An Analysis of Project Risk Management and Contributing Factors

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Abstract: **To achieve successful outcomes, project managers must effectively resolve conflict situations during project management. In this study, we focus on developing a systemic approach to conflict management in project risk management and analyzing various factors contributing to conflict situations. Using a structured questionnaire, we collected data from 200 risk analysts working in the software industry under the project management domain. The data were analyzed using probabilistic methods and statistical analysis to develop a systemic approach to conflict management. The questionnaire was designed to capture information on various factors that contribute to conflicts during project risk management, including the extent of exposure and multiple exposures. The study's findings reveal that a systemic approach to conflict management in project risk management is effective in minimizing the negative impacts of conflicts. Our analysis identified several contributing factors to conflicts, including poor communication, insufficient risk assessment, and unclear project goals. We propose a systemic approach to conflict management that involves identifying the contributing factors, assessing their severity, and developing appropriate conflict management strategies. The study's contributions include developing a systemic approach to conflict management in project risk management, identifying contributing factors to conflicts, and proposing effective conflict management strategies. The research findings have important implications for project managers who want to achieve good project results while avoiding the negative effects of conflict.**

***Keywords*—Project Risk Management, Conflict Management, Risk factors, Project Management Knowledge Areas**

I. INTRODUCTION

Conflict resolution is a difficult but necessary activity in project risk management. The goal of conflict resolution is to minimize and mitigate the negative repercussions of disagreements that arise during project management. One of the most important phases of software implementation is risk management. It entails recognizing, preparing, analyzing, monitoring, managing, and communicating risks [1]. Assessing risks entails determining the extent to which dangers to the project's success are evident. Future dangers could potentially result in significant development issues that would have an impact on every area of expertise in software project management [2]. Whenever a project is being planned and developed, this is typically seen as a crucial concern. Conflicts that arise throughout the risk assessment process must be resolved, according to the project management [3]. In IT in general, and in software development, the risks can be significant, and the consequences can be severe. By conducting rigorous and proper risk assessment analysis, organizations can identify potential risks and develop strategies to mitigate or manage them. This can help to minimize the impact of risks on project timelines, budgets, and outcomes, and improve the overall effectiveness and performance of the organization [4]. However, it's important to note that creating software with the least amount of risk is not always possible. Some risks may be inherent in the software development process, while others may be external factors that are beyond the organization's control. In these cases, the focus should be on identifying and mitigating the most significant risks, rather than trying to eliminate all risks entirely. Overall, effective risk assessment analysis can help organizations to make more informed decisions and manage their projects more efficiently, ultimately leading to improved performance and outcomes. There is a need for a more effective approach to risk assessment in project management, particularly with regard to the systemic analysis of contributing and leading factors [5].

The current approach may not be sufficiently comprehensive or rigorous and may result in a lower success rate in managing and mitigating risks. By focusing on the systemic analysis of various contributing and leading factors, the paper aims to provide a more holistic approach to risk assessment that considers the complexity and interdependence of different factors. This approach may help to identify risks that might otherwise be overlooked and to develop more effective strategies for managing those risks. The major goal of this article is to improve the efficacy of risk assessment and management in project management, with the goal of assuring that projects finish on time, within budget, and with the anticipated project objectives.

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This article focuses on the successful use of systemic analysis to examine the multiple contributing and leading aspects of project management. The goal is to attain a greater success rate by broadening the area of research and taking into account various exposures. Also, each knowledge area's risk impact is examined, and their relevance to conflicts is considered. The survey is carried out at businesses with an emphasis on IT. We have concentrated on those software companies whose commitment to their objectives and apparent adherence to best practices in project development caught our attention. These are the businesses that fall between software houses with medium to high ratings.

This research work is broken into five sections, the first of which introduces the research project. Section 2 presents a summary of the field's pertinent research activities. Section 3 goes into how conflict resolution and risk assessment strategies were used in this study. Section 4 elaborates on the study methods, whereas Section 5 gives the results and findings. Finally, the final section brings this study to a close.

