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## What is project efficiency and effectiveness?

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### Abstract

The concepts of efficiency and effectiveness are commonly used when evaluating different processes. As project management can be described by different kinds of processes, the aim with this research is to explore the concepts within project management through the lens of quality management. Since project-based organisations are often struggling with the balance between time, cost and quality, they are interested in doing this as efficient and effective as possible. However, there are a wide variety of views on efficiency and effectiveness among professionals and research scholars, which makes it difficult to apply these concepts in project-based settings.

The study is based on a literature review and includes interviews with project office managers from Swedish construction and engineering companies. Findings from the study indicate that the terms efficiency and effectiveness are used without clear definitions, where measurements are executed and results interpreted in various ways. Clarifying the interpretation of project efficiency and effectiveness would help and support project-based organisations in their improvement work. Clarity implies improved preconditions to measure efficiency and effectiveness, and the possibility to develop indicators that can be used to help guide the organization in the desired direction. A clearer view on project efficiency and effectiveness can also be a basis for internal improvements in terms of time, cost and quality, as well as external improvements in terms of customer satisfaction.

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## 1. Introduction

Within the field of project management (PM) the concepts of efficiency and effectiveness are commonly used, but rarely defined. Some researchers apply the concepts when describing how to improve some part of PM (Ward, 1999), some apply it when describing competencies for project execution (Lampel, 2001). In different maturity models, e.g. OPM3 (PMI, 2008b), SPICE (Sarshar, Haigh & Amaratunga, 2004) and (PM)<sup>2</sup> (Kwak & Ibbs, 2002), effectiveness is usually listed as one of the reasons for measuring maturity. However, the meaning of PM effectiveness is somewhat unclear. There are some other applications of the concepts discussed in the field of PM, but there is rarely a clear definition of what is meant with efficiency and effectiveness, and they are applied interchangeably.

In the field of quality management (QM), the concepts are applied in a more defined way. In QM, efficiency refers to doing things right, i.e. whatever is performed, it is performed in the most suitable way, given the available resources (high efficiency). Effectiveness, on the other hand refers to doing the right things, i.e. selecting and focusing on producing an output that there is a demand for. In everyday use of the word effective (-ness), it is related to putting something, say “a”, in relation to something else, call it “b”. When comparing these two, “a” can be more or less effective than “b” in terms of for example the outcome. The “a” and “b” can also be the same task, but performed at different times or by different persons, making it possible to compare the two. Efficiency is applied in a similar way. Since the concepts, as words, imply that one thing is in some way better than something else, comparability is key when applying the two concepts. Considering projects they are often described as unique and thereby difficult to compare to each other. Does this “uniqueness” imply difficulties in discussing the concepts of efficiency and effectiveness in relation to projects?

One way to deal with the problem of comparing projects with one another is to describe PM as consisting of different processes, as stated by Wysocki (2011, p. 63) and the Project Management Institute (2008a). In several PM contexts, projects and processes are interrelated to each other. One example is in the *PMBOK Guide* (PMI, 2008a), which describes the different stages of a project as processes. Another example is in the ISO 21500 standard (ISO, 2012) focusing on PM in which processes are described as a central part of projects. As stated, projects are often defined as unique (PMI, 2008a), making it difficult to compare one project with the next. The ability to compare is critical in order to be able to work on improvements so by linking processes to PM this problem can be addressed.

Within the fields such as quality and operations management, processes are central. Extensive literature within these fields focuses on improvements of processes regarding its output, the process itself, and its alignment to the customer (DeToro & McCabe, 1997). DeToro and McCabe (1997) exhibit a clear application of the concepts related to processes, when rating the condition of processes based on efficiency and effectiveness. Emphasizing processes in PM enables comparisons between projects, and thus support continuous improvements. Also, a process view facilitates linking single projects strategically to an organization’s business context and to the main business objectives. Thus, working with improving processes in PM through the lens of efficiency and effectiveness, would put a focus on internal and external as well as short and long-term perspectives.

