In search of opportunity management: Is the risk management process enough?

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Abstract

The concept of risk has always been present in the industrial environment. However, not until recent years has it been actively managed for products, in projects, and, as a consequence, for the organization. Project risk management has been in focus within different organizations, and has proven its value in reducing risks in projects. Risk, however, could be described as the negative outcome of an uncertainty. The opposite of risk would then be opportunity. The aim of this paper is to find empirical evidence supporting a theory that current methodologies for risk management focus mainly on risk. If the results of this study show that methodologies in practice actually focus more on risk, the need to enhance opportunity management would be apparent. Based on interviews with people who actively work with project management and who also seek continuous improvements by being active members of project management networks, this study presents three major factors needed for managing opportunities: the ability of the project manager to develop a holistic view within the project, the organizational support and interest, and the ability to understand how other organizations affect the project objectives. Furthermore, this paper explores the perception of opportunity as it shifts between organizations and levels within the organization.

Keywords: Project management; Risk management; Uncertainty management; Opportunity management

1. Introduction

Risk management today is an integral part of project management. As the project management affect on organizations is obvious, it can be seen that risk management application has extended beyond the scope and responsibility of the project. Depending on the risk management maturity of the organization, different approaches are applied. Starting with the project itself, the risks and opportunities within the scope of the project are managed by project management, with the allocation of responsibility to functions forming the project team. Ultimately, the responsibility of the effectiveness of risk management lies within project management, since the accountability to achieve project goals lies with the project manager. Within the project, various degrees of application of risk management exist by the functional risk management process applied. The foremost, and historically most recognized, application lies within engineering. Technical risk management is well known within any industrial organization, whether it depends on requirements from approval bodies or is derived from the technical product. Broadening the scope of the project time-wise to before the beginning of the project, sales and marketing activities form the initial risk management. That result will set the scene for the project’s ability to achieve set goals. The risk management activities are usually described in a process applicable to the respective function, e.g. sales and marketing plan, business process, and technical process. The function should then be linked to the project risk management process in such a way that the information is interlinked, transparent and useful. Several risk management processes exist today that differ to some extent. However, they still include the important focus of identifying, assessing and mitigating a
risk. Regardless of the type of risk management process, the application of risk management has a positive effect in finding and taking actions to avoid events that could cause negative consequences for the project and organization.

Traditionally, risk has been seen as an adverse factor or event, hindering a project to achieve set objectives to meet budget and time requirements. However, some definitions incorporate risk as being a positive or negative outcome of uncertainty (see e.g. [1–3]). Whether definitions of risk include positive and negative outcomes or not, some researchers argue the need to improve the risk management process to incorporate opportunity (see e.g. [4–6]). Hillson [7] argues that the risk management process itself is sufficient for handling and managing opportunities, but that some tools and techniques are needed that are not usually part of existing risk management processes. The ratio seems to be in favour of risk compared to opportunity. In other words, the negative outcome of an uncertainty has the most attention compared to the positive outcome. There might be several reasons for this skew focus. Nonetheless, all could agree that by exploiting opportunities the present project status is improved. The most interesting question is then the following: where lie the major barriers to improving the management of opportunities? The result could then assist in directing risk management research focus towards areas that, instead of arguing which process or tools to use, would have the most beneficial effect in turning risk management into risk and opportunity management. However, before attempting to answer such a question, it is necessary to find the view on how projects perceive uncertainty and opportunity and where they are perceived to be found.

The aim of this study is to find empirical evidence on the general opinion that risk management in practice mainly focuses on risk, as opposed to opportunity. The opinion that existing risk management processes are not fully able to handle opportunities is also part of this topic. If they are, it should be visible that there is a link and adherence to the company specific risk management process when opportunities are managed or when an identified risk has been turned into an opportunity. Therefore, it is important to find which factors, whether internal in a project or external in the organization or outside, affect the ability to handle or manage opportunities in a project. Equally important is to find commonalities of viewpoints between the different project managers and their ways of approaching uncertainty within a project. Stated another way, is it possible to find a generic step approach?

To answer these questions, a case study with experienced project managers from eight different companies has been performed. The studied companies were active in different industries, different products and strategies and also different customers. Common for all these companies was that they are well known for being proactive in project management and are members of project management professional networks, trying to improve the management of projects. In addition to seeking to find evidence that risk management primarily focuses on risk, this paper will analyze how different projects handle and manage opportunities, how uncertainty and opportunity is defined and interlinked, how risk is perceived in different projects, and, finally, which effect different factors have on the ability to realize opportunities within the project. The paper will begin with a brief presentation of related literature. The case study will then be carefully examined. The discussion section then follows. Finally, some conclusions will be made.

