



جامعة الجميع الذكية  
EVERYONE'S SMART UNIVERSITY

## Everyone's Smart University

### Project (Spring 2021)

|              |                         |               |
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## Project Risk Management

## Risk Analysis

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## Introduction

Every project usually tends to have risks attached to it, though the probability of risk occurrence and the consequences resulting from the occurred risk usually is unknown. Risk analysis, therefore, plays a significant role in identifying and managing potential problems that could interfere with the adequate performance of the project (Jensen, & Aven, T. 2018). To carry out proper risk analysis, recognize potential threats, the effects in case they occurred, and the possibility of the threat is essential. Therefore, practical analysis of risk helps inspect a particular risk that would likely affect the project and decide whether to continue with the project or terminate it. For the current project, in the need to device the most effective mitigation measures, risk analysis that include types and triggers is prudent.

## Types of risks

The introduction of artificial intelligence automation gym is attributed to various risks that an individual may encounter since majorly they involve the use of machines that have human intelligence (Lee, et al., 2018). Moreover, these types of machinery are artificial and do not exist naturally. Besides, these risks encountered may be challenging to intellectualize and measure. With the use of the fishbone diagram, the most likely types of risks related to the project were analyzed and categorized as human personnel, environment, equipment's, techniques, and supplies, as shown in figure 1

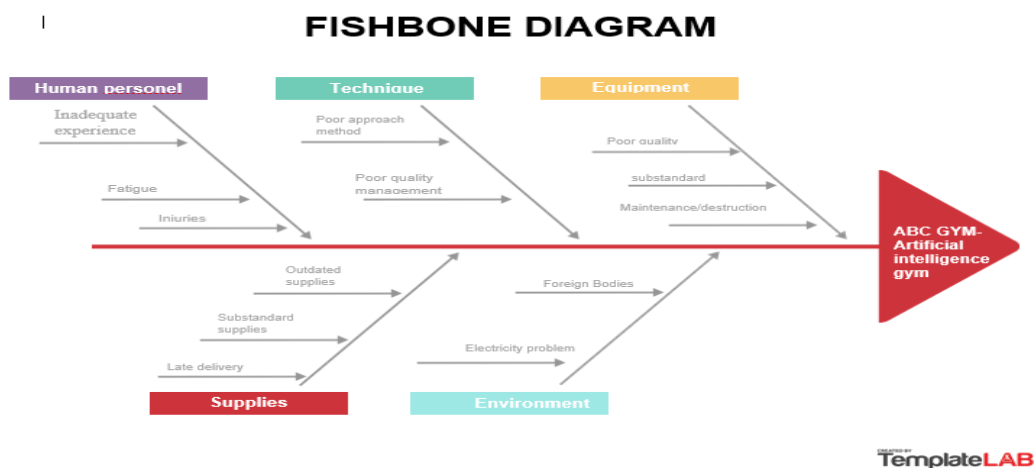


Figure 1: Fishbone diagram

## Risk severity

Severity on the risk characterizes the extent to which a particular hazard is most likely to cause or the consequences incurred from the occurrence of a particular risk. Usually, the use of a risk matrix is applied to determine risk severity. Moreover, the severity of risk occurs typically due to the occurrence of the risk and the impact. Therefore, in this project, to determine risk severity, the probability in which the risk occurs, and the effect of the risk, the Likert scale will be used with a range of 0.0 to 0.9, as shown in the table below (Figure 2)

