

IQRA NATIONAL UNIVERSITY OF IT AND EMERGING SCIENCES PESHAWAR



SUBJECT NAME: RISK AND DISASTER MANAGEMENT

TOPIC NAME: FINAL TERM PAPER

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Question 2.

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

Answer: Definition of 'Cost Benefit Analysis

Definition

A procedure for estimating all costs involved and possible profits to be derived from a business opportunity or proposal

Description: It takes into account both quantitative and qualitative factors for analysis of the value for money for a particular project or investment opportunity. Benefits to costs ratio and other indicators are used to conduct such analyses

The objective is to ascertain the soundness of any investment opportunity and provide a basis for making comparisons with other such proposals. All positives and negatives of the project are first quantified in monetary terms and then adjusted for their time-value to obtain correct estimates for conduct of cost-benefit analysis. Most economists also account for opportunity costs of the investment in the project to get the costs involved.

Cost-benefit analysis (CBA) is a technique used to compare the total costs of a programmed /project with its benefits, using a common metric (most commonly monetary units). This enables the calculation of the net cost or benefit associated with the programmed.

As a technique, it is used most often at the start of a programmed or project when different options or courses of action are being appraised and compared, as an option for choosing the best approach. It can also be used, however, to evaluate the overall impact of a programmed in quantifiable and monetized terms.

EXAMPLE

Good Health' is a startup hospital that has been in operation for close to two years now. The manager, however, plans to expand its operations in the third working year. The hospital management decides to run a cost-benefit analysis to determine whether or not the decision is beneficial or feasible.

The management analyzes a time horizon of one year and estimates that the total revenue collected will amount to \$200,000. However, this will be possible if 2 more physicians are hired and more hospital equipment worth \$100,000 bought. The salary of the physicians will be \$ 70,000, and the cost of hiring and training will be \$5,000.

Therefore, when calculating the CBA, we first get the total costs by adding all the costs.

In this case, it will be salaries + equipment+ cost of hiring and training

$$= 100,000 + 70,000 + 5,000$$

$$= \$ 175,000$$

Additionally, there is the cost of expanding consultation rooms which stands at \$10,000.

On the other hand, the benefits that will come after the implementation of the plan will be \$200,000. Therefore, using the benefit-cost ration, we get $175,000/200,000 = 0.875$. Given that the value is positive and that the total benefits are greater than the costs, the CBA indicates that the decision to expand the hospital's operation is feasible and beneficial to the company.

Question No. 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

Answer: Risk Register

A Risk Register is a tool for documenting risks, and actions to manage each risk. The Risk Register is essential to the successful management of risk. As risks are identified they are logged on the register and actions are taken to respond to the risk. OR

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

There are many different tools that can act as risk registers from comprehensive software suites to simple spreadsheets. The effectiveness of these tools depends on their implementation and the organization's culture.

10) Special measurement for disposal of waste soil etc.

<u>ID</u>	<u>Date raised</u>	<u>Risk description</u>	<u>Risk</u>	<u>With out controls</u>	<u>Controls</u>	<u>Residual risk</u>	<u>Action</u>				
			<u>H</u>	<u>M</u>	<u>L</u>	<u>Cost impact</u>	<u>Time impact</u>	<u>Other</u>			
<u>[No.]</u>	<u>[Date mm/dd/yyyy]</u>	<u>[There is a risk]</u>	<u>[tick or]</u>	<u>[tick or]</u>	<u>[tick or]</u>	<u>[The cost if the]</u>	<u>[The time imp]</u>	<u>[Any thing else]</u>	<u>[Actions that will be taken to]</u>	<u>[Any risks that remain]</u>	<u>[Document any]</u>

