

Risk and Disaster Management in Construction

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Question 1.

What is the difference between hazards and threats?

Provide examples

Answer:

hazard

A hazard in safety management is a condition that poses danger to your organization, and can lead to an accident, incident, or other mishap if not mitigated.

General Threat

One type of threat is a **general threat**, which refers to the amount of danger in a given circumstance. It is used in the context of "threat level," such as:

- "There is no inherent threat in operations right now"; or
- "Given our current ERP, how much threat does a fire emergency pose?";
or

- "Terrorism is a [specific] threat that poses great [general] threat to aviation."

Difference between Hazard and Threat

Sometimes, hazard and threat might be used interchangeably. Consider the example of a flock of birds flying close to an aircraft. This flock is both a hazard and a threat.

However, because the concept of a threat is vaguer than the concept of a hazard, a threat is not always a hazard. Consider the example of:

- migrating birds, which are a hazardous source but not an actual hazard, or
- fatigue, which is a contributing factor

Table 1 Examples of Hazards and Their Effects		
Workplace Hazard	Example of Hazard	Example of Harm Caused
Thing	Knife	Cut
Substance	Benzene	Leukemia
Material	Mycobacterium tuberculosis	Tuberculosis
Source of Energy	Electricity	Shock, electrocution
Condition	Wet floor	Slips, falls
Process	Welding	Metal fume fever
Practice	Hard rock mining	Silicosis
Behaviour	Bullying	Anxiety, fear, depression



Question 2.

Define risk and provide a classification of risk based on its sources. Provide an example for each risk source

Answer:

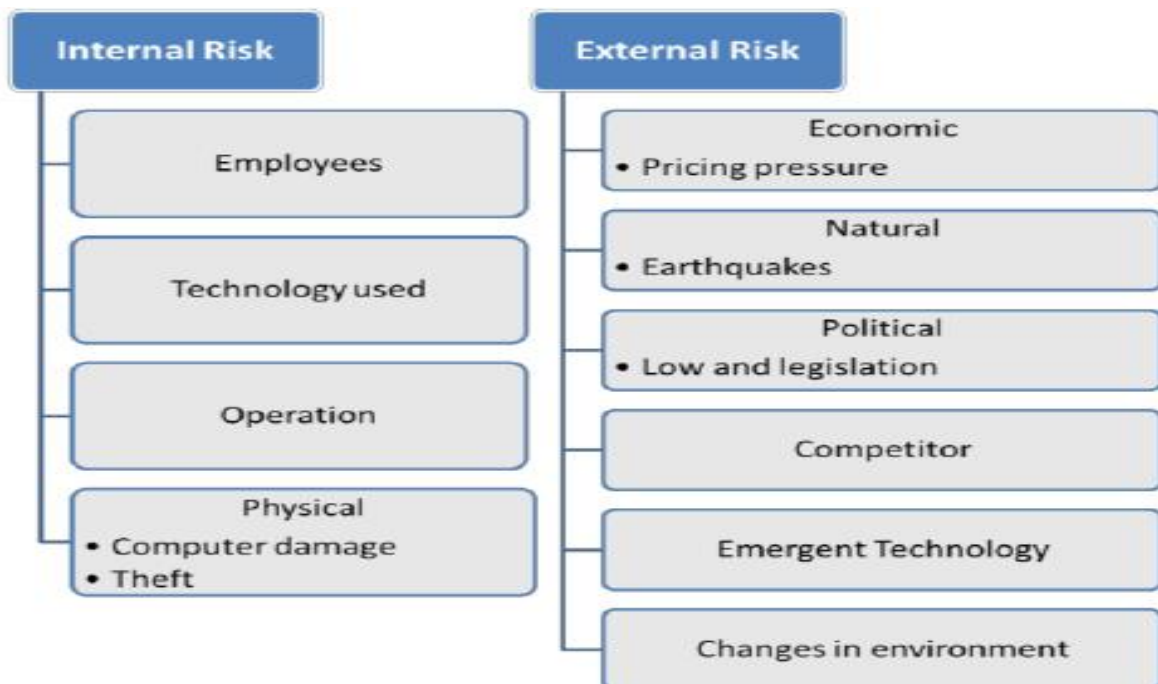
Risk is defined in financial terms as the chance that an outcome or investment's actual gains will differ from an expected outcome or return. Risk includes the possibility of losing some or all of an original investment.