2. Related literature

This section presents some related literature. First, the risk management concept is presented. This is followed by arguments on its effectiveness. Further, opportunities as part of risk management is discussed, together with its relation to uncertainty. Finally, a non-technical view of risk management concludes this section.

2.1. The concept and implications of risk management

Project management is a well-established approach for affecting a wide range of changes (see, e.g. PMBOK [3]). In parallel, the discipline of risk management has developed over the recent decades as an important part of project management. Carrying out a project successfully is the outcome of how well one can plan, execute and control the tasks, and how well one can manage the relationships with all the stakeholders involved with the project [8]. Regarding project risk, there are different risks when viewing different perspectives of different stakeholders. This widespread use of projects (in some cases becoming the preferred or dominant business process) and their use in realizing strategic or complex change have also brought with it the need to marshal project-based activity in some coherent, beneficial way [9].

Several arguments for shortcomings are argued. They include ineffective tools, not appropriate for industry, not reflecting opportunities management, and focusing solely on single-project management. Several researchers (see e.g. [4,10–13]) argue that today’s methodologies of risk management are not sufficient for industrial use. However, challenges towards existing risk management processes have not been raised until recently (see e.g. [6,7,14,15]). Such challenges focus on the risk management process itself, the suitability within an organization, other aspects influencing the effectiveness of risk management, tools and techniques for enhancing the management of uncertainties, and the acceptance and enhancement of opportunity management. However, some researchers argue the risk management process being capable to manage both risk and opportunity. Defining risk would make it easier to understand the rationale behind the development of such processes and would enhance the ability to verify its applicability. As an example, Hillson [7] gives a general
but quite useful definition on risk as any uncertainty that, if it occurs, would affect one or more project objectives. Defining risk as an uncertainty, it would be equally the same case for opportunity. In other words, this definition would apply to opportunity since it, as well, is derived from uncertainty. However, important here is the fact that the lack of certainty is what matters when related to specific project objectives.

2.2. Uncertainty

Then, what is uncertainty? It is not an easy question to answer. However, it is apparent that uncertainty exists in everyday life, in organizations and in projects. There have been several attempts to classify uncertainty. Frank [16] describes uncertainties as either aleatory or epistemic. Aleatory uncertainty is uncertainty that cannot be foreseen in advance (from the Latin alea, meaning die (pl. dice), i.e. having to do with chance). Epistemic uncertainty is described as uncertainty deriving from the lack of knowledge (could have been foreseen given more knowledge). Pender [4] argues that uncertainty applies when there is no prior knowledge of replicability and future occurrences defy categorization (i.e. aleatory uncertainty). In decision modelling, uncertainty is defined as the amount of lacking information (which can become knowledge) i.e. epistemic uncertainty. From this it is not possible to see the link between uncertainty, risk and opportunity, Instead, Hillson [7] attempts to link risk with uncertainty based on the distinction between aleatory and epistemic uncertainty in the following couplet:

Risk is measurable uncertainty;
Uncertainty is unmeasurable risk.

This implies that, when measurable, an uncertainty is to be considered a risk. However, Hillson considers risk as having both positive and negative consequences on project objectives. This also follows Lefley [17], who argues that although risk results from uncertainty, risk and uncertainty are not theoretically synonymous. Risk involves situations where the probability of outcomes is known, while uncertainty is the opposite (i.e. when the probability of outcomes is not known). It is obvious that different opinions exist regarding what to consider as uncertainty, risk and opportunity. Regardless of opinions concerning how to define risk and opportunity in relation to uncertainty, the aim of this paper is to focus on opportunities, which most researchers agree is the positive effect uncertainty has on project objectives.

Holt [14] argues that, because risk has been seen largely in terms of technical, means-end reasoning (and the solutions offered under a condition of reflexive modernity remain oriented to a rational calculus), many aspects of risk remain unacknowledged. Thus, the need for a wider view on risk management when describing the risk management process to adopt only “tame” problems. “Tame problems” are those that are seen as mechanical, consisting of parts that when broken down attract fixed, linear, optimal solutions. By describing “messes” and “wicked problems”, Holt argues that the ability to manage problems extended beyond those defined as “tame”. “Messes” is described as arising from system interdependency. “Wicked problems” result from the dynamic complexity of interdependent systems and from human cognition and behaviour. “Wicked messes” are a combination of the two. The description of classes of problems and its relation to complexity is summarized in Table 1.

