



Project Quality and Project Risk Management: Correlations and Interdependencies

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ABSTRACT

This research aims to identify and develop a framework on how to correlate the project risk and quality management to achieve better results. The research assumes that there is a correlation between project quality and project risk management; and the outcomes of the project quality management and the outcomes of the risk management have mutual correlation. The research utilizes qualitative approach and case study based using open structured interviews. The research concludes that there is an invisible line between risk management and quality management when it comes to integration there where many managements get lost to manage their projects on a strategic level, it all matters when budget and scope to be met.

1. INTRODUCTION

Project risk management and quality management play a vital role in project management processes. They both are part of the project management body of knowledge, which can determine the success or failure of a project (Aloini et al., 2007). Project risk management is the process of dealing with uncertainty by identifying, prioritizing, and responding to these risks (whether positive or negative risks) in a project (Paksoy et al., 2019). Project quality management is the process of following standards and frameworks to develop a product that satisfies the customer requirements every time (Molina-Azorín et al., 2015). Having a lousy quality management plan is a risk by itself. They both heavily depend on the requirements of the client and have related processes (Alzoubi et al., 2020; Ibrahim, 2019; Kassem and Martinez, 2022; Yeung, 2008). The integration of risk and quality management can provide an enhanced impact on a project (Caniëls and Bakens, 2012; Yang et al.,

2021). A study

conducted on the combination of those two processes in the information security sector, showed that the integration resulted in higher quality data and more reliable risk plan this integration can lead to a reduction in cost, eliminating rework, and higher customer satisfaction (Khatib et al., 2022; Sanjuq, 2014). (Meulenbroeks, 1998) also argues that the Failure Mode and Effect Analysis and Six Sigma are the results of this integration. (Leong et al., 2014) suggests that the integration can provide better results, and it will be the future practice.

1.1. Aim and Objectives

This research aims to identify and develop a framework on how to correlate the project risk and quality management to achieve better results (Al-Kassem et al., 2022; H. M. Alzoubi et al., 2022b; El Khatib and Ahmed, 2018). To reach the aim of the

project, the following objectives are to be met:

- explain how project requirements can impact the risks and quality, and how they are related;
- illustrate how compliance with the requirements will reduce the chances of work rejection or rework, and will improve the quality of project product and deliverables;
- identify the critical success factors (CSF), and key deficiency factors (KDF) in the integration; and
- demonstrate and assess case studies.

1.2. Research Hypotheses

The following hypotheses are the base of the research:

- there is a correlation between project quality and project risk management; and
- the outcomes of the project quality management impact the outcomes of the risk management and vice versa.

2. LITERATURE REVIEW

2.1. Risk in Project Requirements: Quality Inside

According to (Al Aljumah et al., 2022a; Mohammed T. Nuseir et al., 2022), risk in the project is referred to any uncertainty that might affect any of the project objectives. To accurately identify those uncertainties, one must understand the requirements. According to (Alshwabkeh et al., 2021; H. M. Alzoubi et al., 2022f; Hani Al-Kassem, 2021), the requirements are the project needs, and requirements management is the process of understanding, formulating, and documenting all the requirements (M. T. Alshurideh et al., 2023a; El Baz and Ruel, 2021). The requirements are like a compass that directs the project. Fully understanding the requirements will assist in a better understanding of the uncertainties involved in the project (Al-Kassem, 2017; M. T. Alshurideh et al., 2023b; T M Ghazal et al., 2023b). Project risk management is the process of dealing with risks, and it consists of three main processes:

- identify (identify all possible risks);
- prioritize (prioritize the risks based on their impact and probability of occurrence); and
- respond (make a response plan for the

risks and implement them when needed) (Aljumah et al., 2021a).

Quality has many definitions. Some define quality as the excellence of a product (Al Aljumah et al., 2022b; M. Alshurideh et al., 2022). Another definition is meeting customer requirements, or the number of features in a product (Louzi et al., 2022b). Even though there are different definitions for the quality, but they all revolve around the "requirements" (Ahmed et al., 2022; Al-Kassem, 2014; AlDhaheri et al., 2023; Amiri et al., 2020). Similar to risk management, quality management is heavily dependent on an adequate understanding of the requirements. Project quality management has three main processes:

- quality planning (identify what level of quality needed to satisfy the requirements);
- quality assurance (planning all required activities to ensure meeting the right level of quality; and
- quality control (monitor the project progress and try to eliminate any issue that will negatively impact the project before it happens) (H. M. Alzoubi et al., 2022h; Aziz et al., 2023).

