

Analysis of Software Project Risk Managers Based on Their Work and Responsibilities

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Abstract — Commonly, people use the term risk manager in different branches of science to represent the person who is responsible for activities which involves and handles risk management. But, in the branch of software engineering the definition for the risk manager is not well defined and there is always some insufficiency over this term. So the main objective of the paper is to classify the software project risk managers based on their roles and responsibilities by reviewing the literature accordingly to make the terms easily understandable.

Keywords — *Risk Manager; Software Project risk management; Project manager.*

I. INTRODUCTION

The term “risk manager” is well-known in different fields, such as banking, civil engineering, information systems, enterprise risk management, etc. Many authors in the field of software engineering have also used the term ‘risk manager’ in the literature. Recently, we conducted a literature survey in order to find out the suggestions given by different authors for making the current practice of risk management more effective [1]. Following the content analysis of the selected papers, it was found that the terms “risk manager” and “managers of risk” were used by a few authors to refer to an important resource for effective software project risk management. However, upon reviewing the literature, it was observed that the role of risk managers is not well defined and their responsibilities are confusing because of this variation. Furthermore, in 2007 [2] conducted a survey. Following the survey analysis it was concluded that the key person responsible for software risk

management activities in the software houses of Pakistan is the project manager, 36% of the respondents of the survey mentioned that in their organization, a risk manager has a role to play in the identification of risk. However, in response to the question “Do you think there is need of risk manager to handle all risk management activities?”, 77 % of the participants of the survey supported the need for a risk manager to handle software project risk management activities. On a second occasion, an author of the current study contacted five organizations and asked them the same question; these respondents too believed in the need for a designated risk manager for the effectiveness of software project risk management. All of the respondents’ answers were “yes” to the question. However, the situation became vague when the organizations were asked “Do you need a full time designated risk manager or half time designated risk manager or a professional risk manager or chief risk manager or a manager of risk or a risk consultant?” The

results described above have led the authors to analyse the literature in order to make the term understandable and to develop concrete concepts for the subject under review. To enrich the findings, the authors also accessed a few websites and other resources. The paper's structure will now be given. Section II is a thematic review of the existing literature so as to enlighten readers about the phenomenon. Section III is all about the findings and recommendations for practitioners on the basis of the results of the literature review of the domain and also other domains, and on the basis of our industrial and academic experience. The last section is the conclusion and suggestions for future work.

II. LITERATURE REVIEW

The term "risk manager" is common in daily life. It is often used by many authors in different fields [3] [4] [5] [6] and in software engineering [7] [8] [9] [10]. Researchers working in the field of banking, while writing books and articles, have often used the term "risk manager," especially in finance and accounting, e.g. both writers [11] of the book are themselves senior financial risk managers and in book it is mention that risk managers are one of the focused upon audiences for the book. In the book, they discuss the practical issues that a risk manager needs to consider while working on risk management. The book [12] is written for students and the authors have defined the role of a risk manager.

In software engineering and in different fields, risk managers are given other job titles such as "risk analyst [13], "project risk manager" [14] [15], "dedicated risk manager," "full-time risk manager," "risk coordinator" [15], "designate risk officer" [16] , "chief risk officer," "risk officer," and "risk master".

The authors of the current study have consulted two online dictionaries in order to find the meanings of a few terms so as to contribute towards the composition of a standard definition of software project risk manager. Risk is "the possibility of suffering harm or loss" and a manager is "One who handles, controls, or directs the staff, part of organization or full enterprise" [17]. Though, the authors did not find the terms "manager of risk" or "software risk manager" in the dictionaries and encyclopaedia available online, however, it described the term "certified risk manager" [17] as follows: "Certified Risk Manager (CRM) is a professional designation that is earned after the completion of five practically oriented courses. This certification is for those working in risk management and

related fields, such as financial, insurance, loss control, legal, accounting, and claims specialists".

Wallmuller's work is based on the work of Jyrki Kontio. According to Wallmuller, it is the responsibility of a project manager to develop a risk management plan, appoint a risk manager and assign risk management responsibilities to the different team members before the first step of the process, because, in the first step of the process, all involved stakeholders have to establish a risk management method for the software project development [26], [34]. Furthering the argument, the senior managers, team members, and especially the project leaders need to gather information from all internal and external stakeholders in order to become effective managers of risk [34].

In common with other authors [30] [31] [32], Dr.E.Wallmuller has considered the importance of a project team in the different phases of software risk management. Moreover, he believes that the risk manager has to play an administrative role and a leading role because the risk manager has to support the project team in the planning and controlling of processes and to administrate risk reporting and has to evaluate new risks and the effectiveness of the risk management plan [26].