This view is interesting to understand when considering the effectiveness of existing risk management processes. It gives some suggestions on the rationale behind the reasoning regarding why opportunities are less regarded than risks. Problems in this case imply that not only risk but also opportunities could be managed the same way. However, it could be argued that the scope of risk management processes should not encompass behavioural aspects of project management. Such aspects could as well be part of organization theory of behavioural science. The findings of this study will be compared with the arguments of Holt.

3. Case study

3.1. Method

It is difficult to gather quantitative data on risk management and, especially, the effectiveness of risk management. This is because the mere presence of risk management will have the effect of reducing some units of analysis. In this study, practical experience and insight in projects about the possibilities and problems is needed in qualitative terms. It is believed that one must have an objective view.

| Problem type      | Complexity               | Solution strategy                        | Managed in today’s Risk Management processes?
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<tr>
<td>Tame</td>
<td>Dynamic and structural complexity</td>
<td>Analytical or algorithmic solution</td>
<td>Yes in systems functioning of multiple viewpoints</td>
</tr>
<tr>
<td>Messes</td>
<td>High dynamic complexity</td>
<td>Commitment to understanding how things interact</td>
<td>Often fail in contemplating influence of people in and between systems</td>
</tr>
<tr>
<td>Wicked problems</td>
<td>High behavioural complexity</td>
<td>Emphasis on resolution between different solution and the dissolution of confusions</td>
<td>No</td>
</tr>
<tr>
<td>Wicked messes</td>
<td>High dynamic and behavioural complexity</td>
<td>The acknowledgement that problems cannot be solved</td>
<td>No</td>
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It is also believed that one need go beyond causal relations and study the relations and their effect on the system studied. In general, case studies are the preferred strategy when “how” and “why” questions are being posed, when the investigator has little control over events, or when the focus is on a contemporary phenomenon within some real-life context, which is relevant for this work [18].

This study focuses upon the intervening conditions and their effect on the ability to manage opportunities in the context of industrial projects. As the objective was to develop an understanding of how these conditions arose, an exploratory research approach using semi-structured interviews was adopted. In addition, an iterative approach was used proposing and checking for patterns, both during the interviews and in the analysis. Finally, insights into behaviours and approaches adopted by project managers were developed.

3.2. Case study companies

The case study involves companies within the mechanical and mechatronic industry (1), offshore industry (1), power generation industry (1), medical technology industry (3), transportation industry (1) and a design house with customers primarily in the telecom industry (1). Three of the companies are Swedish companies with 20–160 persons employed. The other five companies are international companies with a worldwide presence, and with the Swedish part ranging from 350 to 1000 persons. It is acknowledged that additional external factors influence the management of risk and opportunity in multi-company projects. However, such factors are excluded in this study. The projects included all involve marketing/sales, design, and production. For most projects after-sales activities were part of the project scope in the form of support, validation or verification. The projects’ durations were between 6 months and 3.5 years with average project duration of 20 months. The size of the projects range from 7 to 70 persons, and the projects had budgets of between 340,000 US dollars to 5 million US dollars. The extreme project had a budget of 900 million US dollars. Four of the projects were product development projects with software development (1), hardware development (2) or a combination (1). The other four projects were design and build projects for software (1) or both software and hardware (3).

The selection of case study projects was made from companies that are well known for being proactive in project management. They are also members of project management professional networks, trying to improve the management of projects.

3.3. Case study interviews

The case study was based on interviews involving project management professionals. The respondents included project directors, project managers, a managing director with responsibility for project management, and process owners for project management processes. During the interviews, a picture of the work in the projects and on risk management and its applicability to opportunities gradually evolved. Eight persons were interviewed in total.

Three main questions were asked and discussed during the interviews in the case study:

1. How is project specific risk management process applied when handling and managing an uncertainty?
2. How do projects define uncertainty and opportunity?
3. Which factors affect the project’s ability to handle and manage opportunities?

