IQRA NATIONAL UNIVERSITY PESHAWAR

DEPARTMENT OF CIVIL ENGINEERING

M.S TRANSPORTATION
Final Assessment

Submitted To:

Instructor:

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Course:

Risk & Disaster Management in Construction

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M.S (T.E)

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Q:1:

Answer:

Risk log/Register:

The result of interviews and reviews of the programme and budgent should form the basis for a Risk log or Risk Register that will list all the identified risks. It will also contain assessment of their potential impact on the budget, programme and quility/Performance aspects of the project.

To aid manipulation the risk log can be entered into a data base System to facilitate recording, storing

and storing under various headings. These may include inter-alia

- → Project Phase
- → The owner (holder) of the risk
- → Location
- → Other user-defined categories, for example, cross references to the project programme and budget.

The risk management of any project can be summarized or one can say main categories of risk are as follow.

1) The Project constitution & organisational structure including the number of parties and the contractual, or other, relationships between them.

2. The project ~~constitution~~ management team including experience and availability of key Personnel (In house, Consultants and Contractors).
3. Management authority and approval required for work to proceed.
4. Site spartic procedure: Permits/contract Site plane counter signature from client and mutation etc.
5. Ground condations, including special factor such as extent of contaminated ground.
6. Requirment of diversion if any
7. Risk arising from the contract/ procurment stradegy including residual risks if the Sub Contractor does not perform.

8. Risk arising from interfaces.
9. Uncertainties & assumptions in the project scope/design.
10. Temporary work for Construction/dismantling
11. Potential for Cost growth due
    - → Design development
    - → Increase extent or identified risks such as contamination
    - → delay to approval
    - → delay due to contractor at fault.
    - → Unforseen circumstances.
12. Contractor speciality in the given job.
13. Delivery periods of material and equipment.
14. Preventive measure to protect Staff. (Safty)
15. Special measurment for disposal of Waste, soil etc.

In view of the above practical example of On Going Scheme i.e Establishment of Model School in Hangu KP. I will briefly explain below.

1) **Name of Project:**

ADP No. 186/12047 (2019-20)
Establishment of Model School in Hangu Khyber Pakhtunkhwa.

2 **Location:**

District Hangu.

3) **Authorities responsible for:**

Sponsor:

i) Elementry & Secondry Education

ii) Execution: C&W Department

iii) Operation & Maintance: Through C&W depth fuded by education

4) **Total Block Allocation**

~~Rs 277470(M)~~

Rs. 127.997 (M).

5. **Detail of Works:**

The Civil Work include

1) Repair & Renovation works
   a) Main School Building
   b) Student Hostel
   c) Bachelor Hostel
   d) Dispensary Building
   e) Masjid.
2) Construction of New class Rooms
3) Cafeteria Building
4) Guard cum Watch Tower (02 Nos).
5) Watch Tower (06 Nos)
6) Boundry Wall
7) Footh Paths
8) Roads
9) Horticulture

The supply of material and equipment is the responsibility of contractor, who will execute the civil work on the project.

5. Date of Estimation Cost:

July, 2017

6. Year Wise / Components Wise Physical Planning.

Item of work	F. Year-I 2017-18	F. Year-II 2018-19	Total
Building / infrastructure	50 %	50%	100 %
Consultant charges	70 %	30 %	100 %
Escalation	0.00 %	100 %	100 %

7. Year Wise Financial planning

Item Work	2017-18 F. year-I	2018-19 F. year-II	Total (million)
Building / Infrastructure	60.873	60.873	121.747
Consultant Charges	2.975	1.275	4.250
Escalation	0.00	2.00	2.00
Total	63.850	64.148	127.997

8. Annual operating Maintenance cost after Completion of project

As per Govt Yardstick and need @ 2.00% of the project cost

The above scheme was submitted to education department for approval. After various meeting/ discussions the scheme was approved in November 2017.

After issuing of Administrative approval and other codal formalities the scheme was awarded to lowest successful bidders and date commenced for execution of works May 2018. After execution the client department required for Health assessment of old Building from U.E.T Peshawar for future vertical

Extension.

After UET report said on various tests to say that Thus building is not feasible for vertical extension and proposed that Renovation of building for main Building ~~Dispr~~, Dispensary Block & Masjid to be dismantle and Re-construct.

~~After~~ The said report shared with client department i.e education & directed C & W to for Submission of Revised Estimate & Meanwhile the work on Boundry Wall Guard Room & New Class Rooms executed by contractor.

Conculsion:

In view of the Risk log/Register theory and On Going project brief it is concluded that scheme was design/Approved for Two year completion period but due to Risk log/Register take encounter by client department as well Consultant the project ~~became~~ can't complete in time which not only loss to people of area but also loss to Govt exchequne in shape of high rise item rate and escalation.

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Furthermore the cost now increased from Rs. 127.997 (M) to Rs. 279.470 (M) which is 118.34 % above over approved cost and further its completion is proposed June 2021 which is not possible for completion as @ Revised Estimate not get discussed/approved.

The same can also be explain through Risk log/Register table which attached on page No. 12.