II. SURVEY OF RELEVANT WORK

The three main procedures that go into a software risk assessment (SRA) are risk identification, analysis, and prioritization. Creating risk mitigation techniques is a key component of risk analysis in project development [6].

Around 50 civil officials and the Department of Defense (DoD) have used SRA since it began its evolutionary development at SEI in 1992 [7]. The question of why risk assessment or risk management is crucial arises. This question's obvious solution is discovered. Every endeavor or undertaking carries some level of risk [8]. Risks can affect several parts of a project, including scope, integration, cost, human resource, and communication management, among others. As a result, understanding the risks and the objectives connected with them is critical for the project's progress. This knowledge enables stakeholders to create contingency plans that help in successful risk acceptance, mitigation, and mitigation techniques, hence improving overall project planning. The SEI risk management paradigm describes a systematic and continuing risk management methodology. As seen in Fig. 1, there are six main risk management models [9-10]:

- Identify: The first stage is to identify and investigate any dangers ahead of time.
- Analyse: Gathering information on each identified risk, and analyzing its effect, timeline, and probability is part of this process. It also entails categorizing and prioritizing the hazards.
- Plan: Converting the risk information obtained into practical decisions and putting them into action.
- Track: Constantly monitoring risk indicators and ensuring that risk-reduction activities are properly executed.
- Control: Managing any changes to the mitigation strategy and making appropriate modifications.
- Communicate: Maintain a steady flow of information and feedback internally and externally throughout the process. This involves informing key stakeholders on risk activities, present hazards, and emerging risks. [5]

Figure 1: Paradigms of risk management

A few models are also published to help with risk assessment. Risk drivers are the next step in identifying and reducing software risks, after US Air Forces. The Engineering Risk Model (SERIM) is primarily concerned with three types of risk: technical risk, cost risk, and scheduling risk. These hazards are seen as key variables in the model, however, process-related risk is excluded, making it more appropriate for acquisition rather than software development projects. Other critical risk components, such as cost risk, support risk, performance risk, and scheduling risk, all play important roles in total risk assessment [6]. This paradigm has the flaw of not accounting for the intricate problems with any software. The suggested article does not analyze the hazards associated with requirements; these risks are taken into consideration [6].

III. PRIORITIZATION OF RISKS

A. High Probability, High Impact

Risks that have both a high priority and a high impact should be addressed first. These hazards have the ability to significantly impact the project's success or failure. As a result, it is critical to address them initially in order to limit any possible negative consequences and assure the overall success of the project. These risks are typically those that have a high probability of occurring and could cause significant damage if they do. By prioritizing these risks and addressing them proactively, project managers can minimize the chances of failure and increase the project's chances of success. A well-defined risk management plan is critical for detecting and reducing risks throughout the project's lifetime. This strategy allows for proactive actions to be taken to identify and handle possible risks, allowing easier project execution and minimizing the effect of unanticipated occurrences. Risk management should be an ongoing process throughout the project, with risks continually reassessed and

prioritized as necessary. By addressing high-priority and high-impact risks early in the project, project managers can reduce the likelihood of significant problems occurring later in the project, which can save time, money, and resources [11], [12].

B. High Probability, Medium Impact

Once the risks of higher priority and high effect have been handled, the risks of high chance of occurrence and medium impact should be prioritized. While these risks may not have as serious repercussions as the high-priority risks, they can nonetheless have a substantial influence on the project. As a result, it is critical to devote resources and attention to successfully managing and mitigating these risks in order to ensure project success. These risks are significant because of their high possibility of occurrence and possible influence on the project, while they are not as severe as those with high priority and impact. Addressing these risks as soon as possible is critical to preventing them from escalating into larger concerns that might jeopardize the project's success. To ensure project success, it is critical to address them as soon as possible. These risks can be managed by implementing mitigation strategies to reduce their likelihood or developing contingency plans to minimize their impact if they occur. Project managers should construct a comprehensive risk management strategy that gives recommendations for detecting, analyzing, and responding to hazards throughout the project lifecycle to guarantee successful risk management. Project leaders may successfully recognize and mitigate risks with a high chance of occurrence and a medium degree of impact by adopting such a strategy. This proactive strategy enables them to take suitable actions to reduce these risks and ensure the overall success of the project.[13].

