



Defining the Set of Criteria for Establishing and Evaluating the Project Risk Register

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Abstract

The project risk register is an important part of project management and one of risk management documents. The process of creating project risk registers is described and coincides in most theoretical sources. However, the outcome of the process is different. Among the project risk registers used in practice, there are ones of various size and content.

The author has used the results of his previous studies, especially the study where the criteria for establishing and evaluating the project risk register were developed. To achieve the aims of this study, the author chose one source, A Guide to the Project Management Body of Knowledge.

The size, structure and content of the risk register may vary from small to large, with different volumes of content and number of columns. The study is limited by the number of publicly available quality registers that contain a description of the risk management process or registers are part of other documents with a process description.

Key words: *project, risk, risk register, process, set of criteria.*

JEL code: M00, M10, M190

The aim and framework of the research

The aim of the research is to study the register development process to find out whether it is possible to develop the risk register evaluation criteria according to the chosen project management methodology. One source was used to develop the set of criteria – A Guide to the Project Management Body of Knowledge.

Theoretical justification of the study

The author believes that in the theory of project management there are no possible criteria for determining the truth. There is no single and generally accepted set of project management knowledge and no studies with sufficient results to confirm or reject judgements based on management theories. Without answering the question of what is true, it is possible that a set of criteria can be developed against which the process, content and scope of project risk registers can be assessed. The set of criteria would correspond to the chosen project management theory, or a certain body of knowledge.

A Guide to the Project Management Body of Knowledge (PMBok) is the sixth edition, the book's publisher is the Project Management Institute (PMI). The first edition was in 1996. The PMI has also published The Standard for Risk Management in Portfolios, Programs, and Projects. However, PMBoK provides more information on risk registers than The Standard for Risk Management in Portfolios, Programs, and Projects.

The choice of the PMBoK was determined by the following factors:

1. Sufficient information on the risk register, the term "risk register" is used 168 times in the source;
2. In the PMBoK, there are definitions of risk and risk register;



3. The PMBoK presents a process-oriented theoretical model of project management with the interaction of processes, process start conditions and end results and tools and techniques applied in the process;
4. There are five process groups and ten knowledge areas in the PMBoK, including risk management;
5. Risk management is an integral part of all processes and several areas of knowledge.

According to publicly available information on the Internet, the seventh edition, scheduled for August 2021, will differ from all previous editions. However, the impact of the content will be gradual, and the author believes that the impact of the previous edition management concept will remain even after the release of the new edition.

According to the PMBoK, Project risk management processes are as follows: Plan risk management, identify risks, perform qualitative risk analysis, perform quantitative risk analysis, Plan risk responses, Implement risk responses, and Monitor risks. The risk register is an integral part of all the processes. Distinguished are two types of risks – the individual project risk and overall project risk. Risk is defined as “An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives” (PMBoK, 2017). The risk register contains individual project risks. The Project Risk Management processes must comply with the project size, complexity, importance, and development approach (PMBoK, 2017). The Project Risk Management process must be appropriate to the size, complexity importance, and development approach of the project. In a situation where there are high-variability environments and the project is managed using adaptive approaches, risks will also be identified, analyzed, and managed during each iteration (PMBoK, 2017).

Theoretical substantiation of criteria

In the processes of the project Initiating and Planning, the creation of a risk register is started with risk categories, risk statement templates, probability and impact definitions, probability, and impact matrices (PMBoK, 2017). The establishment of a risk register is a risk management process. Project Initiating and Planning processes include Identify Risk, Perform Qualitative Risk Analysis, Perform Quantitative Risk Analysis, Plan Risk Responses. The risk register is updated within the Executing, Monitoring, and Controlling processes. During the closing process, the risk register collects the information on the risks that existed during the life of the project. All risk management processes have an input and output. Table 1 summarizes the information on the risk register in accordance with the risk management processes.

Table 1.

The risk register in accordance with the risk management processes.

| Process | Input | Activities | Output |
|------------------------|------------------------|--|---|
| Plan Risk Management | Risk register template | Defining how to conduct risk management activities for a project | Risk categories, stakeholder risk appetite, definitions of risk probability and impacts, probability and impact matrix, and reporting formats |
| Identify Risks process | | Identifying individual project risks | Risk register, with risks, potential risk owners, and list of potential risk responses, also with a risk title, risk category, current risk status, one or more causes, one or more effects on objectives, risk triggers, as well as the WBS reference of affected activities, and timing information |
| Perform Qualitative | Risk register | Prioritizing individual project risks for further analysis or action | Assessments of probability and impacts for each individual project risk, its priority level or risk score, the nominated risk owner, risk |