According to (Al-Kassem et al., 2013), poor understanding of the requirements is the key source for most of the issues related to risk and quality management in the project (Aljumah et al., 2023; H. M. Alzoubi et al., 2022c; El Khatib et al., 2021; Mat Som and Kassem, 2013). Both quality and risk management heavily depend on requirements, and the risk management processes are very similar to quality management processes (Al-Kassem et al., 2012; El Khatib and Ahmed, 2020; Lee et al., 2023; Mohammed T. Nuseir et al., 2022). Low quality is a risk by itself, and a poor risk plan will lead to bad quality as well. Based on the above information, it can be concluded that using the correlation between quality and risk management can increase both efficiency.

2.2. Project Product and Deliverables: Risk of Compliance to Requirements

The project is divided into phases, and phases are divided into sub-phases, into deliverables, until we reach to the work packages (Nuseir and Aljumah, 2020). To have the right project product, one must have an excellent deliverables. To have excellent deliverables, the requirements of each deliverable

must be clear and agreed upon since the beginning (El Khatib et al., 2020b). Failing to meet the requirements of a deliverables will lead to rejection of work and rework. From the project risk management perspective, risks can be on the project level, and task level (Aljumah et al., 2021b; M T Nuseir et al., 2022a). To deliver the project successfully, all the uncertainties on the task level must be dealt with. After identifying the risks on each deliverable and prioritize them, the risks are to be avoided before they happen if possible (Blooshi et al., 2023; El Khatib et al., 2019; El Khatib and Ahmed, 2019). Avoiding harmful risks can improve the quality of work and reduce the

chances of work rejection. The same goes for quality management (Al-Marroof et al., 2022b, 2022a; Muhammad Turki Alshurideh et al., 2022b; Khan et al., 2022). Each deliverable must achieve the right level of quality to have a successful final product and avoid rejection of work (Abudaqa et al., 2021; E. Khatib et al., 2021). The quality assurance allows planning the right approach to attain the required level of quality, and quality control ensures avoiding mistakes before happening (similar to risk prioritizing and respond) (M. T. Alshurideh et al., 2023c). The table below further illustrates how the risk and quality are correlated.

Table 1: Possible Risks From Quality Requirements

Building a Wooden chair			
Risk 1: Get cheated by the wood supplier (wrong type of wood, infected wood, ..etc.).	To avoid →	Buy the wood from an authorized dealer who has a good market reputation.	To meet ←
			Quality Requirement 1: Type of wood is solid cherry wood.
Risk 2: Damaging the wood while transferring.	To avoid →	Use a wood specialized delivery company to deliver the wood.	To meet ←
			Quality Requirement 2: The wood must be transferred in an appropriate environment to prevent any possible damage.
Risk 3: Damaging the wood while storing.	To avoid →	Store the wood in the right conditions (temperature, humidity, ...etc.).	To meet ←
			Quality Requirement 3: The wood must be stored in an appropriate environment to prevent any possible damage.
Risk 4: Damaging the wood operating.	To avoid →	Choose the right machinery to use to build the chair, as well as the right level of labor expertise.	To meet ←
			Quality Requirement 4: The final product must meet the agreed-upon design.

The table above shows how we can identify possible risks from quality requirements and vice

versa. It also show how addressing a possible risk can achieve a quality requirement (Kurdi et al.,

2022; Nuseir et al., 2021).

2.3. Project Quality Management Methods and Approaches to Handle Risk

(Nuseir and Aljumah, 2022) talks about how quality is subjective and can vary from person to person (Varma et al., 2023; Yasir et al., 2022). Hence it is essential to look into what quality means to the majority of the people while managing a product or a service (Akour et al., 2021; R. S. Al-Marroof et al., 2021a). The majority viewpoint will give the decision-makers several aspects of the product, which are deemed necessary by the customers (Ahmad Ibrahim Aljumah et al., 2022b; Arshad et al., 2023; Nuseir, 2020).

Similar to (M. El Khatib et al., 2022b; Mubeen et al., 2022; Nuseir, 2021) has also talked about quality and how industries can make the most of it. He has focussed on how the quality management processes need to be active and efficient to complete several projects under a stipulated time frame and a fixed budget (Abudaqa et al., 2022; Ahmed and Nabeel Al Amiri, 2022; Aljumah et al., 2020; Gulseven and Ahmed, 2022; Sakkthivel et al., 2022). Most of the quality management processes are on paper, which makes them very time consuming and inefficient (R. S. Al-Marroof et al., 2021b; T M Ghazal et al., 2023c). Therefore, the author suggests the use of BIM-cloud and BIM 360 cloud software to boost up the quality management processes and make them more efficient (A. Al-Marroof et al., 2021; A I Aljumah et al., 2022a; Alzoubi et al., 2021).

