Final Term Assessment

SUBJECT: RISK AND DISASTER MANAGEMENT IN CONSTRUCTION

Course code: (CE-604)

Submitted BY :Rashid latif

Submitted to: Engr.Yaseen Mahmood

ID:15202

Descipline:MS CEM

Iqra National University Peshawer

Date:26/06/2020

Question.01
Define and explain the risk log/register in your own words. Develop a risk log/register for the construction project (you have worked in or you are working). Details of each project must be unique and should be provided accurately to the best of your knowledge. Risk register is attached at the end of the paper (Table 1). Use notes for specifying headings.

Ans:
A risk register is a tool in risk management and project management. It is used to identify potential risks in a project or an organization, sometimes to fulfill regulatory compliance but mostly to stay on top of potential issues that can derail intended outcomes.
The risk register includes all information about each identified risk, such as the nature of that risk, level of risk, who owns it and what are the mitigation measures in place to respond to it.

A Risk Register, also referred to as a Risk Log, is a master document which is created during the early stages of a certain project. It is a tool that plays an important part in Risk Management Plan, thus helping to track issues and address problems as they arise.

The Risk Register will generally be shared between project stakeholders, allowing those involved in the project to be kept aware of issues and providing a means of tracking the response to issues. It can be used to flag new project risks and to make suggestions on what course of action to take to resolve any issues.

All corporate and organizational projects face risk at one time or another. Having a Risk Register in place simply provides a better means of responding to problems as they arise. The Risk Register is there to help with the decisions making process and enables managers and project stakeholders to handle risk in the most appropriate way. A risk needn't be a threat to your project, it is simply an issue that can arise during the project; if effectively managed, it shouldn't prevent your project from attaining its goals and objectives.
The risk register addresses risk management in four key steps:

(1) Identifying the risk

(2) Evaluating the severity of any identified risks

 (3) Applying possible solutions to those risks and

(4) Monitoring and analyzing the effectiveness of any subsequent steps taken.

Here data presented in tabular form is of Community Driven local development project in Kp 13 districts in which proper Risk Log was not maintained and risks were not identified prior to its execution that's why these risks were without control and control actions were unable to be taken to control/reduce the risks and use the fund properly.

Table:01

ID	Date raised	Risk description	Risk			Without controls			Controls	Residual risk	Action
			H	M	L	Cost impact	Time impact	Other			
15202	[Date mm/dd/yyyy]	[There is a risk that…. If this happens…...]	[tick or enter Y]	[tick or enter Y]	[tick or enter Y]	[The cost if the risk occurs e.g. x man days]	[The time impact if the risk occurs e.g. x days delay]	[Anything else that would happen e.g. lost reputation]	[Actions that will be taken to reduce the impact of the risk]	[Any risks that remain once the controls are in place]	[Document any actions to be taken to implement controls or manage residual risks]
	June-2014-June-2021	Policy changes and hiring of social team	High			Funds don't use at specific financial year due which fund lapse	The numbers of schemes become less due to incomplete staff	The funds transfers to others districts as well as due to delay the funds transfer to covid-19	The EU request to govt of KP to run the programme on yours own expenses for the one financial year to complete all the ongoing projects	Delay in completion due to seasonal impact in Hilly areas as well as project employess in uncertianity conditions	Strict vigilance and monitoring to ensure time completion and usage of fund in the allocated Vc's.

Question 2.
Discuss how Cost-benefit analysis is effective for a project? Support your arguments with real example.

Ans: What is Cost Benefit Analysis?

A cost-benefit analysis is a process businesses use to analyze decisions. The business or analyst sums the benefits of a situation or action and then subtracts the costs associated with taking that action. Some consultants or analysts also build models to assign a dollar value on intangible items, such as the benefits and costs associated with living in a certain town.

Cost benefit analysis in project management is one more tool in your toolbox. This one has been devised to evaluate the cost versus the benefits in your project proposal. It begins with a list, as so many processes do. There's a list of every project expense and what the benefits will be after successfully executing the project. From that you can calculate the return on investment (ROI), internal rate of return (IRR), net present value (NPV) and the payback period.

The difference between the cost and the benefits will determine whether action is warranted or not. In most cases, if the cost is 50 percent of the benefits and the payback period is not more than a year, then the action is worth taking.