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|------------------------------------|---------------|--|--|
| Risk Analysis | | | urgency information or risk categorization, and a watch list for low-priority risks or risks requiring further analysis |
| Perform Quantitative Risk Analysis | Risk register | Numerical analysis of the combined effect of the identified individual project risks and other sources of uncertainty on overall project objectives | Prioritized list of individual project risks, trends in quantitative risk analysis results, recommended risk responses |
| Plan Risk Responses | Risk register | Developing options, selecting strategies, and agreeing on actions to address the overall project risk exposure, as well as to treat individual project risks | Updated risk register with appropriate risk responses, trigger conditions, symptoms, and warning signs of a risk occurrence, risk responses budget and schedule, contingency plans, fallback plans, residual risks, and secondary risks, as a direct outcome of implementing a risk response |
| Implement Risk Responses | Risk register | Implementing a agreed-upon risk response plans | Risk register may be updated to reflect any changes to the previously agreed-upon risk responses for individual project risks that are subsequently made as a result of the Implement risk responses process |
| Monitor Risks | Risk register | Monitoring the implementation of the agreed-upon risk response plans, tracking identified risks, identifying and analyzing new risks, and evaluating risk process effectiveness throughout the project | Updated with information on individual project risks generated during the Monitor risks process |

Source: Compiled by the author from PMBoK

The process of creating a risk register in the risk management process is shown in Figure 1.

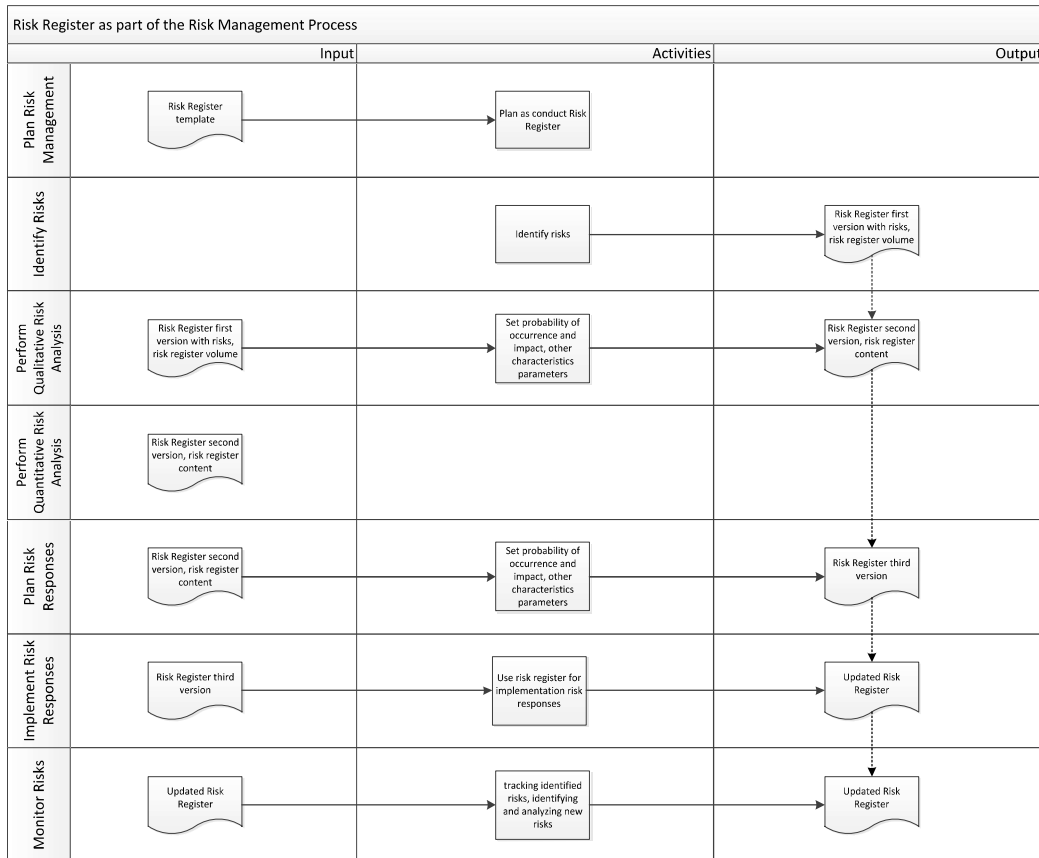


Fig 1.: The process of creating a risk register in the risk management process
 Source: Compiled by the author from PMBoK

The risk register is created and supplemented in other processes as well, see Table 2.