Quantifiably, risk is usually assessed by considering historical behaviors and outcomes. In finance, standard deviation is a common metric associated with risk. Standard deviation provides a measure of the volatility of asset prices in comparison to their historical averages in a given time frame.

Overall, it is possible and prudent to manage investing risks by understanding the basics of risk and how it is measured. Learning the risks that can apply to different scenarios and some of the ways to manage them holistically will help all types of investors and business managers to avoid unnecessary and costly losses.

classification of risk based on its sources

Identifying risk sources provides a basis for systematically examining changing situations over time to uncover circumstances that affect the ability of the project to meet its objectives. Risk sources are both internal and external to the project. As the project progresses, additional sources of risk can be identified. Establishing categories for risks provides a mechanism for collecting and organizing risks as well as ensuring appropriate scrutiny and management attention to risks that can have serious consequences on meeting project objectives.



Example Work Products

1. Risk source lists (external and internal)
2. Risk categories list

Subpractices

1. Determine risk sources.

Risk sources are fundamental drivers that cause risks in a project or organization. There are many sources of risks, both internal and external to a project. Risk sources identify where risks can originate.

Typical internal and external risk sources include the following:

- Uncertain requirements
- Unprecedented efforts (i.e., estimates unavailable)
- Infeasible design
- Competing quality attribute requirements that affect solution selection and design
- Unavailable technology
- Unrealistic schedule estimates or allocation
- Inadequate staffing and skills
- Cost or funding issues
- Uncertain or inadequate subcontractor capability
- Uncertain or inadequate supplier capability
- Inadequate communication with actual or potential customers or with their representatives
- Disruptions to the continuity of operations
- Regulatory constraints (e.g. security, safety, environment)

Many of these sources of risk are accepted without adequately planning for them. Early identification of both internal and external sources of risk can lead to early identification of risks. Risk mitigation plans can then be implemented early in the project to preclude occurrence of risks or reduce consequences of their occurrence.

2. Determine risk categories.

Risk categories are "bins" used for collecting and organizing risks. Identifying risk categories aids the future consolidation of activities in risk mitigation plans.

The following factors can be considered when determining risk categories:

- Phases of the project's lifecycle model (e.g., requirements, design, manufacturing, test and evaluation, delivery, disposal)
- Types of processes used
- Types of products used
- Project management risks (e.g., contract risks, budget risks, schedule risks, resource risks)
- Technical performance risks (e.g., quality attribute related risks, supportability risks)

A risk taxonomy can be used to provide a framework for determining risk sources and categories.

Question 3.

How would you assess the performance of a transportation system of a city?

Answer

Transportation system

Peshawar is the capital city of the province Khyber Pakhtunkhwa (KPK) and it is one of the major administrative and economic hub in the area. With a population of over 2 million, Peshawar is like a large valley situated between the eastern edge of the Iranian plateau and the Indus Valley (Reference). Bound by the famous Khyber Pass on its western end, Peshawar is renowned as the city on the frontier. Its strategic location on the Crossroads of Central

Asia and South Asia has made it one of the most culturally vibrant and vivacious cities in the region.

At national level, Peshawar plays an important role by connecting Pakistan with the neighboring Iran, Afghanistan, parts of central Asia as well as China. Looking at the local level, the supply of the road network doesn't meet the demand and requirements of the users, which is partly the cause behind the continuous disruption of the traffic flow

1) Time table of transportation

As there is no public department for transportation, therefore no time table is available for users. However, the Union Sadar selects specific people on every stand (depot) who are responsible for Frequency. They also don't have any specific time table.