If processes can be identified in an a project-based organization, and if the concepts of efficiency and effectiveness can be applied to evaluate processes, it would be possible to evaluate the PM process over time in terms of performance. But in order to discuss efficiency and effectiveness in PM, a common view need to be established between academics and practitioners. Discussing projects from a process viewpoint is particularly interesting within project-based organizations, since they continuously carry out projects. The possibility to learn and improve from one project to the next is something that any project organization should be interested in doing. Dismissing the possibility to compare and learn from one project to the next, in terms of both efficiency and effectiveness, with the argument that every project is unique might just be a pretext for not dealing with overall project organization performance, similar to the reasoning made by Andersen et al. (2006). This paper discusses

the view on efficiency and effectiveness within major companies in the Swedish construction and engineering industry. In order to obtain comparable results, the companies in the study are limited to the same geographical region and industry. The type of projects the companies perform are of the classical objective oriented type where planning is central. Further, from an academic and practitioners point of view, clarifying what is meant when discussing efficiency and effectiveness related to PM should be a starting point for discussing, measuring and evaluating the PM processes.

## 2. Method

In this exploratory study, the application of the concepts of effectiveness and efficiency among PM academics and practitioners has been studied, with the aim to acquire an understanding of how the concepts are applied. The study is part of a research project concerning efficient and effective PM based on continuous improvements (CI). A literature review has been performed searching for application of the concepts within the notable academic journals in the field of PM, such as the *International journal of project management* and the *Journal of project management*. Secondary searches have been made using the university database search tool Primo in order to identify applications of the concepts related to PM in non-PM journals.

To explore the application of the concepts among practitioners, two sets of qualitative interviews were performed. Both sets consisted of semi-structured interviews in order to capture the views of the respondents. The first set was aimed at practitioners within different companies in the Swedish construction and engineering industry. 7 respondents were involved from 7 companies, holding the role as project managers or responsible for the overall project development (e.g. model and method development). The interviews were conducted via telephone by two interviewers in order to support the balance between the discussion and taking notes, and lasted for approximately 30 minutes each. The second set of interviews was conducted using face-to-face interviews with respondents within one of the participating companies, lasting for approximately one hour each. The selected company had an expressed goal to work actively with developing their project department. 9 respondents (2 project managers (PMr) - i.e. responsible for several project leaders, 2 project coordinators/administrators (PC/PA), 4 project leaders (PL), and 1 project department development manager (PDDM)) were selected. Among the respondents the PDDM was responsible for the PM development at the company. Notes were taken during the interview and recordings were used as back up for the notes. Focus was on the open discussion in order to get each individual's view on effectiveness and efficiency within their organization. The study was performed during spring 2013.

## 3. Theoretical discussion

In the field of PM, the concepts of efficiency and effectiveness are commonly used, and there are several examples of relevant literature within the field. For example, Wysocki (2011) has previously discussed effective PM, and Hyväri (2006), Lampel (2001), Parast (2011) and Fisher (2011) refer to the concepts in different ways. The book *Effective Project Management* by Wysocki (2011) book describes different tools, tips and recommendations in order to better manage projects, thus with a focus on one single project. However, effectiveness is not defined but refers to the improvement in managing projects with the goal to improve delivery on time and budget. Hyväri (2006) in turn, describes PM effectiveness related to organizational design and characteristics of effective project managers. Effectiveness is applied throughout the article, while the concept of efficiency is absent. Effective project execution is also discussed in Lampel's (2001) work. Both authors may have deliberately chosen to only apply effectiveness, but it is not discussed in their articles. With the concepts in mind, it is of interest to further discuss and explore the two concepts within PM.

