Critical Review of the Applicability of Risk Management : An Approach towards an International IT Conference

Introduction

Risk, as defined by the ISO 31000, is the effect of uncertainty on business objectives, either positive or negative. Risk management, then, is the assessment of these uncertainties to minimize the impact of harmful risks and maximize the effects of beneficial effects. The risk management cycle provides a systematic process for identifying and handling risks for a given project. This paper reviews four articles that address risk and risk management from varying perspectives. It then discusses the insights identified and uses an Information Technology conference as a case study, using the risk management cycle. In this case study, we discuss identifying the associated risks, determining an appropriate risk intervention portfolio, and identifying steps for execution and monitoring of the risk management strategies.

Critical Review of Articles

This assignment called for reviewing four articles to understand varying perspectives on the applicability of risk management processes, namely, Cox (2009,2011); Haimes, Y.Y(2009); and Aven (2015). Cox (2009) reviews the shortfall of priority scoring; Cox (2011) discusses the myths usually linked with predictive models; Haimes (2009) examines a more systemic approach to risk management, and Aven (2015) focuses on recent developments in risk management.

Cox, in his 2009 paper, uses five examples to illustrate critical applications of priority scoring systems for risk-related decision making and points out the fundamental limitations of using this approach more generally. It discusses each process; when they are used and some drawbacks to using the selected method. The paper then models risk management from two perspectives; when the value derived from addressing a hazard is known, and when it is uncertain. The former being the most useful model for applying priority-based risk management. In the latter model, Cox used three examples to illustrate cases where priority ratings produce inadequate risk management strategies. Cox concluded that though widely used, priority scoring systems fail to consider correlations among risks and correlations between vulnerability reducing strategies. The paper suggests using optimization techniques that consider these two variables when choosing the most optimal risk reduction portfolio.

In his 2011 paper, Cox gives three examples to debunk some of the myths usually linked with predictive models. The first example shows that an input's uncertainty has little

bearing on a model output's uncertainty. In fact, in the given example, a low uncertainty input gave a high uncertainty output and vice versa on different ranges of the input. The second example shows that a model could generate correct results (measured using standard deviation, error range, etc.) and still not be accurate for specific inputs. It points out that the model is said to be accurate when the decision we ought to get is applicable in real life. Also, some models even though valid for short-horizon predictions, may not be as suitable for long-horizon predictions, despite being correct. Cox's third example shows that an accurate model is not necessarily causal. The causality of a model is dependent on the decision being made from it and the purpose for which it was built.

Haimes uses the system-based approach to define and quantify the risk to a system; it's vulnerability and resilience. The paper suggests that risk and its implications are best understood using the systems engineering or analysis perspective and approach. It discusses the elements of risk and the importance of correctly defining the state variables used in modelling risk to a system, its vulnerability and resilience. In determining the elements of risk, Haimes discussed the Theory of scenario structuring (TSS) introduced by Kaplan and Garrick. They raise the triplet questions into the risk assessment process: "What can go wrong? What is the likelihood? What are the consequences?" He then stresses the importance of defining the state of the system by identifying its vulnerabilities and its resilience. Haimes states that for effectual risk assessment, the analyst must assess the system and its interactions within its environment to model its behaviour holistically. The paper also highlighted the importance of understanding the evolving states of the system over time while defining the model's parameters through a system-based approach.

Aven's article walks us through the most recent developments in risk assessment and risk management, focusing on generic risk research rather than studies of more specific activities.
The article discusses this in five categories, the risk field of science; risk conceptualization; uncertainties in risk assessment; risk management principles and strategies; and the future of risk management. Aven points out that knowledge transfer between specific areas of risk study is difficult; as such, general risk research is a better definer of the field. Additionally, in risk-based decision-making processes, there will inherently be parts that won't fulfil the scientific definition of knowledge as "true beliefs", when other factors like values or policies are considered. Regarding risk conceptualization, Aven notes that obtaining a unified set of definitions for risk poses to be complicated. Recently, however, a glossary has been compiled with definitions and metrics suitable for different situations. The paper then discusses the agreed management of aleatory and epistemic uncertainties and highlights the importance of identifying the most critical output uncertainties, regardless of risk type. The article pointed out three primary strategies for risk management: risk-informed;

cautionary/precautionary, and discursive strategies. Aven concluded that more research is needed to build the platform of risk assessment and move risk management forward.

Project description

Working at a small PCO (professional conference organizer), with 4 employees, we will organize a tech conference next August in Stockholm. Our client, a global tech-networking company, anticipates around 3,000 participants and has demanded for us to arrange five top speakers in their respective field and expertise. Based in Stockholm we possess important know-how about organizing events in the Swedish capital. As a PCO, we are experts in planning and managing conferences and have favourable deals with venue and hotel owners as well as catering and other suppliers. We will take care of all practical matters related to the event. This means handling all communications with speakers, participants and venue owners. From our deals with venues, restaurants and hotels we will be creating packages for participants to easily book though general marketing of the conference will be handled by our client. Our event planning system will handle participant registrations and payment processes. The success measures of our project are to manage the project as per client's expectations, within financial margins and remarkable arrangement of the event. Currently, the scheduled date of the event is 15th August 2021.