		<u>that.... If this happen s.....]</u>	<u>ente r Y]</u>	<u>enter Y]</u>	<u>enter Y]</u>	<u>risk occurs e.g. x man days]</u>	<u>act if the risk occu rs e.g. x days dela y]</u>	<u>that woul d happ en e.g. lost repu tatio n]</u>	<u>reduce the impact of the risk]</u>	<u>once the controls are in place]</u>	<u>actions to be taken to implem ent control s or manag e residua l risks]</u>
R1	01/01/2016	Design issue		Y		30 days			Technical staff is deputed for effective coordination between field staff and design staff of consultants	Construction activities will remain stop if design issues may not solved	Start the selection of the project which is ready for construction
R2	05/1/2016	Utilities shifting		Y		30 days			PRIP staff will coordinate between concerned departments for utilities shifting at the earliest	Construction activities will remain stop I till the shifting of utilities	Start the section of project which requires no shifting utilities
R3	5/5/2016	Vehicle activities due to construction activities			Y				Contractor will be responsible for maintaining traffic management plan and all safety measures		

R4	1/8/2016	Heavy noise and dust to construction activities							Contractor will be responsible for submitting environmental mitigation plan and will closely follow it		

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 $\mu = 60000$ PKR and the population standard deviation $\sigma = 15000$ 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)

Answer:

Normal Probability distribution

The normal distribution is a probability function that describes how the values of a variable are distributed. It is a symmetric distribution where most of the observations cluster around the central peak and the probabilities for values further away from the mean taper off equally in both directions.

Answer:

Given data:

Mean $\mu = 60000$ PKR-----(1)

Standard deviation $\sigma = 15000$ PKR-----(2)

$x \leq 45,000$ ----- (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)?

SOLUTION:

The natural log of normally distributed with the population mean $\mu = 60000$ PKR is 11.002 and standard deviation $\sigma = 15000$ PKR is 9.6158. What is the probability of a randomly selected employees earning less than 45000 PKR annually. This is a tougher one. First let find out what the natural log of 15,000. Its 9.6158. Next we need the standard deviation of log income. Its 9.6158.

Now we can form a z score.

$$Z = \frac{(x-u)}{\sigma} \text{-----(1)}$$

Put value in equ 1

$$Z = \frac{(10.714 - 11.002)}{9.615}$$

$$= -.03$$

What is $P(Z = -.03)$

From table 2 we have (.51197)



Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5039	.5079	.5119	.5159	.5199	.5239	.5279	.5318	.5358
	0	9	8	7	5	4	2	0	8	6
0.1	.5398	.5438	.5477	.5517	.5556	.5596	.5635	.5674	.5714	.5753
	3	0	6	2	7	2	6	9	2	5
0.2	.5792	.5831	.5870	.5909	.5948	.5987	.6025	.6064	.6102	.6140
	6	7	6	5	3	1	7	2	6	9
0.3	.6179	.6217	.6255	.6293	.6330	.6368	.6405	.6443	.6480	.6517
	1	2	2	0	7	3	8	1	3	3
0.4	.6554	.6591	.6627	.6664	.6700	.6736	.6772	.6808	.6843	.6879
	2	0	6	0	3	4	4	2	9	3
0.5	.6914	.6949	.6984	.7019	.7054	.7088	.7122	.7156	.7190	.7224
	6	7	7	4	0	4	6	6	4	0
0.6	.7257	.7290	.7323	.7356	.7389	.7421	.7453	.7485	.7517	.7549
	5	7	7	5	1	5	7	7	5	0
0.7	.7580	.7611	.7642	.7673	.7703	.7733	.7763	.7793	.7823	.7852
	4	5	4	0	5	7	7	5	0	4
0.8	.7881	.7910	.7938	.7967	.7995	.8023	.8051	.8078	.8105	.8132
	4	3	9	3	5	4	1	5	7	7
0.9	.8159	.8185	.8212	.8238	.8263	.8289	.8314	.8339	.8364	.8389
	4	9	1	1	9	4	7	8	6	1
1.0	.8413	.8437	.8461	.8484	.8508	.8531	.8554	.8576	.8599	.8621
	4	5	4	9	3	4	3	9	3	4
1.1	.8643	.8665	.8686	.8707	.8728	.8749	.8769	.8790	.8810	.8829
	3	0	4	6	6	3	8	0	0	8
1.2	.8849	.8868	.8887	.8906	.8925	.8943	.8961	.8979	.8997	.9014
	3	6	7	5	1	5	7	6	3	7