The two concepts of efficiency and effectiveness are applied within PM literature but they are rarely defined and they are usually applied in an unclear manner. Parast (2011) applies both effectiveness and efficiency in discussions of the effect of Six Sigma projects on innovation and firm performance. The concepts appear to be

applied more consciously than previously revealed in PM literature. One reason might be the fact that Parast's (2011) study (in addition to PM) is related to the area of QM, where a clear distinction is made between efficiency and effectiveness. One such example is DeToro and McCabe (1997) where efficient and effective are defined as:

*Efficient: Meets all internal requirements for cost, margins, asset utilization... and other efficiency measures*  
*Effective: Satisfies or exceeds all customer requirements*

The distinction between the concepts supports the management in focusing on different parts of the business. The definitions of the concepts also highlight the main focuses in QM, namely a leading focus on the customer. This is apparent when considering some of the definitions of quality. For example Rose (2005) presents a few definitions of quality that illustrates different perspectives. The first definition from Joseph M. Juran, one of the protagonists of QM, who states that quality can refer to:

*Product features that meet customer needs* (Juran, 1989)

Another definition of quality refers to:

*Freedom from deficiencies* (Juran, 1989)

The two definitions of quality above show the different angles from which quality can be viewed. The first definition emphasizes meeting the customers' needs and expectations while the second focuses on the product itself. It could be argued that both views refer to the same aspect, the end result, but with different approaches, i.e. the means to reach the desired result differs. A third definition of quality is that of the International Organization for Standardization where quality is defined, in ISO 9000:2005, as:

*The degree to which a set of inherent characteristics fulfil requirements* (ISO, 2005)

As stated by Rose (2005), all three definitions above focus on the products, the defects and the customers. Comparing these definitions of quality to those of efficiency and effectiveness made by DeToro and McCabe (1997), the similarities are evident. Definitions of quality encompass aligning the product with the customer needs. The focus is both on delivering the best possible output and making sure that the output is what the customer wants, in other words doing things right and doing the right things. This is the same explanation as that of efficiency and effectiveness presented in the introduction. This implies that both an internal and external as well as short-term and long-term perspectives is covered by the concepts. The description of efficiency emphasizes internal and short-term issues while effectiveness tends to emphasize long-term issues that are both internal and external.

To further portray the use of efficiency and effectiveness in the field of QM, the *process condition rating* made by DeToro and McCabe (1997) can serve as a good example. To rate the condition of processes (from unhealthy to world class) the concepts are applied by evaluating a process in a spectrum from "lack of", to "high" efficiency and effectiveness. Efficiency is then applied as an internal process rating, while effectiveness is applied as a customer satisfaction rating. The highest degree of efficiency is the obtained when a process is: free from defects, have a low unit cost, short cycle time, no waste, and low cost of poor quality. High effectiveness, in turn, is obtained when the process output exceeds most customer requirements.

Continuing the discussion of the concepts from QM, they imply an aspiration to improve. Improvement is also an aspect within QM that receives a great deal of attention regarding evaluation of processes and making incremental improvements. CI is one such QM philosophy. CI is related to the philosophy of Kaizen and the Toyota production system characterized by striving to always do better (Alukal, 2007). The concepts are closely related to CI since comparing and improving is central. Applying the concepts in project-based organizations can support the management in discussions concerning improvements and efforts.

As shown previously, the concepts of efficiency and effectiveness are present in the field of PM, but they are often only used to describe the outcome of some activity. For example, in Wysocki's (2011) book, in which effective PM is viewed as a result of using tips, tricks, tools and recommendations. Effective is a central word in Wysocki's book and is included in the title, but it is not clearly defined. However, it is evident that the majority of the content is aimed at supporting the process of carrying out the individual project. Compared to the definitions of the concepts, the purpose of the book is perhaps more aimed at efficient PM, rather than effective PM. The indistinct use of the concepts can be found to a large extent in the PM journals. In Hyväri (2006), internal and external factors are discussed, as well as both tools and leadership skills. With the concepts in mind, discussing both internal and external factors would mean that Hyväri (2006) probably refers to both efficiency and effectiveness, yet only effectiveness is mentioned.

Efficiency, in comparison to effectiveness, is even more scarcely used in PM literature. One example, however, is by Martinsuo and Lehtonen (2007), who both use and define efficiency from a PM perspective (efficiency are projects together succeeding in fulfilling portfolio objectives). Martinsuo and Lehtonen (2007) touch upon the same findings as in this paper by stating; "portfolio management efficiency as such has not been reported in the literature". Their study is performed at single project level PM in relation to portfolio management and the effects on the latter in terms of efficiency. Martinsuo and Lehtonen's (2007) study is one of few examples found where either of the two concepts are used in a clear and defined way.

Compared to QM, there is a lack of consistency and perhaps awareness in the application of efficiency and effectiveness within the PM literature. This raises the question of how the concepts are applied among practitioners. Improvements in an organization are an ongoing process and the need to decrease time and costs in projects is usually always present. A general problem in PM is to meet time and cost goals and much of the PM literature focus on how to achieve these goals. Taking lessons from other areas such as QM on how to structure and continuously improve processes could support the field of PM to evolve. As indicated, the concepts can be used to help put focus on different perspectives of PM in the project-based organization and provide structure for improvements. Applying the concepts on PM might also help develop new performance indicators in order to support and steer improvement efforts.

Based on this theoretical discussion, the empirical study aims to enhance the understanding of how the concepts of efficiency and effectiveness are applied among practitioners.

#### **4. Empiric results and analysis**

Before continuing the exploration of efficiency and effectiveness in PM, an important question needs to be addressed. In discussions of the concepts in Sweden, only one word is used in relation to efficiency and effectiveness, i.e. "effektivitet". This makes it more complex when trying to identify the meaning of the concepts in the interviews. In order to identify if the respondents have reflected upon both concepts no separation was given beforehand. For this reason, only the word effectiveness is used when describing the respondents' answers. When analyzing the information, the two concepts are identified and presented.

Furthermore, to the in-depth interviews, one company was selected. The company is active in the mining industry and has a specific department that manages large and complex projects. Projects are carried out throughout the entire organization, but for large and complex projects orders are submitted to the project department. The project department, in turn, chooses which projects to execute, depending on if they align with the department's purpose, and if the department has the necessary resources available. The project department has only clients within the organization and do not manage external projects. This is important to keep in mind since it can have implications on the relationship between the project executor and client. Client, in this case, refers to a department within the same organization that has commissioned a project.

#### 4.1. Industry interview

The industry interviews revealed a somewhat scattered picture of the view of effectiveness in PM. When asking the respondents to describe their view on how effectiveness is applied in their respective company, the general view was that effectiveness encompasses fulfillment of requirements considering time, cost and scope.

Some of the respondents did not have a clear view of the concepts and had not discussed them specifically within their respective organizations. For those respondents, the concepts were primarily about fulfilling time, cost and scope requirements. Discussing effective projects with respondents, much of the focus tended to be on planning. One of the respondents described that an effective project was when everything could be planned in advance and that the project did not deviate from the project plan during execution. Planning was described as a key component related to effectiveness in the same respondent's organization and subsequently number of corrections of the plan was used related to effectiveness.

Surprisingly few of the respondents had reflected on effectiveness. The most common reason given was the limited time or resources within their organizations for improving and developing the project organization. The majority of the efforts in their organizations were aimed at fulfilling requirements considering primarily cost and time. Further, estimating time and cost for projects were mostly based on experience and the respondents considered their respective organization to be highly dependent on experienced project leaders (PL) in order to meet requirements.

As described above, a focus on time, cost and scope is mainly related to the concept of efficiency. The majority of the respondents in the industry interviews stated that their focus were on those criteria in their project work. But not spending time on improving PM due to lack of resources has to be counterproductive. Working with improving PM-efficiency could result in increased output from invested resources, and improving PM-effectiveness would ensure that all output meet customer requirements. A general conclusion from the industry interviewees was that the companies focus on carrying out one project at a time, and as long as time, cost and scope requirements were met, little effort were spent on learning from and improving PM-processes.

#### 4.2. Using the concepts in the industry

How to measure effectiveness varied among the responding organizations. The majority of the organizations measured time, cost and scope in order to control the project according to the plan. The purpose of the measurement was not explicitly related to effectiveness, but more specifically towards monitoring resources according to the project plan. The link to effectiveness was instead obtained as result of the companies describing effectiveness as meeting the planned goals.