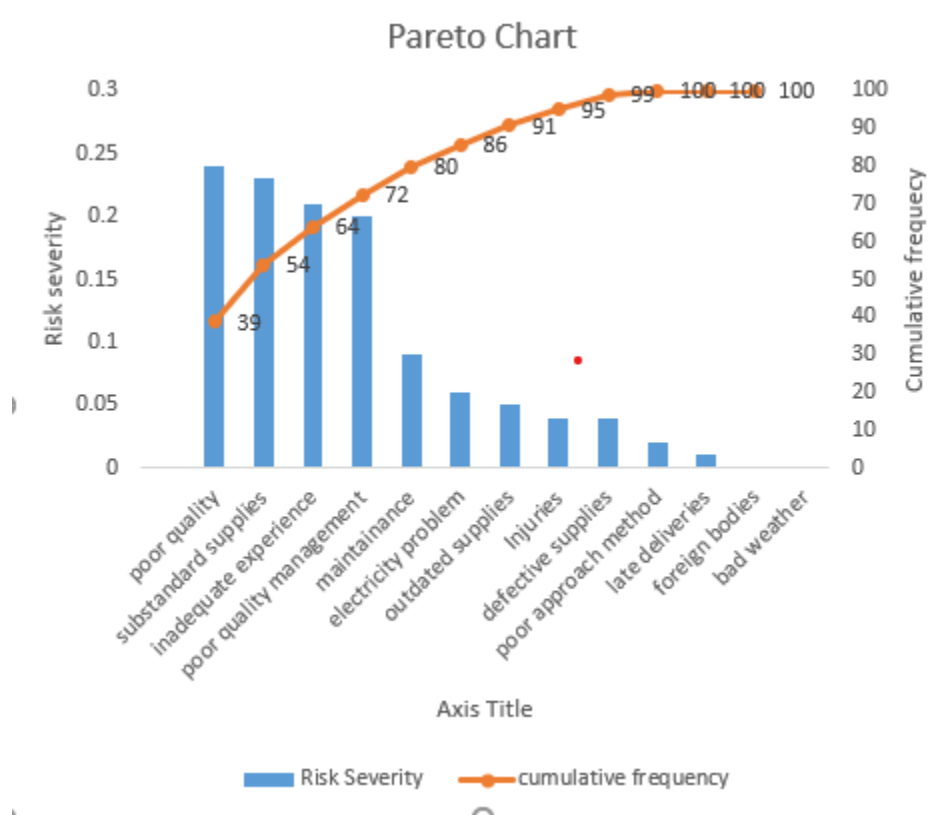
| Risk categories    | specific risk           | Probability of occurrence (P) | Impact of risk (I) | risk analysis (P*I) |
|--------------------|-------------------------|-------------------------------|--------------------|---------------------|
| Human resource     | In-experience           | 0.2                           | 0.6                | 0.12                |
|                    | Commitment              | 0.2                           | 0.5                | 0.1                 |
|                    | Injuries                | 0.1                           | 0.5                | 0.05                |
| Method/Process     | Poor designs            | 0.2                           | 0.9                | 0.18                |
|                    | Poor quality management | 0                             | 0.7                | 0                   |
| Equipment          | Poor calibration        | 0.1                           | 0.1                | 0.01                |
|                    | Poor quality            | 0.1                           |                    | 0                   |
|                    | Maintenance/destruction | 0.1                           | 0.9                | 0.09                |
| Materials/supplies | Out of spec supply      | 0.3                           | 0.7                | 0.21                |
|                    | late supplies           | 0                             | 0.5                | 0                   |
|                    | defective supplies      | 0.1                           | 0.5                | 0.05                |
| Environment        | Bad weather             | 0.5                           | 0.5                | 0.25                |
|                    | Power dissipation       | 0.1                           | 0.7                | 0.07                |
|                    | Vibration               | 0.1                           | 0.6                | 0.06                |

Figure 2. risk severity

## Important risks

Though all risks are worth looking at, Having knowledge concerning the most significant risks is essential. This is because an individual can determine the practical techniques and measures to tackle the risk appropriately. Moreover, this goes beyond identifying a particular type of risk. As demonstrated in the Pareto principle that 80 percent of the

results obtained result from the 20 percent of the causal risks. In order to assess substantial risks in this project, a Pareto chart will be used, as shown in figure 3



**Figure 3, the Pareto chart**

From figure 3 above, it is clear that 80 percent of the effect are felt from the following essential risks. They include poor quality, substandard supplies, inadequate experience, poor quality management, maintenance, and electricity.

### **Risk response**

A risk response involves typically the process by which effective strategic measures and suitable action plans are put in place to reduce the possible threats that might interfere with the objectives of the project (Beynon et al., 2019). Moreover, one is usually entitled to the responsibility concerning every risk response for accountability purposes. Besides, through effective response plan may lead to complete extermination of risks, reduce the chances in which risk may occur, and reduce the effect that could be

impacted on the project's goals. Therefore, to determine response strategies, the affinity diagram will be used, as shown in figure 4.