Hence, a risk manager has a key role in effective software project risk management but some authors have also noted that it is difficult to find an experienced risk manager who possesses reasonable knowledge and is experienced in the practices within the risk management domain [43]. This is a main hurdle in the conceptualization and full utilization of the risk manager role and the allocation of responsibilities so as to achieve effective software project risk management.

III. RECOMMENDATIONS FOR RESEARCHERS AND PRACTITIONERS

In order to develop a better understanding of the subject under review, the authors have classified the various titles of Software Project Risk Manager on the basis of their role and responsibilities in software project risk management. Generally, different job titles are given in this category; however, for clarity and consistency, it is better to use a title with the keywords "Software Project" and "Manager".

A. Software Project Manager Of Risk

All software project development team members are the managers of risk as they are responsible for handling the risks of the project particular to their domain. The

stakeholders of a software project other than the team members can also be the managers of risk if they manage risks of the software project. However, all team members and stakeholders, managing risks are non-designated managers of risks until they are not acknowledged by the organization.

B. Software Project Risk Consultant

A Project Risk Consultant can be a non-stakeholder of the project who is referred to by an organization on the request of a department, and can come from either another department or from outside the organization. The role is the support of the team in the handling of risk management activities of a specific software project, effectively. The degree of involvement of a risk consultant may vary and depends upon the nature, size, criticality and complexity of a project.

C. Chief Software Project Risk Manager

This is a human resource responsible for leading and communicating with the acknowledged risk managers at all of the organization levels. In small organizations the role can be assigned to a project manager, or a quality assurance manager. In large organizations it can be assigned to some expert/professional. In the case of a small organization, and especially for small projects, the project manager or the quality assurance manager or any other senior member can perform their basic duties along with risk management duties, whereas for the large organization, and particularly for large projects, a separate Chief Software Project Risk Manager can be a better option for the effectiveness of software project risk management. The Chief Software Project Risk Manager may also be called the Chief Risk Officer.

D. Professional Software Project Risk Manager

A professionally trained risk expert who has skill in project management and in software risk management and is hired by the organization for the management of risk is known as a Professional Software Project Risk Manager. A Professional Software Project Risk Manager can also be named Professional Software Project Risk Officer. According to the literature, it is very difficult to find a Professional Software Risk Manager for risk management activities, so an organization can train their own human resources by sending staff to different conferences, workshops and training sessions, especially those which give software project risk management certification. The following persons, either from within an organization or outside of it, can be potential candidates for training:

- A senior team lead who has been involved in the different activities of risk management for different projects can be a good option.
- A person who holds a master's and a bachelor's degree in software engineering or computer science and having a post graduate degree in software risk management can be a suitable candidate for this post.
- A person who holds a bachelor's degree in software engineering or computer science and has a master's degree in software risk management can be a potential candidate for this post.
- A senior software engineer with good experience of risk management activities and software development.

Furthermore, if the organization has more than one Professional Software Project Risk Manager in a particular project than the designated will be the one who is acknowledged by the organization.

E. Designated Software Project Risk Manager

Any person who has been assigned a task by an organization to lead and to coordinate the team, particularly for effective risk management activities, is a Designated Software Project Risk Manager. A Designated Software Project Risk Manager may be a Software Project Risk Consultant or a Chief Software Project Risk Manager or both. All Chief Software Project Risk Managers and Software Project Risk Consultant are Designated Software Project Risk Managers by default. However, a Designated Software Project Risk Manager can also be a Chief Software Project Risk Manager only when he/she leads at least a few others who are acknowledged risk managers at the organizational level. Furthermore, a Designated Software Project Risk Manager can also be a Software Project Risk Consultant only when he/she has been appointed from other department or from outside the organization. Simply speaking, Designated Software Project Risk Manager is a title that can be given by the organization to any person who is accredited to play a key role in software project risk management activities. Furthermore, the title Designated Software Project Risk Manager has the same meaning as Dedicated Software Project Risk Manager.

IV. CONCLUSION

The Software Project Risk Manager is a role in software project development that is responsible for actually running the risk management processes in a project, i.e. conducting sessions and analysing their results, reporting risk data, and

coordinating risk management activities and the team. Moreover, the Software Project Risk Manager also provides feedback to the software project manager and to the risk management process itself, for its effectiveness. In software engineering, risk manager, manager of risk, designated risk manager and professional risk manager usually have the responsibilities related to software project risk management. However, the intensity of the role and the depth of responsibility for it are the main factors that differentiate between the different terms. However, in this paper, the authors have classified the different terms for clarity as an aid to researchers and practitioners.

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