Table 2.

| The risk register in other processes | | |
|---|---|--|
| Process | How to use or inputs | How to change or outputs |
| Project integration management | | |
| Direct and Manage Project Work | Risk register provides information on threats and opportunities that may impact project execution | Risk register updates, new risks may be identified and existing risks may be updated during this process |
| Monitor and control project work | Risk register provides information on threats and opportunities that have occurred during project execution | New risks identified during this process are recorded in the risk register and managed using the risk management processes |
| Close project or phase | The risk register provides information on risks that have occurred throughout the project | |
| Project scope management | | |



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| Define scope | The risk register contains response strategies that may affect the project scope, such as reducing or changing project and product scope to avoid or mitigate a risk | |
| Project schedule management | | |
| Estimate activity duration | Individual project risks may impact resource selection and availability | |
| Develop schedule | The risk register provides the details of all identified risks, and their characteristics, that affect the schedule model | The risk register may need to be updated to reflect opportunities or threats perceived through scheduling assumptions |
| Control schedule | | The risk register and risk response plans within it; may be updated based on the risks that may arise due to schedule compression techniques |
| Project cost management | | |
| Estimate costs | The risk register provides detailed information that can be used to estimate costs | The risk register may be updated when appropriate risk responses are chosen and agreed upon during the Estimate Cost process |
| Determine budget | The risk register should be reviewed to consider how to aggregate the risk response costs | New risks identified during this process are recorded in the risk register and managed using the risk management processes |
| Control costs | | The risk register may be updated if the cost variances have crossed, or are likely to cross, the cost threshold |
| Project quality management | | |
| Plan quality management | The risk register contains information on threats and opportunities that may impact quality requirements | New risks identified during this process are recorded in the risk register and managed using the risk management processes |
| Manage quality | | The new risks identified during this process are recorded in the risk register and managed using the risk management processes |
| Control quality | | The new risks identified during this process are recorded in the risk register and managed using the risk management processes |
| Project resource management | | |
| Plan resource management | The risk register contains information on threats and opportunities that may impact resource planning | The risk register is updated with the risks associated with team and physical |



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| | | resource availability or other known resource-related risks |
| Estimate activity resources | The risk register describes the individual risks that can impact resource selection and a availability | |
| Acquire resources | | New risks identified during this process are recorded in the risk register and managed using the risk management processes |
| Control resources | The risk register identifies individual risks that can impact equipment, materials, or supplies | The risk register is updated with any new risks associated with resource availability, utilization, or other physical resource risks |
| Project communications management | | |
| Manage communications | | The risk register is updated to capture the risks associated with managing communications |
| Project procurement management | | |
| Plan procurement management | Some risks are transferred via a procurement agreement | Each approved seller comes with its own unique set of risks |
| Conduct procurements | Each approved seller comes with its own unique set of risks | Changes are made to the risk register during the contracting process, which reflect the specific risks of each seller |
| Control procurements | Each approved seller comes with its own unique set of risks | Changes are made to the risk register during the execution of the project, as early risks may no longer be applicable and new risks occur |
| Project stakeholder management | | |
| Plan stakeholder engagement | The risk register contains the identified risks of the project and usually links them to the specific stakeholders as either risk owners or as subject to risk impact | |
| Monitor stakeholder engagement | The risk register contains the identified risks for the project, including those related to stakeholder engagement and interactions, their categorization, and list of potential responses | The risk register may need to be updated with responses to stakeholder risks |

Source: Compiled by the author from PMBoK



The risk register is also created and supplemented in other processes, see Figure 2.