Background of Cost –benefit analysis (CBA):

Jules Dupuit, a French engineer and economist, introduced the concepts behind CBA in the 1840s. It became popular in the 1950s as a simple way of weighing up project costs and benefits, to determine whether to go ahead with a project.

As its name suggests, Cost-Benefit Analysis involves adding up the benefits of a course of action, and then comparing these with the costs associated with it.

Purpose of Cost-benefit analysis:

The purpose of cost benefit analysis in project management is to have a systemic approach to figure out the pluses and minuses of various paths through a project, including transactions, tasks, business requirements and investments. Cost benefit analysis gives you options, and it offers the best approach to achieve your goal while saving on investment.

There are two main purposes in using CBA:

➢ To determine if the project is sound, justifiable and feasible by figuring out if its benefits outweigh costs.

➢ To offer a baseline for comparing projects by determining which project's benefits are greater than its costs.

Key points:

- A cost-benefit analysis (CBA) is the process used to measure the benefits of a decision or taking action minus the costs associated with taking that action.
- A CBA involves measurable financial metrics such as revenue earned or costs saved as a result of the decision to pursue a project.
- A CBA can also include intangible benefits and costs or effects from a decision such as employee morale and customer satisfaction.

When should you conduct cost benefits analysis?

➢ Cost-benefit analysis should be conducted before allocating funds to a project. A thorough analysis of a project should identify all potential benefits and the probability of achieving goals, compared with the all-in associated costs.

➢ The outcome of the analysis will help decision makers determine if the project is feasible and if it should proceed, or if the funds are better spent elsewhere.

➢ If a project is to go ahead, the benefits should outweigh the costs and meet the intended goals.

How to Calculate Cost Benefit Analysis?

For standard CBA, the formula, the benefit/cost ratio, is fairly simple:

Benefit/cost , simplified as b/c.

Stages in the application process:

- Identify all costs and benefits
- Measure them
- Discount them back to common time period
- Assess whether benefits>costs
- Assess who bears the benefits and costs
- Perform sensitivity analysis
- Assess whether proposal is worth it

Practical examples for the cost –benefits analysis(CBA):

Cost benefits analysis is also used for strategic policy and government long term policy to decrease the trust deficit as well as create employment.There is practical example of for social and govt policy as well as for sustainable small scale projects.The Kp govt have start an initiative with joint venture of EU and KP govt for the sustaible small scale structure projects with the help of Community and give name to this project "Community driven local development".

The project initially started in 2014 for the malakand Division and give the positive result then govt have extended this project upto Hazara division as well as to Swabi and Nowshehra.

The only purpose of this project creation of jobs for engineers and social mobilizer as well as the sustainable projects.

The long term goal of the project to decrease trust deficit and make the sustaible small scale projects and engage community in the development of the country.

Another example which is concerned for business as follows.

Project:01

Total cost= $8000

Total benfits=$12000

Cost benefits ratio=$12000/$8000

=1.5

Cost benefits ratio

Project:02

Total cost=$11000

Total benefits=$20000

Cost benefit ratio=$20000/$11000

=1.81

Cost benefits ratio

So the company will be select one of these project which have more cost benefits ratio. Both values are +ve and can earn money but the company should be select which have more + ve value. So the main purpose of Cost-Benefits analysis is to make the right decision in case of business.

Question 3.
    (a) What is Normal Probability distribution?
    (b) Suppose that the data concerning the first-year salaries of employees is normally distributed with the population mean μ = 60000 PKR and the population standard deviation σ = 15000 PKR. Find the probability of a randomly selected employees earning less than 45000 PKR annually. Hint: To answer this question, you have to find the portion of the area under the normal curve from 45 all the way to the left. Find Z-Score table at the end of the paper (Table 2)

Ans:

Normal Probability Distribution:

The normal distribution is the most important probability distribution in <u>statistics</u> because it fits many natural phenomena. For example, heights, blood pressure, measurement error, and IQ scores follow the normal distribution. It is also known as the Gaussian distribution and the bell curve.

Normal distributions come up time and time again in statistics. A normal distribution has some interesting properties: it has a bell shape, the mean and median are equal, and 68% of the data falls within 1 standard deviation.