C. Medium Probability, High Impact

It is critical in a risk management strategy not to miss hazards with a high likelihood of occurrence and a medium degree of effect. These risks should be handled as a secondary priority, after the risks with the highest priority and effect. Even if their impact is not as severe, their high probability needs preemptive actions to limit their possible implications. Project managers may successfully address and limit the influence of these risks on the development and success of the project by prioritizing them as the second priority. This technique helps them to successfully handle the risks. Project managers may successfully lower the possibility of these risks occurring and lessen their potential impact by prioritizing hazards with high probability and medium consequence. These risks should be addressed as the second priority in a risk management strategy, after the risks with the highest priority and impact. Furthermore, following resolving the aforementioned risks, hazards with medium likelihood and high effect should be assigned the third priority. This methodical approach guarantees that project managers devote adequate resources and attention to risk management, ultimately improving the overall risk management strategy and boosting the likelihood of project success. These risks are important because although their probability of occurring is not as high as the risks with high priority, their potential impact on the project is significant. Therefore, project managers should not ignore them and must address them proactively. To properly manage these risks, project managers must analyze the chance of each risk occurring and assess its potential impact on the project. Mitigation plans should be devised based on this analysis to minimize the possibility of the risks materializing. Furthermore, contingency plans should be developed to mitigate the impact if any of the risks arise.

It is critical to recognize that a risk management strategy is a dynamic and live document. It should be updated and altered on a regular basis as the project proceeds and new risks surface, or current risks change. This iterative method guarantees that the risk management strategy stays relevant and effective throughout the project's lifespan, allowing project managers to remain proactive and responsive in dealing with risks. Risks having a medium likelihood of occurrence but a high effect, which were previously classified as a lower priority, may demand rapid attention and swift action if the situation changes. The relevance and possible repercussions of particular risks might change as the project progresses. As a result, project managers must be alert and adaptive, ready to analyze and rethink the importance of these risks. If the situation changes and these risks become more essential, they must be handled as soon as possible to guarantee the overall success of the project and to limit any potential bad repercussions [12].

D. Medium Probability, Medium Impact

Risks having an average chance of occurrence and a standard effect should be handled as the fourth priority in a risk management plan. This priority order is as follows: high priority and high impact risks, high probability and medium impact risks, and medium probability and high impact risks. Project managers recognize the possible relevance of risks with medium likelihood and medium effect by allocating the fourth priority to them while prioritizing hazards with higher priority. Although risks with a medium likelihood and effect are not as serious as those with higher priorities, they nevertheless require attention and proper mitigation strategies. Addressing these risks on time enables a thorough risk management approach and greatly adds to the project's overall success. By recognizing and anticipating these risks, project managers may successfully reduce their potential impact while keeping project progress and outcomes within intended bounds.

Risks with a medium likelihood and effect may not pose an immediate danger to the project's success, but they should not be ignored. Ignoring these risks might have a detrimental impact on the project. To successfully manage these risks,

project managers must first analyze their potential impact on the project and then devise mitigation techniques to reduce the possibility of their occurrence. By adopting early actions, project managers may reduce the potential effect of these risks and assure the overall success of the project. Risks having a medium likelihood of occurrence and medium effect may not be very urgent or important, but they nevertheless need attention and aggressive management. Ignoring these risks might have a detrimental impact on the project. To limit the chance of occurrence, project managers should assess their possible impact on the project and apply suitable mitigation procedures. By properly managing these risks, project managers may reduce their impact and contribute to the overall success of the project. Project managers may successfully reduce the possibility of these risks materializing and limit their impact if they do occur by prioritizing the management of risks with medium probability and medium impact. In summary, addressing these risks as the fourth priority in a risk management strategy ensures that all risks are addressed and handled, regardless of their likelihood or effect. This comprehensive strategy indicates the project manager's dedication to identifying and managing any risks in order to improve the project's overall success and conclusion [14].

