



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

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Section

Master

Date

Thursday

18 / 03 / 2021.

Course Code

(PMG510)

Project Risk Management

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Risks of Operation AlUla Heritage Sites

1. INTRODUCTION

The festival events environment involves high levels of various risk and complexity, which is a necessary matter that must be observed. For that, this report aims to prepare a risk plan to anticipate risks that may occur and take appropriate action when they occur to reduce the negative impacts as much as we can. In that respect, the report makes a unique, innovative, and significant contribution to the fields of safety science and event management. By identifying the potential project risks, prepare a risk probability and impact matrix, identifies risk responses plan and mitigate actions for each risk, to carry out an analysis of selected risks by estimating the expected monetary value (EMV) of contingency reserve in order to produce the expected results of the project successfully.

2. LITERATURE REVIEW

2.1 Risk Matrix

The risk matrix is a matrix that includes consequence/likelihood for each risk in the project after identifying risks and related terms. It is widely used as a simple risk analysis tool that is often used to determine the level of risk, to give the best available information to matrix users and decision-makers, and help to overcome some uncertainty in results and decisions made about priorities. [1]

2.2 Expected Monetary Value (EMV)

EMV short for Expected Monetary Value which is a statistical tool in project risk management, used to count the contingency reserve and a balance between probability and impact over the variety of possible scenarios. EMV calculates by estimating the probable outcome of all future risks that may happen. The equation of Expected Monetary Value is $(EMV) = Probability * Impact$. Once you get the total expected monetary value of the project, you will be able to estimate work package costs and establish the cost baseline. This amount known as the contingency reserve. [2]

3. METHODOLOGY

In this step, we will go all over the practical procedures to prepare an actual risk management plan starting with identifying potential risks in the planning stage of the project. In the first analysis, we will use the brainstorming method to prepare a list of all potential risks that may severely affect the project as shown in the table below.

Table 1: List of Potential Risks

No	Risks List
1	Bad Weather (the sand storms will damage the antiques and properties, and Rains may make roads muddy)
2	Miscommunication (No telecom towers exist in the heritage sites)
3	Environment challenges (Sands, dehydration, rough roads)
4	Non-Compliance with royal commission rules (Severe rules to protect monuments)
5	Staffing (The number of applicants Insufficient, and don't have experience)
6	Electricity (The electricity not available, and can't use underground cables)
7	Traffic (Traffic density, Insufficient parking facilities, and Roads are not eligible for mass evacuate)
8	Covid-19 pandemic outbreak (Sanctions of the Ministry of Health, and Travel restrictions)
9	Pass of unauthorized visitors through the entrance (Ticketless, or gate crashers)
10	Waste disposal, litter and debris (Environmental pollution)

After completing the list of risks, we have to assign a risk matrix to evaluate the severity of these risks. By creating the two tables, the first table will show you the probability percentage of the risk will occur and the other column presents the percentage of the impact that will happen if the risk has done. The second table will show you the distribution of severity between those factors (probability and impact) depending on this range of three levels: Low level started from 0 to 0.25, Medium level started from 0.26 to 0.74, and high level started from 0.75 to 1.

Table 2: Identify the impact and probability for risks list

No	Risks List	Probability	Impact
1	Bad Weather (the sand storms will damage the antiques and properties, and Rains may make roads muddy)	0.22	0.84
2	Miscommunication (No telecom towers exist in the heritage sites)	0.87	0.96
3	Environment challenges (Sands, dehydration, rough roads)	0.93	0.52
4	Non-Compliance with royal commission rules (Severe rules to protect monuments)	0.54	0.91
5	Staffing (The number of applicants Insufficient, and don't have experience)	0.78	0.43
6	Electricity (The electricity not available, and can't use underground cables)	0.69	0.72
7	Traffic (Traffic density, Insufficient parking facilities, and Roads are not eligible for mass evacuate)	0.35	0.48
8	Covid-19 pandemic outbreak (Sanctions of the Ministry of Health, and Travel restrictions)	0.50	0.93
9	Pass of unauthorized visitors through the entrance (Ticketless, or gate crashers)	0.23	0.65
10	Waste disposal, litter and debris (Environmental pollution)	0.64	0.86