Cost and time were the two most commonly used variables when implicitly measuring effectiveness. Of these two, cost was the dominating variable, usually with the motivation that it was the easiest one to measure. One organization measured costs but had time as the superior variable. The respondent stated that in their organization time equaled money and delays were especially costly for them. In that organization, costs were controlled four times a year while time was controlled continuously once every month. This tendency, to measure cost while time is prioritized was highlighted by several respondents. Since delays in projects were especially costly, it was given as a reason for focusing on time and measuring cost. The focus on costs was related to a current market recession and higher management priority, which demanded savings in that particular organization. One respondent made a reflection about effectiveness related to time:

*Effectiveness is short-term, while project maturity is associated to the project lifecycle (Project department executive)*

The respondents that confirmed that they did (indirectly) measure effectiveness did not act on the results unless it turned out significantly negative. In the case of negative results they evaluated the project after completion in order to identify lessons learned for future projects.

The industry interviews revealed that the concepts were not deliberately applied in the organizations and no separation of the two concepts was made. Almost all of the focus in the organizations was stated to meet cost, time and scope; in accordance to the definition of the concept efficiency. External factors, such as clients and stakeholders that relate more to the concept of effectiveness, were scarcely discussed. This indicates that the focus of the respondents was more on a single project level than on a process level. The follow-up and evaluation of projects, if performed, mainly focused on distinctively negative results. The respondents also indicated that no time was spent on evaluating the PM-process in order to identify improvement areas, and lessons learned were scarcely collected. During the interviews it was apparent that much of the knowledge of PM was associated with individuals, rather than the organization.

The respondents, stating that performance measuring was performed, all had a focus on “cost” as the variable. The variable of “time” was also highlighted, but as in accordance to “cost”, it was also measured in terms of cost. In measuring organizational performance, a general effect is that all focus tends to end up on the measured variable, in this case cost. PLs state that costs are the most important performance indicator since that is what their projects are measured on. Exploring alternative (and perhaps better suited) solutions to clients’ demands are ruled out since that would mean spending extra money or time. Evaluating PMs on cost and time makes it more difficult for them to invest resources in long-term development of the project organization. By adopting the concepts of efficiency and effectiveness, it should be easier to evaluate what needs to be achieved in order to increase the project department efficiency and effectiveness and thereby, most likely, both increase the output from invested resources and save time.

#### 4.3. In-depth interviews

To acquire a deeper understanding about how the concepts of efficiency and effectiveness are applied, one company was selected for in-depth interviews throughout their project-based organization. The organization was a good candidate since it had a well-defined, articulated goal with the purpose to increase their project effectiveness. With participants on different levels a more complete picture of the use of the concepts could be described. Experience among the respondents from the selected organization also differed. An inexperienced respondent refers to someone who has held a position in the targeted project-based organization less than two years.

Among PLs and PCs, the views of effectiveness were on the objectives of cost, time and scope, and according to the respondents, a project that meets those objectives is effective. Then, depending on the type of project, the main management focus could change between the three project objectives. Some of the PLs added to the discussion of effectiveness that:

*Doing things right the first time [is important] (PL)*

And that:

*[Being effective is] getting as much out of the allocated resources as possible (PL)*

As in the industry survey, these comments portray a predominant focus on efficiency among the PLs. One reason for this focus was given by some of the respondents. In some projects, time was the main aspect to meet, while in other projects cost was the main aspect, implying that management guidelines on what to prioritize in the project could shift from one project to the next. Several of the respondents touched upon that in those cases, effectiveness were mostly associated to the current area of focus (e.g. cost or time). This indicates that the PLs are

managed, and therefore manage projects themselves, solely on efficiency. The objective thus becomes meeting project requirements.

When asking the respondents what they lacked in order to achieve higher effectiveness, the views differed depending on experience from the project-based organization. The inexperienced respondents focused on gaining more experience in locating and using tools, templates and so on. They pointed out that significant time during their workday was spent on navigating in different systems in order to find templates or forms needed in their everyday project work. They expressed a need of more administrative support to enable them to focus on their projects.