The authors of [15] created and tested a risk management solution tailored to agile software development projects. The suggested tool incorporates a number of risk management strategies and employs an iterative lifecycle approach. The authors ran an experiment to evaluate the tool's performance in partnership with agile methodology experts. The results demonstrated that the tool enhanced the effectiveness of risk response planning without adding time to the process.

The findings of a qualitative study that evaluated the application of risk management in Scrum software projects were given by researchers in [16]. As a result, authors offered risk management strategies that, according to respondents and the literature, received greater and less widespread agreement. It was discovered that risk management requires constant application in a feedback loop. Even for high-risk projects, Scrum projects do not have a high level of formal planning, even in high-risk projects. The research found that risk management in Scrum is done differently than in more conventional methodologies. Although the framework already includes resources, traditional risk management procedures would be added and modified.

The tools and procedures used for the specified risk management processes were examined by the authors in [17]. It critically examines a handful of these often-employed strategies and exposes their flaws and/or limits. The authors demonstrate how the usage of current risk management strategies may lead to ineffective risk management, which could lead to project failure. Their study serves as inspiration for others to develop better risk management strategies and identify solutions.

The authors of [18] proposed the card game Risking, which encourages students to consider the risks associated with software projects and potential solutions. Authors utilized the game in three software engineering classrooms to gather empirical data on the learning and experience it elicited. To assess the game Focus Group dynamic and the MEEGA questionnaire have been used. The outcomes imply that the game was well received and that the students approved of the playing style, the social connection, and the opportunity for learning through fun activities.

IV. CONFLICT HANDLING AND RISK ASSESSMENT

Conflict resolution is an anticipated and intrinsic component of project management. Conflicts are prevalent in development projects as a result of differing perspectives, experiences, and attitudes related to project skills or other variables [19]. The likelihood of loss or uncertainty is now essentially the risk. In project management, risk plays a significant role. It's regarded as one of the major obstacles to effective project development. Risk is typically what makes a project successful or unsuccessful [20]. Chances of failure exist whenever there is uncertainty. Risk assessment is an essential component of project planning, with the goal of lowering the possibility of failure and increasing the possibility of success. Figure 2 depicts the risk assessment process, which includes the discovery, analysis, and prioritization of hazards. Project teams may address possible hazards proactively, implement appropriate mitigation techniques, and improve overall project outcomes by methodically analyzing risks.

Yet today, a drawback of this strategy is that conflicts arise while evaluating the risks. This is due to the fact that various people desire various risk assessment implementations. The project manager has a responsibility to manage the circumstance [21].

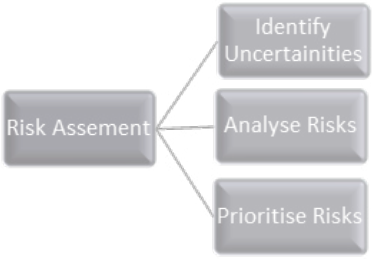

Figure 2: Elements of Risk Assessment [22]

Finding risks related to the management of software development is the first and most crucial phase in the risk assessment process. The objective is to locate dangers without evaluating them just yet. Finding risks related to the management of software development is the first and most

crucial phase in the risk assessment process. The goal is to discover possible threats without first assessing them [17]. It is critical to identify possible hazards related to project management, organization, or project operations before beginning a risk assessment. To completely examine the risks in an appropriate manner, the project management should organize a brainstorming session with all important stakeholders. This collaborative approach enables a thorough assessment of the risks and permits successful risk management solutions. All ten of the software project management knowledge areas contain risk identification. Several risks in every region can lead to disputes. The costing area, for instance, lacks proper contracts, subsequent payments, and cost estimation for uncertain certainties.

Go on to risk assessment after identifying the danger. Risks are assessed using two criteria: likelihood and effect. The probability of a danger occurring is represented by probability. Risks are classified into three categories: high (frequent occurrence of the risk), medium (moderate possibility of the risk occurring), and low (low probability of the danger materializing) [23]. Low: risks are less common.

The risk assessment component known as "impact" examines how risk may affect a project or organization. One of three categories corresponds to the effect of risk [24].