Application of Risk management cycle

Confirm Strategy

The purpose of engaging in this event with our client is to increase our market share of large corporate events in the Stockholm area, keep our good reputation as a PCO and to gain revenue to grow as a company.
With experience from several international conferences in Stockholm we have a clear plan on how to execute the event. Our internal gantt chart is broken down from following headlines:

- Source and visit possible venues.
- Review and invite desired speakers.
- Review the requirements for, and book, catering.
- Prepare package deals with local hotels and restaurants.
- Engage with relevant sponsors.
- Prepare event information for participants.
- Final walk through of the venue.

The client expect revenue of 10 MSEK from the conference and our firm has a target margin of 15% for these kinds of events. We also have a qualitative target of NPS >70 to monitor and keep focus on quality and service.

Identify & assess risk

To list all identified uncertainties that could pose a threat to our project, we made a simple risk priority scoring system. We separated the risks into cause and effect and assigned an impact (if not addressed) and a probability (likelihood) to each risk. Regarding the probability we face the problem with knowledge (reference Aven 2015), as we have difficulty to know to what degree our beliefs are true. To yield a priority score for each risk we use the formula impact * probability. All risks are assigned a possible mitigation, with a colour coding not to overlook the opportunity for coordinated defences (ref Cox 2009). Effort to find correlated risk and risk free gains (reference Cox 2009) were made and put in the list.

Challenge & Evaluate Controls

For any given risk, a risk control must be put in place. The control could be either a policy, an action or a process designed to prevent or at least limit the impact of the risk.
When thinking about all the possible risks involved with the planning of the event, an out-of-the-box thinking must be exercised to reassess all the risks that were produced in the brainstorming. Examining the cost vs. benefit of each risk is one of the ways to evaluate the risks and their respective controls.
Decision-making when evaluating risks should also take the uncertainty of the data, especially the uncertainty of the output, since it could be very different from the uncertainty of the input depending on the range (cf. Cox 2011). Similarly, a short-horizon decision could be different from a long-horizon decision which affects the model's accuracy (cf. Cox 2011).

Take Action

Once we know which risks are the most impactful and we rate their probability as well as challenge and evaluate the controls that were put in place to prevent or mitigate the risk, we are ready to move forward with action.
Various types of action could be taken to prevent or mitigate the risk. Some risks could be tolerated and no action would be taken in regards to them while for others they need to be either treated, substituted (by another less probable or less impactful risk) or terminated in the event we are able to prevent the risk altogether.

Monitor & Report

To analyse the risk involved, we selected the simple structure of risk register. The details of the risks are visible in accordance with the risk cycle and leaves nothing to imagination. The categorisation of the risks as per severity allows the consideration of the likelihood and impact. The frequency of high severity risk review is set biweekly while the review of risks is planned every month, which will give ample time to review and a perfect control mechanism over the project parameters.

Conclusion

In the given project, the access to the some research journals highlighted the importance of various approach to define, quantify and take mitigation actions along with a control mechanism over the lifecycle of the case under observation. However, it has been accepted that limitations in approaching the risk related decisions and uncertainty related. Historical data are good tools to identify the risks in certain scenarios. Various models have been analysed in this approach, however certain factors always question the accuracy and highlight the scope of improvement in model. Based on these research, the team was able to analyse the risks associated with a case and quantify the risks involved. With the progress of the project, the control mechanisms will function and the risk cycle has been adopted as continuous, non-ending process until payment clearance stage of the project is finished. The lessons learnt in the risk management of this project will serve as the backbone of the similar projects in future.

References

1. Aven, T. (2015). Risk assessment and risk management: Review of recent advances on their foundation. European Journal of Operational Research, 253(1), 1-13.
2. Haimes, Y. Y. (2009). On the Complex Definition of Risk: A Systems-Based Approach. Risk Analysis, 29(12), 1647-1654.
3. ISO 31000. (2018). Risk management — Guidelines. 16.
4. Louis Anthony (Tony) Cox, J. (2009). What's Wrong with Hazard-Ranking Systems? An Expository Note: Perspective. Risk Analysis, 29(7), 29(7), 940-948.
5. Louis Anthony (Tony) Cox, J. (2011). Clarifying Types of Uncertainty: When Are Models Accurate, and Uncertainties Small? Risk Analysis: An International Journal, 31(10), 1530-1533.

Appendix

1. Link to our risk analysis system: