened Includes negative consequences. To understand why it is, threats And in the trifecta that includes vulnerabilities We have to look at the danger.

Stakeholder's risk: Creditworthiness of local partner Account clarity, financial certainty of local partner foreign exchange liquidity, On employee reliability Information. The unfairness of joint ventures Shares of Dividend Assets and upon termination of the JV Agreement Foreign through local partner Benefits to companies. Risk Partners is a decision, treatment, By strategy or process People who feel vulnerable. A partner is an individual, a either as a company or within a company May be group, management can change at any time during the process like

TABLE 1. Reliability Statistics							
Reliability Statistics							
Cronbach's Alpha Based on	N of Items						
Standardized Items							
.648	8						
	BLE 1. Reliability Statistics Reliability Statistics Cronbach's Alpha Based on Standardized Items .648						

Table 1 shows the Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is .648 which indicates 68% reliability. From the literature review, the above 64% Cronbach's Alpha value model can be considered for analysis.

	Cronbach's Alpha if Item Deleted
Political instability risk	0.625
Economic risk	0.706
Social risk	0.637
Work quality risk	0.597
Time and cost risk	0.599
Technological risk	0.633
Documents and	0.594
information risk	
Stakeholder's risk	0.767

TABLE 2. Reliability Statistic individual

table 2 Shows the Reliability Statistic individual parameter Cronbach's Alpha Reliability resultsPolitical instability risk 0.625, Economic risk 0.706, Social risk 0.637, Work quality risk 0.597, Time and cost risk 0.599, Technological risk 0.633, Documents and information risk 0.594, Stakeholder's risk 0.767.

Descriptive Statistics													
	Ν	Rang	Mini	Maxi	Sum	Mean		Std.	Varia	Skewness	5	Kurtosis	
		e	mum	mum				Devi	nce				
								ation					
	Stati	Stati	Stati	Statist	Stati	Stati	Std.	Statis	Statist	Statisti	Std.	Statistic	Std.
	stic	stic	stic	ic	stic	stic	Error	tic	ic	с	Error		Error
Political instability risk	20	4	1	5	65	3.25	.250	1.118	1.250	298	.512	.305	.992
Economic risk	20	3	2	5	65	3.25	.280	1.251	1.566	.548	.512	-1.377	.992
Social risk	20	4	1	5	72	3.60	.266	1.188	1.411	159	.512	618	.992
Work quality risk	20	4	1	5	64	3.20	.296	1.322	1.747	255	.512	746	.992
Time and cost risk	20	4	1	5	78	3.90	.307	1.373	1.884	-1.023	.512	044	.992
Technological risk	20	4	1	5	71	3.55	.344	1.538	2.366	490	.512	-1.233	.992
Documentsand	20	4	1	5	64	3.20	.313	1.399	1.958	138	.512	-1.085	.992
information risk													
Stakeholder's risk	20	4	1	5	54	2.70	.219	.979	.958	.307	.512	.548	.992
Valid N (listwise)	20												

TABLE 3. Descriptive Statistics

Table 3 shows the descriptive statistics values for analysis N, range, minimum, maximum, mean, standard deviation, Variance, Skewness, Kurtosis. Political instability risk, Economic risk, Social risk, Work quality risk, Time and cost risk, Technological risk, Documents and information risk, Stakeholder's risk this also using.

Statistics											
		Political	Economic	Social	Work	Time	Technological	Documents and	Stakeholder's		
		instability	risk	risk	quality	and cost	risk	information risk	risk		
		risk			risk	risk					
Ν	Valid	20	20	20	20	20	20	20	20		
	Missing	0	0	0	0	0	0	0	0		
Median		3.00	3.00	3.00	3.00	4.50	3.50	3.00	3.00		
Mode		3	2 ^a	3	3	5	5	3	3		
Percentiles	25	3.00	2.00	3.00	2.25	3.00	2.25	2.00	2.00		
	50	3.00	3.00	3.00	3.00	4.50	3.50	3.00	3.00		
	75	4.00	5.00	5.00	4.00	5.00	5.00	4.75	3.00		
a. Multiple modes exist. The smallest value is shown											

TABLE 4. Frequency Statistics

Table 4 Show the Frequency Statistics in Cement polymer composites is Political instability risk, Economic risk, Social risk, Work quality risk, Time and cost risk, Technological risk, Documents and information risk, Stakeholder's risk curve values are given. Valid 20, Missing value 0, Median value 3.00, Mode value 2^a, 3, 5.

Histogram Plot

Political instability risk



FIGURE 1. Political instability risk

Figure 1 shows the histogram plot for Political instability risk from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Political instability risk except the 3 value all other values are under the normal curve shows model is significantly following normal distribution.

Economic risk



Figure 2 shows the histogram plot for Economic risk from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 2,3 for Economic risk except the 1 value all other values are under the normal curve shows model is significantly following normal distribution.