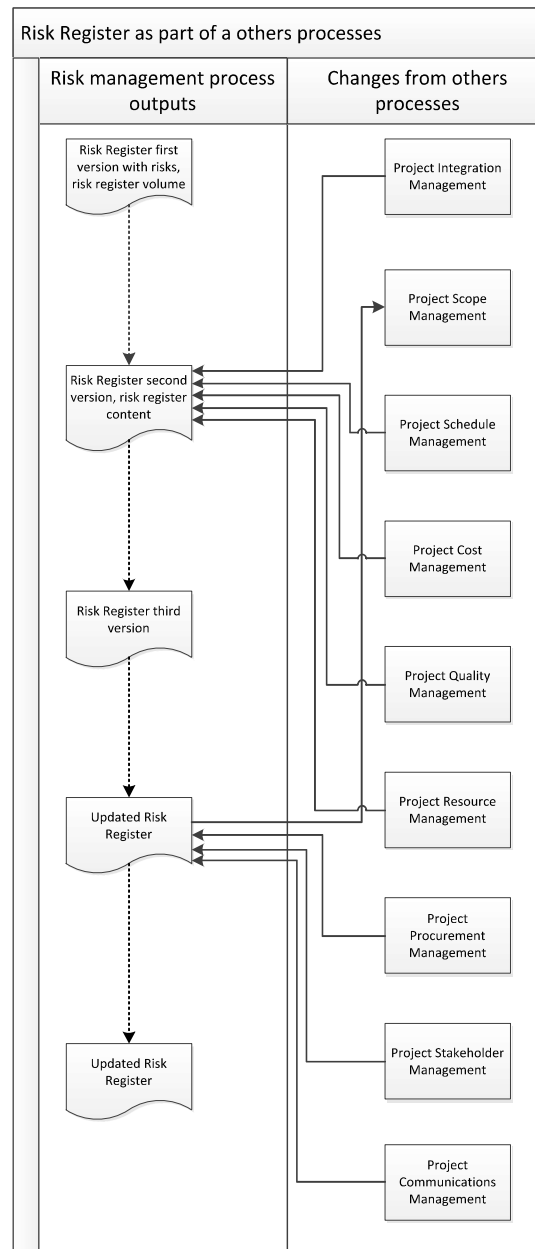


Fig 2.: The risk register in other processes

Source: Compiled by the author from PMBoK

The set of criteria

The volume of the risk register is created in the project risk management process by planning risk management. The risk identification process in PMBoK is one of the project risk



management processes. Risk identification involves not only the participants of the risk management process, but also participants in other processes, and the identification process is an iterative process, as risk identification takes place throughout the life of the project.

After analyzing the PMBoK risk register development processes, it can be concluded that 3 types of criteria are possible. The first group of criteria are the criteria that can be used to assess the size of the risk register by assessing what and how many columns or fields the risk register has, for example, there may be risk registers with 3 or 25 columns (Uzulans, 2019, 2020). However, the volume criteria are insufficient because the number of columns or fields can be the same, even if the columns or fields contain different amounts of information (Uzulans, 2019, 2020). The second group of criteria are the criteria that can be used to assess the information in the risk register, or content criteria. The third group of criteria is the criteria for the information on the changes in the risk register. The three types of criteria are summarized in Table 3.

Table 3.

| Type of criteria | Criteria | | Source | How to use |
|------------------|--|--|---|---|
| Volume | Compliance with risk management processes | Yes/No | PMBoK project risk management process, all processes | To assess if the information in the risk register complies with the risk management processes |
| | Compliance with other management processes | Yes/No | PMBoK project processes, all processes where risk register is presented | To assess if the information in the risk register complies with the risk management processes |
| | Completeness of the risk management process | Full/Partly/Not presented | PMBoK project risk management process, all processes | To assess if the information in the risk register complies with the risk management processes |
| | Non-controversial in relation to the risk management process | Compatible/Partly compatible/ Incompatible | PMBoK project risk management process | To assess if the information in the risk register complies with the risk management processes |
| Content | Compliance with risk management process input | Yes/No | PMBoK project risk management process | To assess that the content of the information corresponds to in the risk register complies with the risk management processes |
| | Compliance with risk management process output | Yes/No | PMBoK project risk management process | To assess that the content of the information corresponds to in the risk register complies with the risk management processes |



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|--------|------------------------------|-----------------|--|---|
| | Completeness of the content | Full/Partly/Not | PMBok project risk management process, all processes | To assess that the content of the information corresponds to in the risk register complies with the risk management processes |
| Change | Information about the change | Is/Is not | PMBok project risk management process, all processes | Assess whether the risk register is changing during the life of the project |
| | Justification for the change | Is/Is not | PMBok project risk management process, all processes | Assess whether the risk register is changing during the life of the project |

Source: Compiled by the author from PMBoK

Conclusions

It can be concluded that the goal of the study - whether it is possible to develop the risk register evaluation criteria according to the chosen project management methodology is at least partially achieved. Development of criteria in accordance with the project management methodology is possible. However, the study cannot be considered complete as only one source for the selection of criteria was selected - A Guide to the Project Management Body of Knowledge. The next step would be to select other criteria for the selection of criteria and compare the sets of criteria to assess whether a universal set of criteria is possible. A set of criteria based on several project management methodologies could be used to assess risk registers according to different project management methodologies.

References

- Project Management Institute Inc, 2017. *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* – Sixth Edition USA: Newtown Square, Pennsylvania.
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