The Normal pdf: $f(x) = \dfrac{1}{\sigma\sqrt{2\pi}} e^{\frac{-(x-\mu)^2}{2\sigma^2}}$ where

μ = mean
σ^2 = variance
π=3.14159=ratio of the circumfrance to diameter
e = 2.71829

Important things about at the normal distribution
(1) There are infinitely many variations of the normal distribution differentiated by μ and σ^2.
(2) The highest point of a normal is at the mean which is also the median.
(3) The normal distribution is symmetric. This implies that

$$F(x) = 1 - F(-x)$$

Given data:

mean μ = 60000 PKR   ---------------------1

standard deviation σ = 15000 PKR   ------------------2

x≤45,000   -------------------------------------3

Required:

The portion of the area under the normal curve from 45 all the way to the left?

Z-Score table at the end of the paper (Table 2)

Z= (x-u)/ σ ------------------1

Put value in equ 1

Z=(45000-60,000)/15,000

=-1.00
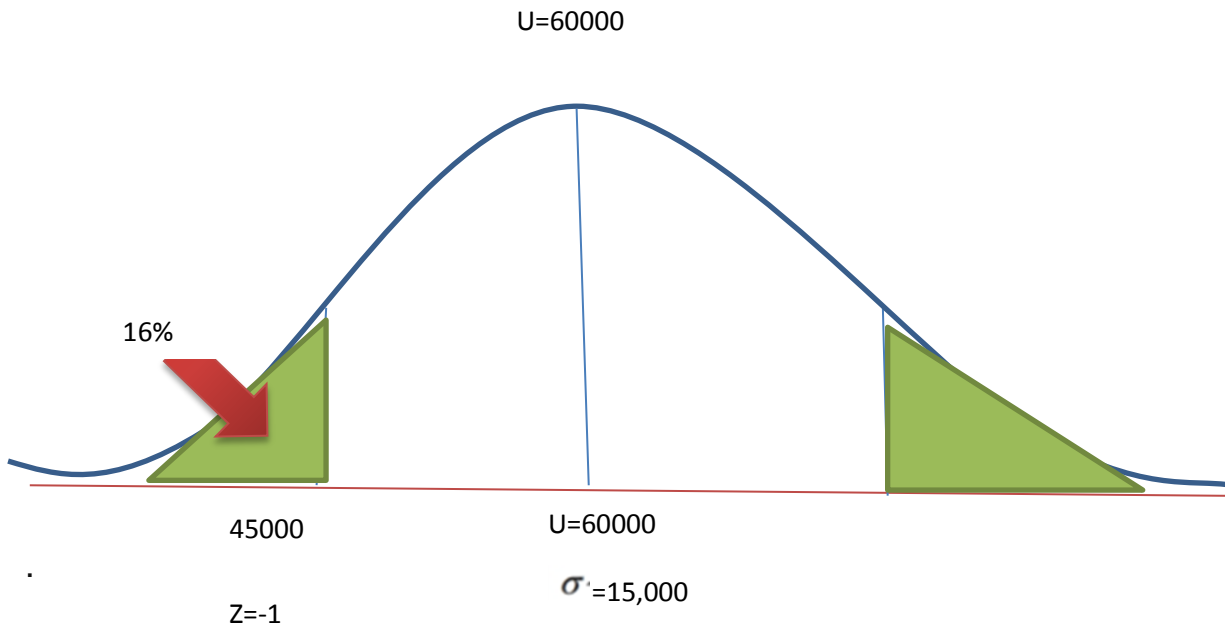
What is P(Z=-1.00)

P(X<45,000)=P(Z<-1.00)=.15866=16%

From table 2 below the graph the values are mentioned by arrow

we have (.15866)

Ans= 16%

U=60000

16%

45000

U=60000

.