The duration of the interviews was between 1 and 2 h. The researcher’s role in the interview was what is usually called direct observation. Interactions with the respondents are part of the methodology. During analysis, the approach was to seek and evaluate similarities and differences between the different case projects. This involves selecting categories, categorizing each case project, and looking for similarities and differences within projects and between projects. The interviews were recorded and later transcribed and analyzed. The qualitative data were analyzed by coding the data into clusters of contextual areas in order to bring out relationships that are not otherwise apparent. Finally, the analysis was further peer reviewed in order to reduce bias of the results.

4. Case study results

4.1. General observations and background

All respondents consider risk management a very important part of project management. However, the understanding and application of the concept of risk management is widely dispersed. This study shows that there is a difference between strategies and intentions of managing risk and opportunity and the way they work in projects. With the exception of those respondents from the medical technology projects, respondents include opportunities in the way they understand the risk management concept applied in their companies. Risk and opportunity go hand in hand to a certain degree from the project managers’ point of view. However, the result of this study indicates that “talk is cheap”: it is easier to talk about risk and opportunities, especially opportunities, than to manage them. In this study, three common areas were visible when managing risk and opportunity. They exist in the following situations:

- In the tendering/bid proposal phase, where risk and opportunity identification is mostly originated from the company itself, e.g. from type of customer, technology, the ability to successfully achieve the customer expectations, and customer solidity. These are examples of traditional business risk. Some projects estimate the risks and opportunities in terms of cost by functions
and summarize and add an overall risk, and sometimes opportunity, contingency. Respondents found the tendering/bid proposal phase the most common for identifying opportunities.

- In the project, where risk and opportunity owners are identified and assigned. Actions conducted according to the contingency available to minimize the risk and realize the opportunity. Several tools and techniques were used, but respondents usually have well defined procedures for forming a judgment.

- For the product, where the product was scrutinized to identify potential design or application risks. The adherence to the risk management process was apparent. Here, a clear distinction was found for projects for which the product is a medical device or is used medically. For such products, patient risk is a key factor for the whole project, superseding other aspects of risk. Also, opportunities were not clearly a part of the concept of risk management in these projects.

4.2. Approach to manage uncertainty

Respondents make use of the risk management process in the case of the bid/tender phase. Some companies include this risk management activity into the business processes. It is then included as a separate risk management process. The study shows it is, not surprisingly, quite easy to find opportunities in this phase of the project. However, the respondents did not necessarily participate in the risk and opportunity sessions. Instead, sales departments and senior management mostly did this activity. In projects, respondents all felt that risk management is a part of project management. Most projects have a formalized project management process, which is used to different degrees. Firstly, the risk and follow-up meetings were, according to existing process or to the overall project management, follow-up meetings adopted by the company. Secondly, the results of project risk management varied between the projects. Some projects were ordered to present and discuss the present risk status, whereas other projects found no one interested in the actual status as long as the “iron triangle” (i.e. time, cost, and quality) was kept. However, the distinction between risk and opportunity was not unanimous. For projects where dominant governmental or other approval bodies dictate procedures, opportunities were not part of the normal project management vocabulary. The respondents state that planning risk responses and making them happen was up to the project manager, in conjunction with the functional representatives within the project.

Finally, the management of opportunities in the project execution phase did not follow any formal risk management process in any of the projects. If opportunities were identified, and later managed, it was not due to the risk management process used in the project. Although few projects include opportunities as part of risk management scope, respondents did not make use of that when managing opportunities. Instead, respondents stated opportunities as being identified by other reasons. Examples included by superior knowledge, by chance, by having a holistic view, and by determined work and dedication. However, respondents recognized the identification of opportunities as part of the organizational result, especially in the bid/tender phase.

4.3. Perception on uncertainty and opportunity

Respondents consider risk to be a negative outcome of uncertainty. All but one respondent sees uncertainty as the somewhat pragmatic view of being “something that you cannot foresee” “... when you do not know what will happen ...”. Respondents felt that uncertainty usually stems from the combination of different variables. Examples include the surrounding environment and the attention of the surrounding world, the internal environment and the people the project consists of, and the design and use of the product to fulfill customer expectation. One of the respondents has a different view regarding uncertainty; namely, that uncertainty is something that you need to act on, thus implying there is always a possibility to manage uncertainties and that a certain control over uncertainty can be obtained.

Also, all respondents see opportunity as positive in several senses. Results indicate that opportunity stems from uncertainty, and opportunity is considered the positive perception of uncertainty. Opportunity also seems to be restricted to the lifecycle of the project. In other words, opportunity is a positive effect of uncertainty that can be managed during the life cycle of the project.

