

Risk and Disaster Management in Construction

Paper time duration: 6 hours

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Question 1.

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:

“The record of information about identified risk is called risk log/register.”

A risk register is a document used as a risk management tool and to fulfill regulatory agreement acting as a source for all risks identified and includes additional information about each risk, e.g. nature of the risk, reference and owner, justification measures. It can be displayed as a scatterplot or as a table. The qualitative portion is when we began prioritizing the risk based on probability and impact to the risk and the quantitative analysis is to analyzing the effect of this risks would have potentially on the project or adjective of the project.

Risk Register Table:

Risk Register project NAME = Common project Risk									
ID	date assess	Risk description	Likely hood of risk occuring	impact of risk	Severity	Time impact	Cost impact	owner	mitigation action
1	31/1/20	project purpos is Not well defined	medium	high	high	Time over run	NO	project sponsor	To ensure That purpose is defined in project charter
2	7/1/20	project Design is incomplet	Low	high	high	Time over run	Cost overrun	psponsor	define scope and design in detail
3	13/1/2020	project Schadule is NOT complet	Low	medium	medium	overrun	NO	PM	The pm To understained the plane and reduced missTask
4	16/1/2020	NO Controle on Staff	medium	medium	medium	overrun	NO	PM	The pm have To complet Command on staff
5	21/1/20	Contractor delay	Medium	high	high	Over run	over run	PM	To include late penalty on cont ractor

Question 2.

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

ANS NO 2

A cost-benefit analysis (CBA) is a systematic process in which decisions relating to proposals are analysed to determine whether the benefits outweigh the costs, and by what margin. A CBA serves as a basis for comparing alternatives proposals and making informed decisions about whether to proceed.

In terms of proposed developments, by evaluating all the potential costs, and comparing these with possible revenues and other benefits that might derive from a new building, a developer is able to assess whether the proposal is financially worthwhile or whether an alternative is needed.

The first step typically involves listing, in as much detail as possible, all the costs and benefits that are associated with the project. Costs could include direct and indirect costs, hard and soft costs, opportunity costs and the cost of potential risks. Benefits could include direct and indirect benefits, and intangible benefits (e.g. increased productivity and cost savings). It is better to be conservative with the benefits as an over-estimation (or under-estimation of the costs) will result in an inaccurate CBA.

Once the list has been made, a common unit of monetary measurement should be applied to all the items before quantitatively comparing them to ascertain whether the benefits outweigh the costs. If they do not, then a review should be undertaken to determine how the benefits might be increased and/or the costs decreased to try and make the project financially viable.

If, once this is done, the benefits are still outweighed by the costs, it may be necessary to reassess whether the project should proceed as planned. If the benefits outweigh the costs then the project can be taken forward to the next stage of planning.

Examples:

Within the time frame of one year, it is expected that if the company hires four employees for the expansion then the revenue of the company will increase by 50 % i.e., the revenue benefit will be around \$ 250,000.

Along with this due to the new hiring company value of the business will increase which would result in an additional revenue of \$ 30,000.

The salary of the new employees is estimated to be \$ 160,000.

The additional cost of hiring is estimated to be \$ 15,000.

The cost of additional hardware and software required will come at around \$ 25,000

Analyze the expansion using Cost-benefit analysis.

Solution

Total benefit from the project = Increase in revenue from expansion

Total benefit from the project = \$ 250,000 + \$ 30,000 = \$ 280,000

Total Cost from expansion = Salary of new employees + Cost of hiring + Cost of additional hardware and software

Total Cost from expansion = \$ 160,000 + \$15,000 + \$25,000

Total Cost from expansion = \$ 200,000

= \$280,000 / \$ 200,000

Benefit-Cost Ratio = 1.40

Question 3.

(a) What is Normal Probability distribution?

Answer:

The normal probability distribution was discovered by Abraham De Moivre in 1733 as a way of approximating the binomial probability distribution when the number of trials in a given experiment is very large. In 1774, Laplace studied the mathematical properties of the normal probability distribution. Through a historical error, the discovery of the normal distribution was attributed to Gauss who first referred to it in a paper in 1809.

The normal distribution (also called the Gaussian distribution) is widely used due to its simplicity and wide applicability. This distribution is the basis for many statistical methods.

A random variable with a Gaussian distribution is said to be normally distributed and is called a normal deviate.

Normal distributions are important in statistics and are often used in the natural and social sciences to represent real-valued random variables whose distributions are not known.

(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)

Given Data

$x=45000$ PKR(employee earning)

$\mu = 60000$ PKR (employees normally distributed with population)

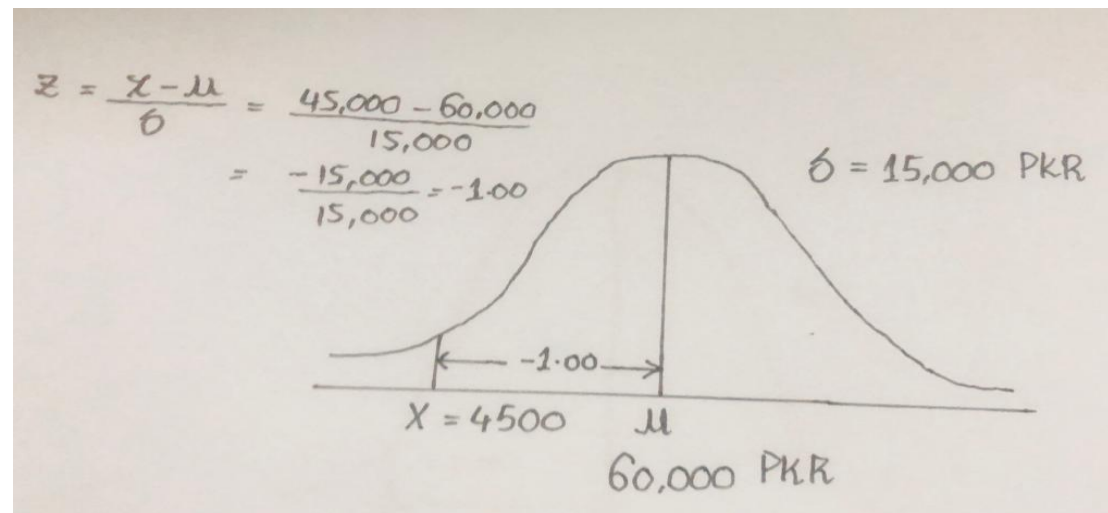
$\sigma = 15000$ PKR (population standard deviation)

$$Z = \frac{X - \mu}{\sigma}$$

$$Z = \frac{45000 - 60000}{15000}$$

$$Z = -1$$

We found 2 scores in the table 0.15866 which means 15.866% of people will earn less than 45000 PKR



THE END