σ=15,000

Z=-1

Table:02

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.50000	.50399	.50798	.51197	.51595	.51994	.52392	.52790	.53188	.53586
0.1	.53983	.54380	.54776	.55172	.55567	.55962	.56356	.56749	.57142	.57535
0.2	.57926	.58317	.58706	.59095	.59483	.59871	.60257	.60642	.61026	.61409
0.3	.61791	.62172	.62552	.62930	.63307	.63683	.64058	.64431	.64803	.65173
0.4	.65542	.65910	.66276	.66640	.67003	.67364	.67724	.68082	.68439	.68793
0.5	.69146	.69497	.69847	.70194	.70540	.70884	.71226	.71566	.71904	.72240
0.6	.72575	.72907	.73237	.73565	.73891	.74215	.74537	.74857	.75175	.75490
0.7	.75804	.76115	.76424	.76730	.77035	.77337	.77637	.77935	.78230	.78524
0.8	.78814	.79103	.79389	.79673	.79955	.80234	.80511	.80785	.81057	.81327
0.9	.81594	.81859	.82121	.82381	.82639	.82894	.83147	.83398	.83646	.83891
1.0	.84134	.84375	.84614	.84849	.85083	.85314	.85543	.85769	.85993	.86214
1.1	.86433	.86650	.86864	.87076	.87286	.87493	.87698	.87900	.88100	.88298
1.2	.88493	.88686	.88877	.89065	.89251	.89435	.89617	.89796	.89973	.90147
1.3	.90320	.90490	.90658	.90824	.90988	.91149	.91309	.91466	.91621	.91774
1.4	.91924	.92073	.92220	.92364	.92507	.92647	.92785	.92922	.93056	.93189
1.5	.93319	.93448	.93574	.93699	.93822	.93943	.94062	.94179	.94295	.94408
1.6	.94520	.94630	.94738	.94845	.94950	.95053	.95154	.95254	.95352	.95449
1.7	.95543	.95637	.95728	.95818	.95907	.95994	.96080	.96164	.96246	.96327
1.8	.96407	.96485	.96562	.96638	.96712	.96784	.96856	.96926	.96995	.97062
1.9	.97128	.97193	.97257	.97320	.97381	.97441	.97500	.97558	.97615	.97670
2.0	.97725	.97778	.97831	.97882	.97932	.97982	.98030	.98077	.98124	.98169
2.1	.98214	.98257	.98300	.98341	.98382	.98422	.98461	.98500	.98537	.98574
2.2	.98610	.98645	.98679	.98713	.98745	.98778	.98809	.98840	.98870	.98899
2.3	.98928	.98956	.98983	.99010	.99036	.99061	.99086	.99111	.99134	.99158
2.4	.99180	.99202	.99224	.99245	.99266	.99286	.99305	.99324	.99343	.99361
2.5	.99379	.99396	.99413	.99430	.99446	.99461	.99477	.99492	.99506	.99520
2.6	.99534	.99547	.99560	.99573	.99585	.99598	.99609	.99621	.99632	.99643
2.7	.99653	.99664	.99674	.99683	.99693	.99702	.99711	.99720	.99728	.99736
2.8	.99744	.99752	.99760	.99767	.99774	.99781	.99788	.99795	.99801	.99807
2.9	.99813	.99819	.99825	.99831	.99836	.99841	.99846	.99851	.99856	.99861
3.0	.99865	.99869	.99874	.99878	.99882	.99886	.99889	.99893	.99896	.99900
3.1	.99903	.99906	.99910	.99913	.99916	.99918	.99921	.99924	.99926	.99929
3.2	.99931	.99934	.99936	.99938	.99940	.99942	.99944	.99946	.99948	.99950
3.3	.99952	.99953	.99955	.99957	.99958	.99960	.99961	.99962	.99964	.99965
3.4	.99966	.99968	.99969	.99970	.99971	.99972	.99973	.99974	.99975	.99976
3.5	.99977	.99978	.99978	.99979	.99980	.99981	.99981	.99982	.99983	.99983
3.6	.99984	.99985	.99985	.99986	.99986	.99987	.99987	.99988	.99988	.99989
3.7	.99989	.99990	.99990	.99990	.99991	.99991	.99992	.99992	.99992	.99992
3.8	.99993	.99993	.99993	.99994	.99994	.99994	.99994	.99995	.99995	.99995
3.9	.99995	.99995	.99996	.99996	.99996	.99996	.99996	.99996	.99997	.99997