The relationship between quality management processes and inter-organizational processes was studied by in their paper on the same. Most of the studies prove an inconsistent result about the relationship between the two. However, a few studied still show some contextual factors which exist between quality management processes and inter-organizational processes (Blooshi et al., 2023; T M Ghazal et al., 2023b; Taher M. Ghazal et al., 2023). Most of the organization involve external participants while conducting their quality management processes to ensure fair and neutral results of the same (Alshurideh et al., 2020; Alzoubi and Ahmed, 2019; Alzoubi et al., 2019).

- Approaches to Handle Risk

Cloud computing is proven to be an advantage to the users of data storage and much helps for risk assessment and handling approaches. The authors

(Ahmed et al., 2022; H. M. Alzoubi et al., 2022d; Gaytan et al., 2023) have talked about how cloud services have helped risk assessment and management in data science. Traditional access control is not risk-based, which might cause problems for several users.

(Dr. Mounir M El Khatib, 2015) have also talked about the approaches to handle risks in the cloud computing industry. The authors have reviewed extensive literature on the increasing use of cloud computing and the various approaches taken to handle risks. They have also synthesised an integrated model which executes the risk management plan to undertake while innovating the cloud services.

On the contrary, (M T Alshurideh et al., 2022; M T Nuseir et al., 2022b) have focussed on the risk assessment management one has to take care of while content curation and presenting themselves online (H. Alzoubi et al., 2022; Ghazal et al., 2021). They have talked about the dark side of social media and given tips on how to make your content curation and online presence safer for themselves and their users (Muhammad Turki Alshurideh et al., 2022a, 2022c; T M Ghazal et al., 2023a).

2.4. Critical Success Factors (CSF) and Key Deficiency Factors (KDF) in Project Quality Management Risk Handling

The critical success factors of any project refer to the factors that influence and promote the success of any project. These critical success factors are significant to consider while assessing the risk management and quality management of any project. (M. T. Alshurideh et al., 2023d; E Tariq et al., 2022; Emad Tariq et al., 2022) have discussed the CSFs in construction projects in their study. Forty-Two success factors were recognized with the help of factor analysis (Ahmad Ibrahim Aljumah et al., 2022a). The research was focussed on the construction projects in Nigeria, and all the success factors have been analyzed based on the categories in which these projects were divided. (H. M. Alzoubi et al., 2022a) have emphasized upon the use of BIM technologies in the quality management in the higher processes of design, construction, and operations. They have talked about the role of the BIM technologies in the quality control management and the improvement of the safety of the buildings (Farrukh et al., 2023; M. El

Khatib et al., 2021; Nuseir and Elrefae, 2022). The authors have reviewed several examples which show the success use of this technology and promote the same to other professionals in the field (M. Alshurideh et al., 2023; Gulseven and Ahmed, 2022; Nadzri et al., 2023).

(Akour et al., 2023; I. Akour et al., 2022; Bawaneh et al., 2023; Louzi et al., 2022a) have talked about the critical success factors of the public participation in the urban renewal projects. They have discussed as to which elements make the general public to participate in the decision-making process of the urban renewal projects (Khatib and Oplencia, 2015). The factors which ranked the highest were (i) the clarity of information disclosure (ii) timely responses to public inquiries (iii) necessary avenues and equipment (iv) diversity in the ways of disclosing information and (v) results in the presentation (Almasaeid et al., 2022; H. M. Alzoubi et al., 2022e; Dr. Mounir M. El Khatib, 2015; Nuseir et al., 2020) have talked about the importance of Building Information Modelling (BIM) similar to the study conducted by . They talked about how having BIM will increase efficiency and integrates the processes in any project (Aityassine et al., 2022; Al-Awamleh et al., 2022; H. M. Alzoubi et al., 2022g; Nuseira and Aljumahb, 2020). The authors conducted a quantitative study with ninety-six respondents, and the respondents consisted of both public and private sector participants. The investigation was concluded by the drawing out of 16 CSFs of the use of BMI in any sector.

3. METHODOLOGY

3.1. *Selecting the Right Model and Approach*

Selecting the right model to build the research is one of the vital things to success in getting your goal of the research. By starting to identify the issue which we as group discuss with our instructor to get the approval.

At this point we started analyzing to get more details then we designed the approach to get our project complete by developing the interview methods and type of communication and the questions with its form finally we implemented the research and in each step we had to evaluate the outcome and the progress.