The more experienced PLs expressed a lack of resources in order to achieve higher effectiveness. One respondent stated that they could be better at communicating with the client and stakeholders in order to better establish the project plan. Time constraints confined them to go with the first solution found; they lacked the possibility to explore alternative solutions, which might have been more suitable and effective. As one of the respondents emphasized:

*Time constraints and high workload forces focus to be on meeting time, cost and scope requirements; no time is left to consider if the project could be carried out in an alternative and more effective way. (Experienced PL)*

The respondents' views of the concepts coincide in both the survey and in the in-depth interviews. When discussing effectiveness, the first aspect emphasized was time, cost and scope. The comments made about how to gain as much as possible from the allocated resources fit the description of efficiency. The majority of the project work was spent on meeting time, cost and scope constraints; in other words focusing on a single project and meeting the project goals. To have a focus on a single project can be expected from PLs, since that is where their focus should be. The view of the more experienced PLs of the concepts was broader, i.e. including clients and stakeholders. This indicates that both efficiency and effectiveness is discussed among experienced PLs, just not directly and formally. As seen in the quote above, the experienced PLs also expressed a desire for increased freedom in early stages of a project in order to explore alternative solutions. This could be interpreted as a wish to work not only with efficiency but also to focus on effectiveness. Experience from the organization clearly drives focus from tasks related to efficiency to those more related to effectiveness.

Most PLs considered that the projects were carried out satisfyingly and did not have much to add to that discussion. However one of the respondents pointed out that:

*... in order to do it even better the clients have to be involved. Greater commitment from the client means more satisfying results. (Experienced PL)*

This small but significant comment shows that there is a need to broaden the perspective of effectiveness, to not only focus on internal factors but to include external factors (such as clients and stakeholders) as well. Since PLs work on a short-term, single project level, it is natural that their focus is put on factors related to efficiency rather than effectiveness. The comment about client involvement is a two sided coin since it not only means that the PLs have to involve the client more, but also that the clients have to allocate time and want to participate in the project.

#### 4.4. Difference in view related to authority

Moving focus from a PL and PC level to the PMr and PDDM level a slightly different view of the concepts can be distinguished. Among the respondents in the latter group the question of what effectiveness in PM is or could be, had previously been discussed. However no clear definition or result emerged from that discussion. The reason for the discussion was that they (the management of the project-based organization) had set the goal that:

*[The organization] shall perform effective projects (PMr)*



To reach the project-organization's goal the PMs had to define what is meant with an effective project. From the in-depth interviews it was obvious that the PMs were not able to give a definition of what an effective project is. It did, however, get them to reflect upon the concepts in more detail. Several respondents pointed out that effectiveness goes beyond the traditional variables of time, cost and scope. One respondent indicated having a more holistic view of effective projects and stated that effectiveness should be more than just meeting specific project goals. As an example given, a project could have been carried out in half the time, at lower cost or perhaps deliver something that both meets and exceeds client expectations. A wish to identify weaknesses and improve processes was expressed in order to improve and develop the entire project-based organization.

Among PMs and PDDMs, the responsibility of performance in the project-based organization was reflected in their view on effectiveness. Since the respondents have responsibility for long-term performance in their project-based organization, they tend to discuss factors both related to efficiency (as with PLs) and effectiveness. As with the PLs, this would be expected since it reflects their respective responsibilities in the organization. However a clear distinction was still not made between the concepts. The respondent that questioned if the project goals in terms of time, cost and scope were set correctly touched on something interesting. A discussion of how goals are set would mean moving focus from the single-project level to a process view on PM. Together with a clear definition of the concepts this would hopefully help structure the improvement efforts and be one possible starting point for raising efficiency and effectiveness within the organization.