Table 3: Risks Matrix

Probability	0.75 – 1	High	High	Medium
	0.26 – 0.74	High	Medium	Low
	0 – 0.25	Medium	Low	Low
		0.75 – 1	0.26 – 0.74	0 – 0.25
		Impact		

The table below will show you the anticipated response plan to avoid risks occur and mitigate action as a contingency plan to reduce the impact as possible as we can if response plans did not prevent the risk from occurring.

Table 4: Response plan and Mitigate action for risks list

No	Probability	Impact	Severity	Response plan	Mitigate Action
1	0.22	0.84	Medium	Provide umbrellas, Plastic rain suits, and tarp cover water and dust resistant	Delay the trip times in worst case evacuate the site and postponing trips to another day
2	0.87	0.96	High	Making deal with a local telecom company to build a telecoms tower	Using Walkie-Talkie devices with a long frequency range
3	0.93	0.52	High	Paving the off-roads and pedestrian paths	Irrigation the sandy roads on a daily basis to make them more cohesive
4	0.54	0.91	High	Viewing the list of rules and conditions for protecting heritage areas	Establishing a common monitoring unit to mitigate penalties.
5	0.78	0.43	High	Post a job offer widely and then training the new staff before starting	Provide rewarding offers to experienced staff and make them train the new ones

6	0.69	0.72	Medium	Provide Mobile Lighting Tower working with solar power or diesel	Provide generators and batteries as backup system
7	0.35	0.48	Medium	Organize visitor vehicles movement and Increase parking capacity	Determining gathering points to transport visitors to and from the heritage sites by busses
8	0.50	0.93	High	Obligation to Precautionary measures like social distance, sanitizers,...etc.	Provide organizers to maintain these Preventive measures
9	0.23	0.65	Low	Making checkpoints to Inspect visitor tickets and permissions	Provide security guards, and Special Forces for Security and Protection
10	0.64	0.86	High	Position trash bins in wide clear pathways and Identify bin transfer routes	Preventing foods, drinks, and anything that leads to environmental pollution

4. RESULTS

Then the Expected Monetary Value (EMV) of each risk is determined by multiplying the cost of the impact of each risk by its probability of occurrence to produce the total contingency reserve that's shown at the end which is 29,7880 SR, whereas the total of impact cost equal 663,000SR.

Table 5: Expected Monetary Value (EMV)

No	Probability	Impact cost SR	Risk Contingency
1	0.22	30000	6600
2	0.87	10000	8700
3	0.93	15000	13950
4	0.54	50000	27000
5	0.78	75000	58500
6	0.69	37000	25530
7	0.35	350000	122500
8	0.50	30000	15000
9	0.23	54000	12420
10	0.64	12000	7680
Total		663,000	29,7880

5. DISCUSSION

In the end, we can say this report presents a practical model of risk management principles, which include diverse literature regarding the tools to build an effective risk plan, and then go through applying these procedures by creating the list of potential risks. Then analyzing the effect of risks on a project by determining the probability of its occurrences and the impact. Although most of the risk analysis methodologies quantify risk by determining the probability and severity of risk, they do not identify responses objectively. In this report, we have determined the probability and severity of risk, and also identifies risk responses and mitigate actions for each risk. Finally, we got the results from the expected monetary value (EMV) tool that determined the total cost of contingency reserve, which is estimated at 29,7880 SR, instead of 663,000SR. As we see this difference is a very huge will protect the company from incurring more losses.

6. REFERENCE

- [1] Althaus, C. (2005). A disciplinary perspective on the epistemological status of risk. Risk Analysis, 25, 567–588.
- [2] Canavos, G.C. Applied Probability and Statistical Methods, Little, Brown and Company, 1984.