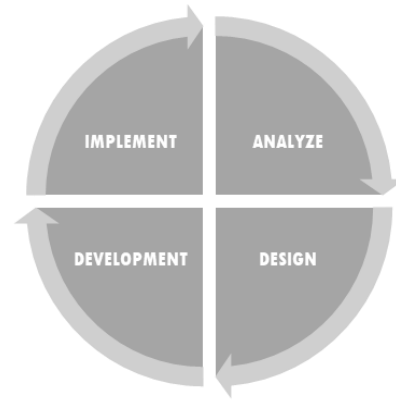


Figure 1: Quality Management

Selecting the right model for the research we are conducting had to go through some research itself where we had to identify the main approaches of the research and its goal to understand more how to illustrate on our research between risk management and quality management integration (El Khatib et al., 2020a). So we started with naming the main approaches as it follows:

- Quantitative
- Qualitative
- Pragmatic
- Advocacy/participatory

Quantitative research is the gathering of numerical data in order to use it for a statistical conclusion that will give some calculated insights.

In the process it would show that conducting the research would have one or more hypotheses to study and due to that an action plan will be provided. This will require data gathering primary or secondary that will give an outcome in a quantitative approach.

Therefore, this approach helps in controlling the emotional interfere of the research that it does not involve any feeling due to the facts that comes as numerical form and its known as top bottom approach.

On the other hand, the qualitative approach where it relays on the data gathering from experience or knowledge that does not require any numbers also it helps on understanding the uncalculated ways of researching in the same approach and it has many ways that in our research will rely on as it will come furthermore. This approach build itself bottom up reasoning deductive to understand the detail of in how it comes to conclusion so it does not move in one direction its move flexible in collecting the data

and in the same time it does not need a large number of people to participate due to the interview approach in the qualitative approach.

Also one of the approaches is Pragmatic approach to research which will mix different ways of the research in a scientific approach that will be accumulated toward the goals of the research.

Here the interview would not be individual it will be a group interview or focus group that will analyze the fact with the research by using sources of variety data, diversity of researchers, many perspectives to conclusion and multiple studies to research problem.

One last approach in our study is the Advocacy or the participatory approach to research which focuses on calling specific individuals with in same category to identify outcomes at the same analysis research that would be conducted on the same group.

3.2. Case Demonstration

- Maintenance Department in Dubai Municipality.
- Abu Dhabi Water & Electricity Authority (ADWEA)/ Now Department of Energy (DoE).
- DUBAI SOUTH.

Interview is a technic that allows to get some answers to gather data which has many methods and types such as:

3.3. Three methods

- Structured interviews
- Unstructured Interviews
- Semi-structured interviews

Structured interviews are questions that organized in a systematic order same questions different answer to maintaining uniformity. It comes as open end questions which gives more detail or as close end questions that direct to an aimed understanding.

3.3.1. Advantages

- accuracy of the responses.
- Analyze collectively.
- Large target sample.
- Easier for the interview.
- The bigger the scope the accurate the result.
- Faster the implementation of the result.

3.3.2. Disadvantages

- Limits to the scope of the result.

- Accuracy of the information outcome the details.
- The limitation of the researchers.
- Longer time for the interviews.

Unstructured interviews are informal and untrusted method gathering the information. Also the format of the questions does not help to have clear insights any result find can go side way in some researches with unstructured method.

3.3.3. Advantages

- Friendly insights.
- Deep explanation.
- Flexibly of the answers.

3.3.4. Disadvantages:

- Longer time.
- Less trusted of the result.

Semi-structured interviews are mix between structured and unstructured interviews it uses the same technic preparing the questions at the same time it can add some questions within the interviews to get more insights and understanding.

3.3.5. Advantages

- More time due to the questions prepared previously.
- Somehow flexible.
- Trusted information.
- Flexible structure.

3.4. Four Types:

- Personal
- Telephonic
- Email
- web page

3.4.1. Disadvantages:

- Trust can be questioned.
- Hard to unify information.

Personal interviews: It's the most common type face to face meetings, the questions can be prepared ahead and the researcher can get some emotional insights by the body language and the voice tune to add the comment to the highlights within the interview.

3.4.2. Advantages:

- Higher interactive to the interview.
- Clear questions and answers to be understandable.
- Body language.

3.4.3. Disadvantages:

- ✓ Needs more time.
- ✓ Costly.

- ✓ Due to the awareness of the interviewer they tend to be dishonest.

Telephonic Interviews: It's very common in the advertisement company or for sale that can easily show an insight.

3.4.4. Advantages:

- Easy to target.
- Cheaper.
- Faster to gather information.
- Can be used for more explanation.

3.4.5. Disadvantages:

- ✓ Many interviewers tend to avoid participating.
- ✓ Less control.
- ✓ Vitality of communication.