- High impact: Due to the serious repercussions of this risk, the project manager was forced to suspend all work.
- Medium effect: Although this risk may have an impact on performance, the project manager will continue to address and manage it.
- Low impact: This risk has few ramifications and may be readily addressed without causing major interruption to the project.

Following the risk assessment, the figure displays risk prioritization based on likelihood and impact, as well as a risk classification chart [25]. Regular hazards are ones that are highly probable but have little consequence. Minor human mistakes involve problems with delivery operations or procedures. Low-importance risks are those having a low likelihood and little impact [26]. Lower-level management is normally in charge of managing these risks. On the one hand, difficult risks are those that have a low likelihood of occurring but would have a big impact on the project if they did. Critical risks, on the other hand, are more probable and would have a significant effect on the plan or organization.

V. METHODOLOGY

Conducting a survey-based methodology is a common and effective way to gather information on risks in software project management. By surveying a diverse group of risk analysts from the software industry, you can obtain a range of perspectives on different risks and their potential impact. Using statistical analysis to understand survey findings helps uncover trends and patterns in the data. It also allows for the measurement of the relative importance of distinct dangers. Using this method, project managers may efficiently prioritize their risk management efforts and focus on issues that are most likely to have a significant impact on the project. This allows them to more efficiently deploy their resources and attention, ensuring that the most significant risks are appropriately managed and minimized. Project managers may improve the overall risk management approach and raise the project's chances of success by concentrating on these high-impact issues. Overall, a survey-based methodology can be a useful tool for identifying and prioritizing risks in software project management. However, it's important to ensure that the survey is well-designed and that the sample size is large enough to provide meaningful results. Additionally, the interpretation of the results should be done carefully and with appropriate statistical analysis to ensure that the findings are accurate and reliable. Ten knowledge areas of software project management have been taken into consideration when creating the questionnaire. Risk assessment and conflict relationships, as well as how they affect project success, are examined under each knowledge domain. Based on this study, inquiries have been made. All the ten-software project management knowledge domains are detailed in Fig 3. For each knowledge domain, the connection between conflicts and dangers has been examined. Their impact and likelihood of occurrence have both been carefully evaluated. [20]

Figure 3: Project management knowledge cycle [22]

A survey was conducted to investigate the level of awareness of risk assessment and the relationship between risk and conflict in several knowledge areas. The survey results confirm a strong link between risk assessment and disputes, emphasizing their importance in project development success. These findings emphasize the significance of handling risks and managing disputes effectively to guarantee project success.

The survey results are based on replies from several organizations. To guarantee anonymity, the replies are extensively analyzed and aggregated without exposing the identities of any specific sources or organizations. The report contains 200 completed questionnaires from risk analysts in the software sector working in the project management domain. These 200 completed surveys are statistically analyzed, and the results are analyzed using probability analytic techniques. This rigorous analysis technique allows for a thorough knowledge of the link between risk assessment and disputes in the context of project management.

On the basis of eleven software project management knowledge domains, the questionnaire is organized into various sections. There are a few questions in each section of the questionnaire designed to examine how risks are perceived in relation to that knowledge area. For each question, we have given different instructions, and based on those instructions, we have divided the participants into groups and examined their responses. This research made it easier to understand how crucial risk assessment is to project success and how it relates to issues that arise during project development.

VI. RESULTS AND DISCUSSION

The results, to get a better understanding of risk in project management, are obtained and those are in alignment with the knowledge areas as shown in Table 1 to Table 10 to get a better understanding of risk assessment.

We have collected data from different groups of people [22]. The responses are studied and analyzed to see what the impact of each risk is and how heavily it can affect the success rate of a project. "Awareness of the importance of risk assessment in software project development." [19]

Table 1 Project Integration Management

Risk Impact	Low	Medium	High	Don't Know
Failure to deliver software, hardware, or a development environment on time	24%	10%	36%	30%
Integration failure with the current system.	7%	30%	40%	23%