1.3	.9032 0	.9049 0	.9065 8	.9082 4	.9098 8	.9114 9	.9130 9	.9146 6	.9162 1	.9177 4
1.4	.9192 4	.9207 3	.9222 0	.9236 4	.9250 7	.9264 7	.9278 5	.9292 2	.9305 6	.9318 9
1.5	.9331 9	.9344 8	.9357 4	.9369 9	.9382 2	.9394 3	.9406 2	.9417 9	.9429 5	.9440 8
1.6	.9452 0	.9463 0	.9473 8	.9484 5	.9495 0	.9505 3	.9515 4	.9525 4	.9535 2	.9544 9
1.7	.9554 3	.9563 7	.9572 8	.9581 8	.9590 7	.9599 4	.9608 0	.9616 4	.9624 6	.9632 7
1.8	.9640 7	.9648 5	.9656 2	.9663 8	.9671 2	.9678 4	.9685 6	.9692 6	.9699 5	.9706 2
1.9	.9712 8	.9719 3	.9725 7	.9732 0	.9738 1	.9744 1	.9750 0	.9755 8	.9761 5	.9767 0
2.0	.9772 5	.9777 8	.9783 1	.9788 2	.9793 2	.9798 2	.9803 0	.9807 7	.9812 4	.9816 9
2.1	.9821 4	.9825 7	.9830 0	.9834 1	.9838 2	.9842 2	.9846 1	.9850 0	.9853 7	.9857 4
2.2	.9861 0	.9864 5	.9867 9	.9871 3	.9874 5	.9877 8	.9880 9	.9884 0	.9887 0	.9889 9
2.3	.9892 8	.9895 6	.9898 3	.9901 0	.9903 6	.9906 1	.9908 6	.9911 1	.9913 4	.9915 8
2.4	.9918 0	.9920 2	.9922 4	.9924 5	.9926 6	.9928 6	.9930 5	.9932 4	.9934 3	.9936 1
2.5	.9937 9	.9939 6	.9941 3	.9943 0	.9944 6	.9946 1	.9947 7	.9949 2	.9950 6	.9952 0
2.6	.9953 4	.9954 7	.9956 0	.9957 3	.9958 5	.9959 8	.9960 9	.9962 1	.9963 2	.9964 3
2.7	.9965 3	.9966 4	.9967 4	.9968 3	.9969 3	.9970 2	.9971 1	.9972 0	.9972 8	.9973 6
2.8	.9974 4	.9975 2	.9976 0	.9976 7	.9977 4	.9978 1	.9978 8	.9979 5	.9980 1	.9980 7
2.9	.9981 3	.9981 9	.9982 5	.9983 1	.9983 6	.9984 1	.9984 6	.9985 1	.9985 6	.9986 1
3.0	.9986 5	.9986 9	.9987 4	.9987 8	.9988 2	.9988 6	.9988 9	.9989 3	.9989 6	.9990 0
3.1	.9990 3	.9990 6	.9991 0	.9991 3	.9991 6	.9991 8	.9992 1	.9992 4	.9992 6	.9992 9
3.2	.9993 1	.9993 4	.9993 6	.9993 8	.9994 0	.9994 2	.9994 4	.9994 6	.9994 8	.9995 0
3.3	.9995 2	.9995 3	.9995 5	.9995 7	.9995 8	.9996 0	.9996 1	.9996 2	.9996 4	.9996 5
3.4	.9996 6	.9996 8	.9996 9	.9997 0	.9997 1	.9997 2	.9997 3	.9997 4	.9997 5	.9997 6
3.5	.9997	.9997	.9997	.9997	.9998	.9998	.9998	.9998	.9998	.9998

	7	8	8	9	0	1	1	2	3	3
3.6	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998
	4	5	5	6	6	7	7	8	8	9
3.7	.9998	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999
	9	0	0	0	1	1	2	2	2	2
3.8	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999
	3	3	3	4	4	4	4	5	5	5
3.9	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999
	5	5	6	6	6	6	6	6	7	7

THIS IS JUST

$$1-P(Z < .03) = 1-F(.03) = 1 - .51197 = .48803$$