Email and web page interview: It's the most common on the world due to the shift of lifestyle towered information technology in a mass movement this makes the scope gets bigger because of the advance services that gives more insights to understand the trends.

3.4.6. Advantages:

- Faster to get the data.
- Flexible of the respond time.
- Merge the research with the trends.
- Can use many ways to answer.

3.4.7. Disadvantages:

- No limitation to personal life.
- Too often to conduct.

Our approach in this project is qualitative due to our research would focus on interviewing some of the key project management that will give us some of the insights regarding risk management and quality management integration and its value according to the institutions that they work in and its effects on their projects, so by using Structured interviews method with an open end questions where the interviewers can answer openly, also we had to use the four types due to pandemic of corona virus so we did a personal interview on cam which did not allow as to analyze the body language on the same time the answers were given through the email and telephonic were made for illustrate on some of the questions and answers.

3.5. Case Assessment, Analysis, and Judgement

The objective of the study is developing a framework on the correlation between project risk and quality management to achieve better results

in organizations. Risk management is a necessary process when undertaking any project. Based on the interviews conducted, Salim Zid (Senior Civil Engineer, Dubai Municipality) and all participants agreed on the ideology that risk management involves a method of identification, exploration, and response to risks within any project. Often, the knowledge of the relationship between projects and threat management is a systemic process. The process includes the identification of risks, assessment, response development, and implementation of a mitigation and contingency plan. The purpose of risk management is to ensure that project output is maintained and organizational culture factors, including teamwork, are promoted (I. A. Akour et al., 2022). An interview from participants of Dubai South gave a more elaborate answer regarding risk management. In their perception, risk management can only be beneficial if compounding questions are asked about a project (M. El Khatib et al., 2022a).

The participant openly explained that quality is subjective and that it is not defined by one single entity. It can include tasks and deliverables. Other participants regarded quality as critical to teamwork and incorporation of the interests of stakeholders. Nevertheless, according to Durga Devi, in any project, the impression of project risk administration and achievement of success requires a quality control check that ensures that members and tasks are well coordinated.

Quality and risk management are often integrated within any organization's project. Participants indicated that risk management and the quality of a project are interlinked. A risk is defined as an ambiguous occurrence that can affect the success of a project. Risks, as such, can occur from different perspectives. According to Salim Zid, risk can be an opportunity. From the researcher's point of view, an opportunity may be argumentative based on the results of the study. Regardless of whether it is defined as an opportunity or problem, quality implies the use of management protocols that safeguard the tasks, individuals, and variables of the project from sabotage. For instance, illuminated that the process of risk management is crucial to handling any risk and finding the best solution to deal with the risks both in the short-term and long-term purposes. His opinion was similar to all other participants' positions. An

example of a risk management protocol is the PDCA cycle, which entails the identification of risks, potential sources of the risk, and pre-emptive solutions.

The study also investigated the integration concept of quality against risk. In particular, the interviews needed a professional perspective about risk integration. All participants seemed to agree on the integration of risks as a natural concept. However, the participant from Dubai South provided a coherent explanation as to why it can be difficult sometimes for companies to handle risk and realize quality at the same time. The information retrieved explains that quality is a differential concept within a business. In most organizations, different departments manage various risks.

The way each department mitigates the risks presents a unique problem of what quality entails. A silo-type of management for risks exists, which may explain why companies often find themselves in trouble over matters that they could have handled through different lenses. The research investigated the impact of training workers and its impact on risk and quality management for organizations. One interviewee (Dubai South) indicated that training is not a significant concern with regard to quality and risk management. In support, all participants agreed that training cannot be categorized as a risk in risk management and quality assurance. In fact, it is a beneficial component in ensuring that employees understand the idea of risk and how to manage it. In their view, it improved the integration of risk management, including the set of practices and processes used in handling risks. Similarly, the other two agreed that training could never be a hindrance to risk management.

However, quality management and risk management often result in minimal achievements in projects within businesses. The interviewer was interested to know why that was the case. From a professional perspective, the participants suggested that companies rely on individualized documentation on quality as well as risk management. Theories, on the other hand, recommend the use of one source documentation. The participants agreed on this premise, suggesting that it prevents over documentations, limits obsolete documents, and improve on risk management protocols, systems, and criteria. Therefore, the participants agreed that it is

necessary for companies to have individualized risk management systems. To achieve this, companies should have specific critical success factors and parameters. These parameters include communication, adequate project control, resources, teamwork, and realistic time and cost estimates. Durga Devi suggested the inclusion of all employees at all levels in risk and quality management. Knowledge of specific key factors is dependent on the organization, as seen in the data retrieved, including skills, communication, teamwork, planning, and execution process.