The study has found that failing to integrate with the system has the highest impact on project success, it suggests that this is a critical risk factor that needs to be carefully managed and mitigated. Integration is a critical aspect of software development, and failure to integrate effectively can lead to delays, errors, and other issues that can have a significant impact on project success. By identifying this risk factor as a high priority, the study can help project managers to focus their attention and resources on developing effective strategies for managing and mitigating this risk. This may include implementing robust testing and quality assurance processes, ensuring clear communication and collaboration among team members, and using appropriate tools and technologies to support integration. Overall, the study's findings can provide valuable insights into the most critical risk factors in project management and can help organizations to develop more effective strategies for managing those risks and improving project success

Table 2 Project Scope Management

Risk Impact	Low	Medium	High	Don't Know
The scope is not defined accurately.	16%	10%	56%	18%
Uncontrolled changes that expand the project's scope	44%	34%	12%	10%
The project scope lacks several crucial requirements.	4%	18%	76%	2%
Project risk is brought on by imprecise and incomplete requirements	18%	38%	36%	8%

If important requirements are missing from the project scope, it can have a significant impact on the success of the project. Requirements are the foundation of any software development project, and they define what the project aims to achieve and how it will be implemented. If important requirements are missing, it can lead to confusion, delays, and even failure to meet the project's goals. Missing requirements can result in several problems, such as:

- Misaligned expectations: If important requirements are not included in the project scope, it can lead to misaligned expectations between stakeholders and the development team. This can result in a lack of clarity and misunderstandings about what the project is supposed to achieve.
- Increased risk: Missing requirements can increase the risk of errors and omissions in the final product. This can lead to delays and additional costs as the team works to

fix issues that could have been avoided if the requirements were properly defined and included in the scope.

- Reduced quality: Missing requirements can also lead to a final product that does not meet the required quality standards. This can impact the project's success and the organization's reputation.

Overall, it is important to ensure that all import requirements are included in the project scope to minimize the risk of project failure and ensure the success of the project.

Table 3 Project Cost Management

Risk Impact	Low	Medium	High	Don't Know
Incorrect project cost forecasting and estimation.	7%	48%	33%	12%
Everyday rates at which the currencies of various nations change.	58%	18%	6%	18%

It is difficult to make a definitive statement about the impact of currency fluctuations on the success of a project without more context. Currency fluctuations can have a range of impacts on a project depending on various factors such as the type of project, the industry it operates in, and the location of the project. For example, a project that involves importing or exporting goods may be significantly affected by currency fluctuations as changes in exchange rates can impact the cost of materials and shipping. Similarly, a project that involves working with foreign partners may be impacted by changes in currency exchange rates. On the other hand, a project that is entirely domestic and not reliant on international trade may not be as affected by currency fluctuations. Additionally, the degree of impact can vary depending on the magnitude of the currency fluctuation and the duration of the project. Overall, it is important to consider the potential impact of currency fluctuations on a project and develop strategies to mitigate any negative effects. This may involve implementing contingency plans or financial hedging strategies to minimize the impact of currency fluctuations on project success.

Table 4 Project Time Management

Risk Impact	Low	Medium	High	Don't Know
Wrong scheduling and time management.	20%	47%	9%	24%
Using the incorrect shortest path in a critical path analysis	1%	60%	36%	3%
According to time management, resources are not readily available.	19%	18%	53%	10%

Correctly identifying the critical path is an important aspect of project management as it helps to ensure that the project is completed within the planned timeframe. If the wrong shortest path is identified, it can result in delays and impact the overall success of the project. Therefore, it is important to properly analyze the project and determine the correct critical path. As the study shows, 60% of people agree that determining the wrong shortest path in the critical path analysis technique will moderately affect the project. While this may not have a catastrophic impact on the project, it can still result in delays and additional costs. Therefore, it is important to carefully analyze the project and use accurate data to determine the critical path. It may also be helpful to perform sensitivity analysis to identify potential changes to the critical path and develop contingency plans in case any delays occur. Overall, while determining the wrong shortest path may not be a high-priority risk, it should still be taken seriously and addressed appropriately to minimize the impact on the success of the project.