Social risk



Figure 3 shows the histogram plot for Social risk from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Social risk except the 3 value all other values are under the normal curve shows model is significantly following normal distribution.

Work quality risk



FIGURE 4. Work quality risk

Figure 4 shows the histogram plot for Work quality risk from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Work quality risk except the 3 value all other values are under the normal curve shows model is significantly following normal distribution.

Time and cost risk



FIGURE 5 Time and cost risk

Figure 5 shows the histogram plot for Work quality risk from the figure it is clearly seen that the data are slightly Right skewed due to more respondent chosen 5 for Work quality risk except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

Technological risk



FIGURE 6 Technological risk.

Figure 6 shows the histogram plot for Technological risk from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 5 for Technological risk except the 3 value all other values are under the normal curve shows model is significantly following normal distribution.

Documents and information risk



FIGURE 7. Documents and information risk

Figure 7 shows the histogram plot for Documents and information risk from the figure it is clearly seen that the data are slightly Left skewed due to more respondent chosen 3 for Documents and information risk except the 3 value all other values are under the normal curve shows model is significantly following normal distribution.

Stakeholder's risk



FIGURE 8. Stakeholder's risk

Figure 8 shows the histogram plot for Stakeholder's risk from the figure it is clearly seen that the data are slightly Right skewed due to more respondent chosen 3 for Stakeholder's risk except the 2 value all other values are under the normal curve shows model is significantly following normal distribution.

I ADLES. Correlations										
Correlations										
	Political	Economic	Social	Work	Time	Technological	Documents and	Stakeholder's		
	instability	risk	risk	quality	and cost	risk	information risk	risk		
	risk			risk	risk					
Political instability risk	1	0.066	0.357	0.321	0.394	0.252	.505*	0.024		
Economic risk	0.066	1	0.071	0.35	0.107	0.034	0.301	537*		
Social risk	0.357	0.071	1	.624**	0.071	0.213	0.367	0.027		
Work quality risk	0.321	0.35	.624**	1	0.36	0.383	0.347	-0.236		
Time and cost risk	0.394	0.107	0.071	0.36	1	.651**	.532*	-0.102		
Technological risk	0.252	0.034	0.213	0.383	.651**	1	0.362	-0.304		
Documents and	.505*	0.301	0.367	0.347	.532*	0.362	1	-0.3		
information risk										
Stakeholder's risk	0.024	537*	0.027	-0.236	-0.102	-0.304	-0.3	1		
*. Correlat	ion is significa									
**. Correla										

TABLE5. Correlations

Table 5 shows the correlation between motivation parameters for Political instability risk For Documents and information risk is having highest correlation.Next the correlation between motivation parameters for styrene Economic risk For Documents and information risk is having highest correlation with Stakeholder's risk is having lowest correlation.Next the correlation between motivation parameters for styrene Social risk For Work quality risk is having highest correlation with Stakeholder's risk is having highest correlation. Next the correlation parameters for styrene Work quality risk is having highest correlation with Stakeholder's risk is having highest correlation. Next the correlation between motivation parameters for styrene Work quality risk For Social risk is having highest correlation with Stakeholder's risk is having highest correlation with Stakeholder's risk is having highest correlation with Stakeholder's risk is having lowest correlation with Stakeholder's risk is having lowest correlation parameters for styrene Time and cost risk For Technological risk is having highest correlation with Stakeholder's risk is having highest correlation. Next the correlation between motivation parameters for styrene Technological risk For Time and cost risk is having highest correlation. Next the correlation between motivation parameters for styrene Documents and information risk is having lowest correlation. Next the correlation parameters for styrene Documents and information risk For Time and cost risk is having highest correlation with Stakeholder's risk is having lowest correlation. Next the correlation between motivation parameters for styrene Documents and information risk For Time and cost risk is having highest correlation with Stakeholder's risk is having lowest correlation.

Next the correlation between motivation parameters for styrene Stakeholder's risk For Social risk is having highest correlation with Economic risk is having lowest correlation.

Conclusion

Mainly, risk management Objective, potential problems Detect them before they occur to address them It means having a plan. Risk Management negatively affects a company Vulnerable internal and external Looking at the risks. Project risk The objectives of management are positive Probability and impact of events Escalation and negative events Reducing probability and impact is of the risk management process Identify the benefits and risks and analyzing and Construction project management processes Optimization and resource efficiency Includes use. Construction projects are more complex and There is also uncertainty. Risk Management is an important It is necessary because it is a process Improve business with tools, Thus the potential risks Adequately detect and deal with can If a hazard is detected, it It's easy to mitigate. What are the tasks? Accomplished, completing tasks who will be involved and when the tasks will be done Describe how to start and finish Project management helps. Generally, Plans are steps or increments advancing through the ranks; however, rapid, others for interactive project management approaches are also widely used. The Cronbach's Alpha Reliability result. The overall Cronbach's Alpha value for the model is .648 which indicates 68% reliability. From the literature review, the above 64% Cronbach's Alpha value model can be considered for analysis.

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