One respondent argued that “... as soon as you talk about risk, it is the negative effect [of uncertainty] you are talking about and then you always miss out on opportunities. Instead we talk about uncertainties and probabilities...”. All respondents stated that the more holistic view project members have on scope, constraints, project goals, customer expectations, etc., the easier it is to reflect on opportunities. Results indicate that one major difference between uncertainty and opportunity is the fact that when considering uncertainty, a lack of holistic view was apparent. Thus, the contrary can be said when considering opportunity. Stated another way, project managers consider uncertainties a lack of an overall, holistic view of events affecting the project and the project’s efficiency in organizational execution and effectiveness and towards the customer. Either the project manager him/herself or the project team suffers from this lack.

4.4. Factors influencing opportunity management

Although not prioritised in terms of importance, this study finds several factors influencing a project’s ability to manage opportunities. It was, early in the analysis, possible to categorize influencing factors into project internal and project external factors. In general, respondents view
the internal factors as most influential in terms of enhancing the management of opportunities. However, it is not possible to weigh the internal factors’ individual effect on the overall influence on opportunity management effectiveness.

4.4.1. Project internal factors

Three factors stand out as major internal factors: competence, team spirit and internal communication. Competence relates both to the project team members and the project manager him/herself. For the team, what is meant is first of all the competence and experience in its own area of expertise. However, the ability to work as a team player is also part of this competence, encouraging an open discussion. The respondents see the project manager’s competence as the most important competence, where areas such as the ability to handle a group of people and the understanding and communication of not only project objectives but also customer and organizational requirements are considered important. Team spirit is seen as the ability of both team and project manager to be committed and to create an environment where thoughts can be ventilated and discussions enabled. Internal communication relies mostly on the project manager and her/his ability to enable and promote communication within the team in conjunction with the two previous factors, in meetings and otherwise. Respondents also expressed another factor as important: the possibility for reflection. This implies time for reflection and the understanding of the team and the project manager. Also, the conscious action of the project manager is included here. One such action could be not only allowing time for reflection but also proactively promoting and initiating reflection in the form of e.g. focus groups. The common denominator for these factors is the project manager. This is because it is within her/his mandate and responsibility to enable good communication and to create team spirit. He/she does this by understanding the project objectives, as well as the requirements from the organization and the customer.

4.4.2. Project external factors

Respondents considered two major external factors important: the ability to communicate with the customer and other functional disciplines and the understanding of the customer view on project results. Once more communication is mentioned. External communication also implies the other factor, customer view on project objectives. These two factors have in common the creation of a holistic view, a view of seeing the project from above and in so doing being able to oversee customer expectations, as well as being able to communicate project related information (e.g. problems, expectations and assumptions) with the customer.

Respondents also stated the importance of external information within the organization, with other functional disciplines as well as with stakeholders and steering groups. This communication would enhance the project manager’s understanding of other internal requirements, expressed and unexpressed.

5. Discussion

As previously stated, three common areas were visible when managing risk and opportunity. They existed in the Bid/sales phase, in project execution and for the product. These distinctions are compared below in Table 2 with what Holt [14] describes as “tame”, “messes”, and “wicked problems”. In Table 2, organization problems are also included. This is because the findings of this study reflect organization problems as an influential factor which is integrated with the other factors.

“Tame” problems are convergent by definition; a solution is always assumed. “Messes” are convergent if we agree on what overlaps, on appropriate strategies and on the kind of “climate” we wish to maintain. “Wicked problems”, in turn, are divergent if no ethic or overriding social theory exists [14]. Based on this reasoning, the findings in this study will be compared. Although respondents considered risk management as a very important part of project

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<th>Table 2 Problem types compared to findings, adapted from Holt [14]</th>
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<td>Organization</td>
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management, its applicability differed depending on when it was used.

5.1. “Tame” type of risks and opportunities

In the bid/sales phase and for the product, the risk management process was used to the greatest extent. The risk management focus in bid/sales was e.g. type of customer, available versus required technology, degree of innovation, the company’s ability to satisfy customer expectation, and more traditional business risks, such as customer solidity, knowledge of product and type of project. For the product, the use of the risk management process was more obvious when the requirements from regulatory and approval bodies were apparent. There, the risk management focus was on product compliance, safety aspects of the product and production, and the end user perspective. Opportunities were identified in the bid/sale phase by using the risk management process and/or the business process, e.g. sales process. This phase was considered the major area for identifying opportunities. Product opportunities were not identified systematically according to a risk management process, and the frequency of opportunities was considered low.