Table 5 Project Quality Management

Risk Impact	Low	Medium	High	Don't Know
Conflicts between attributes of quality, time, and scope. (It will take more time and require a clearly defined scope to recruit a solid development team.)	5%	15%	72%	8%
The project's quality of product or service does not meet the criteria and is not appropriate for usage.	12%	5%	53%	30%

The project's quality is unattainable. (ex. expensive, difficult to implement, and incompatible with needs).	7%	18%	65%	10%
To raise the project's quality, no training is offered.	38%	35%	17%	10%
Best practices and technology are incompatible with the project domain.	10%	26%	63%	1%

It is true that conflicts between project qualities, time, and scope can have a significant impact on the project development process. These conflicts can arise when there are competing priorities or limited resources, which can make it difficult to achieve all project objectives within the planned timeframe. As the results show, many respondents agree that conflicts between project qualities, time, and scope can have a high impact on the success of the project. This highlights the importance of properly managing these conflicts and making trade-offs where necessary to ensure that project objectives are met within the available resources. One approach to managing conflicts between project qualities, time, and scope is to prioritize project objectives based on their importance to the overall success of the project. This can help to ensure that the most critical objectives are achieved even if there are constraints on time or resources.

In addition, effective communication and collaboration among project stakeholders can help to identify potential conflicts early on and develop strategies to address them. This can help to minimize the impact of conflicts on the project development process and ensure that the project is completed successfully. Overall, it is important to recognize the potential for conflicts between project qualities, time, and scope and take steps to manage them effectively to ensure the success of the project.

Table 6 Project Human Resource Management

Risk Impact	Low	Medium	High	Don't Know
There aren't resources available at a certain moment.	10%	17%	64%	9%
A lack of determination for ongoing projects.	38%	28%	17%	17%

The research shows that a lack of resources can have a significant impact on the development process of a project. This can include a shortage of funding, materials, equipment, or personnel needed to complete project tasks. When resources are not available at the time needed, it can cause delays in the project timeline and potentially impact the quality of the final product. In some cases, it may also lead to increased costs if additional resources need to be brought in or if the project needs to be reworked due to resource constraints. Effective resource management is therefore crucial for the success of any project. This includes identifying resource needs early on in the planning process, allocating resources appropriately, and continuously monitoring and adjusting resource usage throughout the project lifecycle. In situations where resources are not available as needed, project managers may need to make trade-offs or prioritize certain tasks over others to ensure that critical project objectives are met. This can involve re-sequencing project tasks, revising timelines, or adjusting project scope to accommodate resource limitations. Overall, managing resources effectively is a critical aspect of project management and can have a significant impact on the success of a project.

Table 7 Project Communication Management

Risk Impact	Low	Medium	High	Don't Know
The project team does not understand the requirements correctly	2%	13%	84%	1%
Lack of coordination between the project manager, the team, and the stakeholders	10%	40%	36%	14%
Impact of functional managers' Lack of Communication and Commitment	2%	59%	37%	2%

The risk of a lack of understanding of the requirement usually creates major problems. This is the result we have extracted from analyzing the responses of the people. It is important to have a clear understanding of project requirements to avoid potential risks and ensure successful project development.

Table 8 Project Risk Management

Risk Impact	Low	Medium	High	Don't Know
Avoid a significant risk that has no estimated cost but a large impact.	5%	13%	70%	12%
Reduce the high risk with minimal impact	63%	19%	13%	5%

It is important to consider risks with high impact, even if there is no clear cost estimation, as ignoring them can have significant negative effects on project development. This highlights the importance of properly assessing and prioritizing risks in project management. According to 70% of respondents, the risk that has the greatest influence on the progress of the project if we ignore it has no estimated cost.

Table 9 Project Procurement Management

Risk Impact	Low	Medium	High	Don't Know
Project problems arise when disputes arise between vendors.	22%	61%	7%	10%
Terms and conditions of the contractor that are undesirable to upper management and the project manager	20%	45%	33%	2%
Contractors don't provide a reliable response.	17%	38%	35%	10%

It is important to manage conflicts effectively to avoid negative impacts on project development. While conflicts among vendors may have a medium effect, it is still important to address them and find solutions to minimize their impact on the project.

When there occur conflicts among vendors then it will have a medium effect and 61% of people agree with this as shown in the above table.