In general, the participants appeared to be knowledgeable based on their perception of risk and quality management. However, based on the industry or sector of employment, each participant was proficient in their fields. Therefore, they offered similar positions but had differing ideologies.

4. RESEARCH LIMITATIONS AND RECOMMENDATIONS

The limitation of the research is the sample size. The objective of the study was to understand how project risk and quality management are interlinked. The reliability and credibility of the study would have been optimum if the researcher focused on concepts of the across numerous organizations to provide specific views on the goals of the study. The main challenge in this research is arranging interviews with people due to lock down imposed by UAE government because of Corona Virus. In recent days, many organizations start to implement working from home strategy so arranging interviews was so difficult. Time management is one of the main challenges in this research. The research shall be completed with one month and half which is a short period. To overcome this challenge, effective plan and work load distribution among team members was placed in order to compete the research before the deadline date.

Nonetheless, the project was a success. However, given the scope of the study, recommendations are necessary to improve research information. An exploitative study that focuses on each firm and its perspective on risk and quality management based on its project performance is recommended. If a quantitative data analysis can be provided, this would improve the information relayed by the participants. Also, it is recommended that the

researcher refine the interview questions that focus on the example of risk management in these organizations and how they are mitigated according to theoretical analysis and practical system integration. Such knowledge will significantly impact the analysis of the correlation between risk and quality management from both standpoints.

5. CONCLUSION

There is an invisible line between risk management and quality management when it comes to integration there where many managements get lost to manage their projects on a strategic level, it all matters when budget and scope to be met.

At the same time with the reality of the project history due to the failures of the most project, therefore quality management is a most to control risk.

It's all start with strategic analysis from SWOT to get a full understanding of the gaps and the uncertainty to be discovered and action plan was ready to manage it in the right time.

So by planning and interviewing we got to an understanding to which level the integration was synchronized to enhance the deliverable.

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Appendix

Dubai Municipality

- **How can risk management increase the success rate of a project?**

Proactive is considered eminent rather than being reactive. Identifying risks for a project means, possibilities of failure is known, assessed, and we have counter measure to overcome in case if the risk arises.

When we have clear treatment measures to treat the risk, why not take risk?

If the same or similar project is already completed by someone, lessons learnt can be shared. If a project is not attempted by anyone, with known treatment measures, its good to attempt the project.

Therefore risk management increase the success rate of any project irrespective if this is new or already attempted.

- **How can quality management increase the success rate of a project?**

Quality management means, quality in total. Needless to say, systematic procedures and assurance process laid fortune for businesses example: Blue chip companies. Process and procedures streamlines the activities in a structured way (best way) which minimizes failures, or we know what we have to do, when failure occurs. If things prolong in a structured way, it would also become a culture of doing things in a best way. When we do the best way, we get the best results. Success rate is most certain.

- **Do you think that we use the correlation between risk and quality management to enhance the success rate of a project further? How?**

All process and procedures must be in place to overcome risk and enhance success rate of a project. If a process or procedure is not correlated with identified risks, then the process or procedure is redundant and does not add value to it.

- **Do you think that integrating risk with quality is difficult? Why? If yes, how to make it less difficult?**

Yes. It is not easy to integrate the risk based thinking. It is 'culture' that makes it difficult. Culture is fostered by 'people'. When people understand and stand together, integration is easy. This would require imparting right information in the form of training in effective way.

- **When adopting a new approach, training can hinder or delay the success of the approach, will training do the same if risk and quality were to be integrated? Why?**

Training alone is not sufficient. Risk and quality is integrated in order to facilitate the process. A newly trained personnel would still have fear during execution, because it is done for the first time. But if the risk and quality is integrated, personnel would know what should be done in case of failures and therefore, he or she would be more confident and not worrying about executing a task even if it's for the first time.

- **Many theories suggested that one of the short comes in risk management and quality management is excessive documentation. To overcome this issue, some researchers suggested that the combination of risk and quality management can reduce the documentation. Do you agree or disagree? Why?**

People think excessive documentation because it is difficult to memorize and remember everything written on a procedure. Many at times, procedures require to rehearse again and again so it sticks to a person's memory and culture. Also when a procedure is documented, people think what is good or best way to do this. But when they actually do it may or it may not be good. This changes the practice on a long run, and different from what was documented. Combining risk and quality management and rehearsing procedures gives immense feeling that, procedures are more, but it is necessary.

- **One of the critical deficiencies in quality**

management and risk management is the rare update of the plan once approved, can the integration of risk and quality reduce this issue? How?