These areas are suggested to be considered “tame”, where the risk management process is able to identify, assess and manage uncertainties. The bid/sales phase is considered an area with structural complexity, where analytical and algorithmic reasoning could manage uncertainties. However, the bid/sales interaction with customer and/or other external stakeholders could imply a “messes” type of problem. Here, the risk management process is suggested as not being able to manage uncertainties. This is because the nature of the problems is more dynamic and behaviourally complex. Product-related uncertainty can also be dynamic and behaviourally complex, since a product might contain human interaction by the customer or its systems.

5.2. “Messes” type of risks and opportunities

“Messes” type of risks and opportunities are characterized by high complexity and cannot be solved by component solving in isolation. Such problems are suggested to be present in an organization and in the project environment. The existing risk management process can cover dynamic and structural complexity problems to a degree. However, that would not be the case with behavioural complexity. Organizations and projects have different stakeholders and different requirements and objectives. Thus, they demand a commitment to understanding how things going on “here and now” interact with other things going on “there and later”. The result of this study finds communication as an important factor in managing opportunity. However, managing opportunity for the “messes” type of uncertainty cannot easily be done: it requires a holistic view of both organisational and customer expectations. Such expectations are not necessarily unanimous. Furthermore, opportunities, as well as risk, if considered negative, most certainly require a systems view of activities. There are primarily two reasons for this. First, in order to identify an opportunity, one must be able to have a holistic view concerning objectives. Second, the secondary effects of realizing the opportunity must be visible (i.e. what are the effects on objectives if the opportunity is realized)?

5.3. “Wicked problem” types of risks and opportunities

“Wicked problems” cannot be solved. They can only be contained. This requires full acknowledgement that they are conditioning influences of fortune and necessity [14]. Following this statement, existing risk management processes, with their logical and convergent way of dealing with uncertainty, cannot fully manage “wicked problems”. Instead, another approach needs to be adopted. Holt argues the emphasis should be as much on resolution between alternative solutions and the dissolution of confusions as upon the pursuit of optimal solutions. This relates both internally within as well as outside of the organization. The results of this study show that the understanding of the customer view of project result is an important factor for enhanced opportunity management. This can be classified as a “wicked problem”, in that it is an uncertainty that might not be solved. It requires interaction and communication with the customer. Further, it is by no means certain that the solution is achieved, since it involves behavioural complexity. As one respondent said: “... if business goes well for the customer, we will get more work ...”. Here, the customer expectations on the projects are unknown, based on the projects influence on the customer’s success. This reasoning also is suggested by Kutch and Hall [19], who argue that it would appear that ignorance of risk arises for two reasons. First, project teams are unable to predict risk because of contextual conditions such as complexity and dynamics. Second, the teams are unwilling to look for risks outside their defined scope of project management skills.

6. Conclusions

In conclusion, this paper has analyzed active project managers’ application to existing risk management processes and tried to identify factors that affect the ability to manage opportunities. The aim of this paper was to find empirical evidence on the general opinion that risk management in practice focuses mainly on risk, as opposed to opportunity. The result shows that formal risk management processes are used. Opportunities are mostly identified in the bids/sales phase, and the adherence to risk management process and/or appropriate business process is obvious. In project execution, risk management adherence is dependant on the project manager and the follow-up requirements. For projects in which products are under strict regulatory and/or approval body requirements, the risk management process is extensively used. However,
the absence of opportunity management is obvious. By comparing the results to Holt [14], existing risk management processes cannot be said to fully be able to manage opportunities. However, the same applies to risk, if risk is considered the negative effect on objectives. It is through conversation that “wicked” and “messes” problems are encountered and structured so as to provide a series of decisional frameworks. The main reason is that existing risk management processes are developed to manage “tame” problems, leaving the “messes” and “wicked problems” aside. Finally, one aim of this paper was also to find commonalities between different project managers and their way of approaching uncertainty within a project. The study shows that since opportunities are mostly developed from more of a “messes” and “wicked problem” type of uncertainties, it is difficult to design a step approach to identifying and realizing opportunities. The identification and realization of opportunities is vastly facilitated, and is nearly impossible unless when a holistic view within the project is developed. Hence, the focus should first be on developing this holistic view. Then, given that a holistic view is developed, the identified opportunities may be more easily realized through a step approach.

References