Table For Establishment Of Model School Hangu Khyber Pakhtunkhwa

	Date raised	Risk description	Risk			Without controls			Controls	Residual risk	Action
			H	M	L	Cost impact	Time impact	Other			
186/12041	01-05-18	If the scheme not fully funded as per financial year phasing (given in page No 07) or any changes in design/ change in scope of work.	Y	.....	.....	59% increase due to revision in the above on going project being change in scope of work	6.5% per year of cost effect due to time extension in the shape of Escalation as per PEC rules & guide lines and clause 5 / clause 70 as per old and new contract agreement respectively between C&W department and contractor	Natural Disaster	Timely provision of allocated funds and well managem ent of actives at site	safty	Proper flow chart of daily activity/ work plan to be got from contractor and strictly implemented through consultant on daily basis and Executing Agency will also follow/ checked both the contractor & consultant activities for timely completion of the project.

Q No. 2:

Answer:

Cost Benefit Analysis:

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

In most construction projects, factors other than money must be taken into account.

If a Dam is built it might drown a historical monument reduce the likelihood of loss of life due to flooding, increase the growth of new industry because of the reduced Dam flooding risk, and so on.

Cost benefit analysis provides a logical framework for evaluating alternative factors that may be highly conjectural in nature. If the analysis is confined to purely financial considerations, it fails to recognise the overall social objectives, to produce the greatest possible benefit for a given cost.

At its heart lies the recognition that a factor should not be ignored because it is difficult or even impossible to quantify it in monetary term. Methods are available to express, for instance, the value

of ~~road~~ recreational facilities and although it may not be possible to put a figure on the value of human life it is surely not something we can afford to ignore.

The essential cost-benefit analysis is to take into account all the factors, which influence either the benefits analysis or the cost of the project. ~~from~~ Imagination must be used to assign monetary values to what at first sight might appear to be intangibles. It should be mentioned that monetary value are highly subjective and must be evaluated with care. Even faults to which no monetary value can be assigned must be

taken into consideration. the analysis should be applied to projects of roughly similar size and patterns of cash flow. Those with the higher cost-benefit ratios will be preferred. the max. net benefit ratio is marginally greather than the next most favoured project. the scope of secondry benefits to be taken into account frequently depends on the viewpoint of the analyst.

It is obvious that, in comparing alternatives, each project must be designed within itself at the min. cost that will allow the fulfilment of objectives including the appropriate quality, level of performance and provision of safety.

Continuation of Q No. 2:

Example:

"Good Health" is a startup Hospital that has been in operation for close to two years now. The Manager, however, plan to expand its operations in the third work years. The Hospital Management decid to run a cost-benefit analysis to determine whether or not the decision is beneficial/feasible.

The Managment analyzes a time horizon of one year and estimate that total revenu collected will amounting to Rs. 1500000/- However this will be possible if two more physicians are hired and more Hospital equipment with Rs. 750000/- bought.

The salary of the Physicians will be Rs. 300000/- and cost of hiring and training will be Rs. 50000/-

Therafter, when calculating the CBA, we first get the total cost by adding all the expenses costs.

~~Therefore, when calculating the CBA~~

In case, it will

Salaries + Equipment + Cost of Hiring/Training

= 300000 + 750000 + 50000

= Rs. 11,0000/-

Additionally: Cost of Consultation rooms - Rs 80000/-

On the other hand, the benefit that will come after implementation of the plan will Rs. 1500000/-

Therefore using the cost benefit Cost ratio

1100000/1500000 = 0.733

Given that the value is positive and the total benefit are greater than expenses,

The CBA indicates that the decision to expand the Hospital's operation is feasible and beneficial to the company.

Q No. 3:

Answer:

(a) Normal Probability Distribution:

It is the most important distribution in statistics because by this one can get very comfortable with dealing with the tables that describe probabilities associated with each distributions.

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

where μ = mean

σ^2 = variance

π = 3.1416 = ratio of Circumference to diameter

e = 2.71828

Important thing about the normal distribution

1) There are infinitely many variations of the normal distribution differentiated by μ and σ^2

2) The highest point of normal is at the mean which is also the median

3) The normal distribution is symmetric. This implies that.

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

(b) Suppose that the data concerning the first year salaries of employee is normally distributed with population mean $\mu = 60000$ PKR and the population standard deviation $\sigma = 15000$ PKR.
Find the probabilities of a

randomly selected employee earing less then 45000 PKR annualy.

Solution:

Given Data:

Mean = μ = 60000 PKR

Standard deviation = σ = 15000 PKR

$x = \leq 45000$

Required:

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

Z-Score From table (2) Given in Q. Page

Qn:

The Natural log of Normally distributed with the population mean = μ = Rs 60000 ₹ is 11.002 Standard deviation = σ = Rs 15000 is 9.615

$$Z = x - \mu / \sigma$$

$$= (10.714 - 11.002)/9.615 = -0.03$$

From Given table.

$$P = 0.51197 \quad (Z = -0.03)$$

$$P - P(Z < 0.08) = 1 - F(0.3)$$

$$= 1 - 0.51197 = 0.488$$