If a plan is updated again and again, its not planned properly in the first place. All over the world, plan versus actual progress for any big project is 50-60%. This means most of the projects don't undergo as per the plan.

Integrating risk and quality minimizes the failure, and commensurate with contingencies therefore the delays are manageable and treated.

- **What are the CSF & KDF to judge a successful integration between the quality and risk?**

Following indicators are critical success factors:

- Risk prediction was good and contingencies worked well
- Risk based thinking integrated in to process and now it became a 'culture'
- Lessons learnt from previous failures were helpful to minimize failures in the project.
- Customers are happy, as the quality was good and never compromised.
- Project completed effectively and efficiently (timely, cost was under control)
- Sense of satisfaction with overall execution.

Dubai South

- **Can you introduce yourself and your role in your organization?**

I am working as Manager- Technical & Operations. My role is to provide training to professionals on project management, Quality management; Prepare training manuals, prepare and maintain necessary documentation for accreditation from certification bodies; provide support to marketing team on technical aspects.

- **How can risk management increase the success rate of a project?**

Identification and evaluation and planning for risks ensure schedule , budget are not affected and ensures customer satisfaction. It also helps in maintain the quality of output and ensure safety to team members.

- **How can quality management increase the success rate of a project?**

Reduces customer complaints, prevents defects and rework and thereby reduce non value added cost, failure costs. and helps to achieve profitability.

- **Do you think that we use the correlation**

between risk and quality management to enhance the success rate of a project further? How?

Yes. Implementation of right quality procedures, quality management system keeps product and process risks in check.

- **Do you think that integrating risk with quality is difficult? Why? If yes, how to make it less difficult?**

No. It is a natural integration.

- **When adopting a new approach, training can hinder or delay the success of the approach, will training do the same if risk and quality were to be integrated? Why?**

I do not see training as hindrance. Training is the first step for any transition would prepare the team in transition.

- **Many theories suggested that one of the short comes in risk management and quality management is excessive documentation. To overcome this issue, some researchers suggested that the combination of risk and quality management can reduce the documentation. Do you agree or disagree? Why?**

Yes .As Many quality documents also includes risk information such as failure modes, preventive and corrective actions, mitigation plan etc., integrating them may decrease documentation.

- **One of the critical deficiencies in quality management and risk management is the rare update of the plan once approved, can the integration of risk and quality reduce this issue? How?**

Yes. To some extent. Reduced documentation would motivate team to update appropriately. But efficient document control system is important to keep documents to date.

- **What are the CSF & KDF to judge a successful integration between the quality and risk?**

Management commitment, sponsor support, training , effective documentation system, employee involvement at all levels

DoE

- **Can you brief us about your organization?**

Organization: Abu Dhabi Water & Electricity

Authority (ADWEA)/ Now Department of Energy (DoE)

Company: Shuwiehat CMS IPC Privatized by Abu Dhabi Power Corporation, which is a subsidy company by ADPC, having 60 % shares for the government and 40% for the private company. It is the heart of the western region due to the essential role of power generation and water production which sold to the procurer in order to support the grid requirements and consumer demand.

- **How can risk management increase the success rate of a project?**

Having up to date procedures and work instructions that are being modified based on changes in the rules and policies can lead to being ready for any risk. The same has been discussed in regular meetings between the business Continuity management (BCM) committee members.

In addition, all the entities are being gathered in a unified platform having the risk register of very event or action. This risk register is being categorized from the highest risk to the lowest and the same is reflected in to the planned yearly capital and operating budgets.

- **How can quality management increase the success rate of a project?**

Planning the technical, engineering and financial aspects led to solid total quality management control without any counted significant deficiency. Finally, I have to say that Deming wheel played the main role to organize managing the risk via having the PDCA cycles and managing every single stage effectively.

Following and obtaining the necessary of ISO 9001 certificate requirements which is pertaining to quality and some ISO certificates pertaining to safety and environment for instance ISO 18001, 14001 & 45001. All the mentioned ISO certificate along with the renewal procedures followed have participated a big role in this success.

Finally, not only obtaining the certificates but also implementation of the same on every department, section and in all technical and admirative aspects.

- **Do you think that we use the correlation between risk and quality management to enhance the success rate of a project further? How?**

Well, yes indeed. Actually, both are integrated together in our management, in a way that all the risk management are elaborated in the emergency response plan and business continuity

management plan. On the other hand, quality management has a direct intervention on every step or procedure in engineering, technical, safety and financial control.