Table 10 Project Stakeholders Management:

Risk Impact	Low	Medium	High	Don't Know
Conflicts between managerial stakeholders spoil the project	14%	48%	37%	1%
Conflicts among stakeholders over proposed changes	7%	48%	35%	10%
Input taken from stakeholders is of low quality (e.g. Business case, requirements, and changes request.	17%	8%	55%	20%

If the inputs from stakeholders are of low quality, it can negatively impact the project development process and ultimately the success of the project. It is important to have clear and accurate inputs from stakeholders to ensure the project meets their expectations and requirements. Therefore, it is essential to prioritize and address this risk to mitigate its impact on the project's success. This study shows that most people agree on the thing that inputs from stakeholders are of low quality has the highest impact on project success.

Risk Assessment Matrix

A risk assessment matrix as shown in Table 1, is a tool used in risk management to prioritize risks based on their likelihood and potential impact. It is often used in conjunction with a risk register, which lists identified risks and their corresponding risk response plans. The risk assessment matrix is a useful tool for project managers to prioritize risks and determine the appropriate risk response plans. It allows for a systematic approach to risk management and helps to ensure that resources are allocated appropriately to address the most critical risks.

Table 11 Risk Assessment Matrix

Knowledge Area	Risk Description	Impact
Integration	Failure to deliver software, hardware, or a development environment on time	High
Integration	Integration failure with the current system.	High
Scope	The scope is not defined accurately.	High
Scope	Uncontrolled changes that expand the project's scope	Low
Scope	The project scope lacks several crucial requirements.	High
Scope	Project risk is brought on by imprecise and incomplete requirements.	Medium
Cost	Incorrect project cost forecasting and estimation.	Medium
Cost	Everyday rates at which the currencies of various nations change.	Low
Time	Wrong scheduling and time management.	Medium
Time	Using the incorrect shortest path in critical path analysis.	Medium
Time	According to time management, resources are not readily available.	High
Quality	Conflicts between attributes of quality, time, and scope. (It will take more time and require a clearly defined scope to recruit a solid development team.)	High
Quality	The project's quality of product or service does not meet the criteria and is not appropriate for usage.	High
Quality	The project's quality is unattainable. (ex. expensive, difficult to implement, and incompatible with needs).	High
Quality	To raise the project's quality, no training is offered.	Low
Quality	Best practices and technology are incompatible with the project domain.	High
Human Resource	There aren't resources available at a certain moment.	High
Human Resource	A lack of determination for ongoing projects.	Low
Communication	The project team doesn't understand the requirements correctly.	High
Communication	Lack of coordination between the project manager, the team, and the stakeholders	Medium
Communication	Impact of functional managers' Lack of Communication and Commitment	Medium
Risk	Avoid a significant risk that has no estimated cost but a large impact.	High
Risk	Reduce the high risk with minimal impact.	Low
Procurement	Project problems arise when disputes arise between vendors.	Medium

Procurement	Terms and conditions of the contractor that are undesirable to upper management and the project manager.	Medium
Procurement	Contractors don't provide a reliable response.	Medium
Stakeholders	Conflicts between managerial stakeholders spoil the project.	Medium
Stakeholders	Conflicts among stakeholders over proposed changes.	Medium
Stakeholders	Inputs taken from stakeholder's t are of low quality (e.g. business case, requirements, and change requests).	High

VII. CONCLUSION

Careful risk assessment is a critical aspect of software project management. The assessment should be done by all ten knowledge areas to ensure that all risks are identified and addressed appropriately. The survey conducted in this scenario is an example of such risk assessment. It helped in making distinctions between various risks related to conflicts and prioritizing them based on their probability and impact. The survey's methodology was implemented honestly, and it is being carefully considered. The survey questionnaire was sent to a diverse group of people, and sampling was done keenly to ensure accurate results. The outcomes will aid in the improvement of the software in each knowledge area of software project management. Overall, a comprehensive risk management plan that considers all possible risks and addresses them appropriately can help in ensuring the success of software projects.

Overall, future work in this area should focus on developing and refining risk management strategies to ensure that software projects are completed successfully and deliver the expected value to stakeholders.

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