2) Coordination with other transit units

There is no coordination among the buses. Sometime traffic police start checking for making it sure that every bus must run from the Depot under proper number, But it is hard to handle.

3) Longer travel time

Due to unnecessary stops and waiting, it increases the travel time and complexity. This is pushing people to think about own cars and taxis. Again more cars are increasing and multiplying the problems of congestion.

4) Problem with implementation of traffic laws

Traffic signals are meant to be broken, wearing seatbelts is hectic and if someone needs to get somewhere in a hurry, they do not think twice about wreaking havoc by speeding and cutting other cars in order to move ahead. There is no defined speed limit on the roads, and even if there is, there is no enforcement. Same goes with seatbelts, which are provided in every car in order to ensure safety of the driver and passengers and overloading is another problem.

5) Road congestion

Peshawar is increasingly transforming into a city of congestion and traffic related problems due to growing number of vehicles coupled with lack of expansion in the existing road network and ineffective traffic management.

From 1998-2009, the proportion of increase in number of vehicles is 126.4 % while that of road network expansion is only 0.85 %. The greater number of road-blockages and check posts created by the security personnel for security reasons which cause traffic jams in the city. Furthermore, the situation has caused extra fuel consumptions and delays.

6) Lack of existing infrastructure

Current transportation infrastructure is not able to facilitate the user. There is no facility of Bus Stops and due to narrow lanes.

There is always congestion.

7) User information system

There is no provision of time table and stops. And there is no coordination among operators about route or frequency. So the system works without any planning and strategy. And due to lack of information the daily transport users face a lot of problems in terms of delay and comfort.

Question 4

Define security vulnerabilities of a university campus

Answer

Vulnerability:

Weaknesses or gaps in a security program that can be exploited by **threats** to gain unauthorized access to an asset

Physical Vulnerability

The physical vulnerability of an area also depends on its geographic proximity to the source and origin of the disasters e.g. if an area lies near the coast lines, fault lines, unstable hills etc. it makes the area more vulnerable to disasters as

compared to an area that is far away from the origin of the disaster. Physical vulnerability includes the *difficulty in access* to water resources, means of communications, hospitals, police stations, fire brigades, roads, bridges and exits of a building or/an area, in case of disasters. Furthermore, the lack of proper planning and implementation in *construction of residential and commercial buildings* results in buildings that are weaker and vulnerable in earthquakes, floods, landslides and other hazards.

Economic Vulnerability

Economic vulnerability of a community can be assessed by determining how varied its sources of income are, the ease of access and control over means of production (e.g. farmland, livestock, irrigation, capital etc.), adequacy of economic fall back mechanisms and the availability of natural resources in the area.

Social Vulnerability

A socially vulnerable community has weak *family structures*, *lack of leadership* for decision making and conflict resolution, *unequal participation* in decision making, *weak or no community organizations*, and the one in which people are *discriminated* on racial, ethnic, linguistic or religious basis. Other social factors such as *culture*, *tradition*, *religion*, *local norms and values*, *economic standard*, and *political accountability* also play a vital role determining the social vulnerability of a community

Social vulnerability to natural phenomena is greatest among the poorest people in developing countries owing to a lack of information and resources with which to take the appropriate measures. Within this group, children, women and the elderly are considered to be the most vulnerable. To reduce social vulnerability, all of the above factors must be addressed but this requires knowledge and understanding of the local conditions, which can – in most cases – only be provided by local actors.

Attitudinal Vulnerability

A community which has negative attitude towards change and lacks initiative in life resultantly become more and more dependent on external support. They cannot act independently. Their sources of livelihood do not have variety, lacks entrepreneurship and do not possess the concept of collectivism. This brings about disunity and individualism in the society. Thus, they become victims of conflicts, hopelessness and pessimism which reduces their capacity of coping with a disaster.

THE END
THANK YOU SIR