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.9	.00005	.00005	.00004	.00004	.00004	.00004	.00004	.00004	.00003	.00003
-3.8	.00007	.00007	.00007	.00006	.00006	.00006	.00006	.00005	.00005	.00005
-3.7	.00011	.00010	.00010	.00010	.00009	.00009	.00008	.00008	.00008	.00008
-3.6	.00016	.00015	.00015	.00014	.00014	.00013	.00013	.00012	.00012	.00011
-3.5	.00023	.00022	.00022	.00021	.00020	.00019	.00019	.00018	.00017	.00017
-3.4	.00034	.00032	.00031	.00030	.00029	.00028	.00027	.00026	.00025	.00024
-3.3	.00048	.00047	.00045	.00043	.00042	.00040	.00039	.00038	.00036	.00035
-3.2	.00069	.00066	.00064	.00062	.00060	.00058	.00056	.00054	.00052	.00050
-3.1	.00097	.00094	.00090	.00087	.00084	.00082	.00079	.00076	.00074	.00071
-3.0	.00135	.00131	.00126	.00122	.00118	.00114	.00111	.00107	.00104	.00100
-2.9	.00187	.00181	.00175	.00169	.00164	.00159	.00154	.00149	.00144	.00139
-2.8	.00256	.00248	.00240	.00233	.00226	.00219	.00212	.00205	.00199	.00193
-2.7	.00347	.00336	.00326	.00317	.00307	.00298	.00289	.00280	.00272	.00264
-2.6	.00466	.00453	.00440	.00427	.00415	.00402	.00391	.00379	.00368	.00357
-2.5	.00621	.00604	.00587	.00570	.00554	.00539	.00523	.00508	.00494	.00480
-2.4	.00820	.00798	.00776	.00755	.00734	.00714	.00695	.00676	.00657	.00639
-2.3	.01072	.01044	.01017	.00990	.00964	.00939	.00914	.00889	.00866	.00842
-2.2	.01390	.01355	.01321	.01287	.01255	.01222	.01191	.01160	.01130	.01101
-2.1	.01786	.01743	.01700	.01659	.01618	.01578	.01539	.01500	.01463	.01426
-2.0	.02275	.02222	.02169	.02118	.02068	.02018	.01970	.01923	.01876	.01831
-1.9	.02872	.02807	.02743	.02680	.02619	.02559	.02500	.02442	.02385	.02330
-1.8	.03593	.03515	.03438	.03362	.03288	.03216	.03144	.03074	.03005	.02938
-1.7	.04457	.04363	.04272	.04182	.04093	.04006	.03920	.03836	.03754	.03673
-1.6	.05480	.05370	.05262	.05155	.05050	.04947	.04846	.04746	.04648	.04551
-1.5	.06681	.06552	.06426	.06301	.06178	.06057	.05938	.05821	.05705	.05592
-1.4	.08076	.07927	.07780	.07636	.07493	.07353	.07215	.07078	.06944	.06811
-1.3	.09680	.09510	.09342	.09176	.09012	.08851	.08691	.08534	.08379	.08226
-1.2	.11507	.11314	.11123	.10935	.10749	.10565	.10383	.10204	.10027	.09853
-1.1	.13567	.13350	.13136	.12924	.12714	.12507	.12302	.12100	.11900	.11702
-1.0	.15866	.15625	.15386	.15151	.14917	.14686	.14457	.14231	.14007	.13786
-0.9	.18406	.18141	.17879	.17619	.17361	.17106	.16853	.16602	.16354	.16109
-0.8	.21186	.20897	.20611	.20327	.20045	.19766	.19489	.19215	.18943	.18673
-0.7	.24196	.23885	.23576	.23270	.22965	.22663	.22363	.22065	.21770	.21476
-0.6	.27425	.27093	.26763	.26435	.26109	.25785	.25463	.25143	.24825	.24510
-0.5	.30854	.30503	.30153	.29806	.29460	.29116	.28774	.28434	.28096	.27760
-0.4	.34458	.34090	.33724	.33360	.32997	.32636	.32276	.31918	.31561	.31207
-0.3	.38209	.37828	.37448	.37070	.36693	.36317	.35942	.35569	.35197	.34827
-0.2	.42074	.41683	.41294	.40905	.40517	.40129	.39743	.39358	.38974	.38591
-0.1	.46017	.45620	.45224	.44828	.44433	.44038	.43644	.43251	.42858	.42465
-0.0	.50000	.49601	.49202	.48803	.48405	.48006	.47608	.47210	.46812	.46414

End of paper