In another word, every clause in the obtained ISO certificates are being checked and audited twice, once internally by the employees and the second time by a third party. So we do correlate the current risk management procedure with the ISO requirements, once the auditing is done all the non-conformities are being gathered in order to put in place or to be modified as per the procedure. The same is done semi annually or sometimes directly upon any incidents or any findings.

- **Do you think that integrating risk with quality is difficult? Why? If yes, how to make it less difficult?**

Yes and no!

No if the risk is manageable within the available resources for instance the manpower, engineering tools and financial requirements. This is via following the predefined BCM plan and emergency response process.

Yes, if it is unpredictable risk (eg. Oil spill, red tide, war.etc) that has newly came to the power plant or even to the country. This unpredictable risk needs new procedures to be created and then amended into the company policy.

The way to make it less difficult is to rate the defined and predicted risks in to categories, high, moderate and low. The same to be ranked with records out of 5 or 10m and then to reflect the chances of any equipment failure in to the capital and operating budgets either in to a maintenance intervals or a full system replacement.

- **When adopting a new approach, training can hinder or delay the success of the approach, will training do the same if risk and quality were to be integrated? Why?**

Training is the only solution in case of adopting new approach, but it will not delay the success if it is in advance way and inline with the current agreed risk and quality integrated management requirements. The reason that it will not effect the success is that training can enhance awareness of the new approach and make the risk and quality management updated and aligned to the overall company vision, mission and objectives.

- **Many theories suggested that one of the short comes in risk management and quality management is excessive documentation. To overcome this issue, some researchers suggested that the combination of risk and quality management can reduce the documentation. Do you agree or disagree? Why?**

I do agree to some extent, as I believe that the procedures documentation has to be segregated between risk and quality management in order to go quickly to the desired clause in case of **obtaining ISO certificates and recertification purposes**. Even though, integration of the risk and quality can definitely reduce the documentation as every selected and followed step can lead to the right approach with the desired quality, in faster manner instead of going to 2 different documentations and **numerous forms to be filled**. So to sum up, having such critical asset which is power sector, better to integrate both risk and quality in to one integrated document for less hassle, that can save time and efforts.

- **One of the critical deficiencies in quality management and risk management is the rare update of the plan once approved, can the integration of risk and quality reduce this issue? How?**

Yes it is possible as once the risk and quality managements are being integrated, it is mandatory to revise every single clause in both policies in order to be aligned together properly.

Although, this deficiency can be resolved in case of having yearly reviews, internal and external auditors, in which all the raised comments can be tackled and improved. These reviews and comments attendance to be done department and sections wise with counter checks by the departments' heads and managers.

- **What are the CSF & KDF to judge a successful integration between the quality and risk?**

The main key success factors to perform world class of high standard quality with high secure assets to ensure sustainability of power generation and water production for Abu Dhabi city are as follows:

1. Having a regulator, who states the policy and regulation based on UAE law, world health organisation and internationally

approved procedures, practices and work instructions. This regulator control all the companies starting for the generation companies, transmission till ended up to the distribution companies where all users benefit from the products (electricity and water).

2. Implementation, including auditing of the above-mentioned points are controlled by another power corporation to ensure that all are in line with the procedures.
3. Follow up of the above to ensure that all steps are in line with the international power and water purchase agreements are done by another additional entity which buys the power and water for the consumers.
4. All of the generation companies are having full security as the company that buys the product already signed agreements that there will be no interruption for the fuel sources during the agreement. In addition, the generation companies signed agreements to have suitable power generation and water production.
5. Additionally, all the companies signed agreements with insurance companies in order to claim any losses for all the assets in case of any catastrophic incidents.
6. All the security and safety related for the asset and employees are secured by another entity belong to the army and Abu Dhabi government.
7. Risk and crises management is also managed and coordinated between all the entities via another authority keen on managing, controlling and providing risk mitigation solutions.

KDF:

I'll not consider it deficiency as the return on investment of the entity is too high and never reduced at all from the time lunched till date. The demand of power and especially water has been dramatically increasing which is a true evident of having no deficiencies.

The following can be improved:

1. Reduced the number of entities to have the sector more focussed as these entities are keeping changing from time to another. Additionally some of the key employees and decision makers are keeping changing,

but since the procedures and agreements remain the same that can be followed.

2. Emiratisation is a very difficult and complicated file that requires proactive steps to enhance work security via sustainability of power and water particularly during major crises when no expatriates exist in the country and the need will be for only UAE National to operate the power sector.
3. Moderate speed to synchronization for those different entities as every company wants to seek for maximum profit rates.
4. Sometimes every company willing to work independently, but they face the fact that they have certain important tools but still there are lack of other important tools that are available with other companies!

Lack of training centres dedicated for the employees to practice generation, transmission and distribu