**Figure 4: Affinity diagram on risk responses for the most severe risks**

| Risk Event              | Risk Response                                                                                                                                                            |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Poor quality            | <ul style="list-style-type: none"> <li>- Strict adherence to the quality of the facilities</li> <li>- Source the correct equipment's before making purchases.</li> </ul> |
| Substandard supplies    | <ul style="list-style-type: none"> <li>- Research on quality and standard supplies materials.</li> </ul>                                                                 |
| Inadequate experience   | <ul style="list-style-type: none"> <li>- Enhancing effective training</li> <li>- Seek assistance from the supervisor</li> </ul>                                          |
| Poor quality management | <ul style="list-style-type: none"> <li>- Ensure to use approved and standard materials</li> </ul>                                                                        |
| Electricity problem     | <ul style="list-style-type: none"> <li>- Implementing a backup plan through the use of a generator</li> </ul>                                                            |
| Maintenance             | <ul style="list-style-type: none"> <li>- Develop a casing for having extra spare parts and ensuring monthly savings</li> </ul>                                           |

### Risk triggers

Commonly, the event resulting from a particular risk to occur is usually regarded as a risk trigger. Additionally, these risk triggers are recognized during the analysis of risks. Moreover, having the ability to understand the triggers of risks usually enables a person to create a more resourceful response towards a particular risk (Zhang & Ram, 2020) suggest that for every much severe risk, there must be something behind it that initiates it, hence leading to that. The triggers of risks usually tend to identify the cautioning signals of the risk and designates if the risk already occurred or is about to take place. An indication of when a particular risk will be expected to occur is shown. (Figure 5)

**Figure 5. Risk even and risk triggers**

| Risk Event              | Risk Triggers                                        |
|-------------------------|------------------------------------------------------|
| Poor quality            | - Increased counterfeit products                     |
| Substandard supplies    | - Corruption and inappropriate deals                 |
| Inadequate experience   | - Ignorance in search for knowledge                  |
| Poor quality management | - Sourcing for inferior quality materials            |
| Electricity problem     | - Climate change                                     |
| Maintainance            | - Disturbances from lousy weather and foreign bodies |

### Expected Monetary Value (EMV)

Expected monetary vary is usually a statistical analysis used to calculate the concept and averages concerning a particular outcome when the future relies on the probability of the occurrence of the risk on whether the risk will take place in the future or not. The figure below shows the EMV for the project. (Figure 6)

**Figure 6. Expected Monetary Value (EMV)**

| RISK                 | PROBABILITY OF RISK(P) | COST-IMPACT (I) | RISK CONSISTENCY P×IC |
|----------------------|------------------------|-----------------|-----------------------|
| Poor quality         | 0.24                   | \$10000         | \$2400                |
| Substandard supplies | 0.23                   | \$30000         | \$6900                |

|                              |             |                 |                |
|------------------------------|-------------|-----------------|----------------|
| <b>Inadequate experience</b> | <b>0.21</b> | <b>\$9000</b>   | <b>\$1890</b>  |
| <b>Poor management</b>       | <b>0.2</b>  | <b>\$15000</b>  | <b>\$3000</b>  |
| <b>Electricity problem</b>   | <b>0.06</b> | <b>\$70000</b>  | <b>\$4200</b>  |
| <b>maintainance</b>          | <b>0.09</b> | <b>\$16000</b>  | <b>\$1440</b>  |
| <b>Total</b>                 |             | <b>\$150000</b> | <b>\$19830</b> |

$$EMV=P \times I$$

Lee et al. (2018) illustrates that EMV is dependent on the probability (P) that the risk will occur and the impact of the risk (I). therefore, the potential impact on the project basing on the risks is \$150,000. In contrast, EMV will be \$19830.

## References

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- Zhang, W., & Ram, S. (2020). A Comprehensive Analysis of Triggers and Risk Factors for Asthma Based on Machine Learning and Large Heterogeneous Data Sources. *MIS Quarterly*, 44(1).