#### *4.5. Practitioners showing interest in the concepts*

All respondents in the study found it difficult to define effectiveness related to their occupation. The most common discussion dealt with meeting project plan requirements of cost, time and scope. That is, mainly controlling the internal single project elements (i.e. efficiency), and not focusing on external factors or the relation to other projects. It is, however, interesting is that all respondents expressed that they were very interested in how effectiveness in a project-based setting could be defined. Using the concepts of efficiency and effectiveness from QM and their respective internal short-term and internal/external long-term focus could help define the concepts within PM. A clear definition of the concepts within PM would among other things make it possible to construct suitable key performance indicators, since it would be clearer what leads to higher efficiency and effectiveness.

During the interviews a several of the respondents expressed concern about the involvement of clients, or lack thereof. As discussed, the majority of the empirical findings are related to the concept of efficiency, i.e. a clear focus on following up and meeting the project plan. One example of how to incorporate the concept of effectiveness would be to focus on involving the client more in the process. In open discussions with the respondents, several mentioned client involvement as a key contributor to projects that were recognized as successful. These projects did not always meet the requirements of time and cost but since the client had been involved in all decisions that effected time, cost and scope there were no surprises at the end. The delivered outcome usually exceeded the client expectations, which means that high effectiveness (if described as meeting or exceeding customer requirements) was achieved. If these projects were carried out efficiently or not would be hard to say without defining what efficiency in PM. With a clear definition of the concepts within PM these projects could be evaluated and lessons learned could be used to develop and improve the project-based organization.

## **5. Conclusions & discussion**

The findings from this study indicate that the use of the concepts efficiency and effectiveness among project management academics and practitioners is somewhat unclear. In other fields, such as quality management, the concepts are used in a more defined way and are utilized to evaluate and improve processes. Adopting the concepts in the field of project management could help both academics and practitioners to structure improvement work in

project-based organizations. A process view in project management makes it possible to adopt a holistic view in project-based organizations and enable comparison between individual projects in order to improve the organization.

The possibility to compare the management of projects also allows for new performance indicators to be developed. As highlighted in this study much of the focus when measuring project performance is focused at time and cost. This limits a project department to focus on set time and cost requirements for the single project. New performance indicators would put focus on other aspects reflected in the concepts, and increase diversity among available performance indicators. These aspects include internal and external as well as short and long-term objectives. With efficiency and effectiveness in project management the project-based organization can strive to ensure that what is carried out is performed in the best possible way, and that the outcome is the best suitable outcome for the customer.

## 6. References

- Alukal, G. (2007). Lean kaizen in the 21st century. *Quality Progress*, 40(8), 69-70.
- Andersen, E. S., Birchall, D., Jessen, S. A., & Money, A. H. (2006). Exploring project success. *Baltic Journal of Management*, 1(2), 127-147.
- DeToro, I., & McCabe, T. (1997). How to stay flexible and elude fads. *Quality Progress*, 30(3), 55-60.
- Fisher, E. (2011). What practitioners consider to be the skills and behaviours of an effective people project manager. *International Journal of Project Management*, 29(8), 994-1002.
- Hyväri, I. (2006). Project management effectiveness in project-oriented business organizations. *International Journal of Project Management*, 24(3), 216-225.
- ISO. (2005). Quality management systems - fundamentals and vocabulary (ISO 9000:2005). (p. 7) International Organization for Standardization.
- ISO. (2012). Guidance on project management (ISO 21500:2012) International Organization for Standardization.
- Juran, J. M. (1989). *Juran on leadership for quality: An executive handbook*. New York: Free Press.
- Kwak, Y. H., & Ibbs, C. W. (2002). Project management process maturity (PM) 2 model. *Journal of Management in Engineering*, 18(3), 150-155.
- Lampel, J. (2001). The core competencies of effective project execution: The challenge of diversity. *International Journal of Project Management*, 19(8), 471-483.
- Martinsuo, M., & Lehtonen, P. (2007). Role of single-project management in achieving portfolio management efficiency. *International Journal of Project Management*, 25(1), 56-65.
- Parast, M. M. (2011). The effect of six sigma projects on innovation and firm performance. *International Journal of Project Management*, 29(1), 45-55.
- Project Management Institute. (2008a). *A guide to the project management body of knowledge: (PMBOK® guide)*. (4th ed.). Newtown Square, Pa.: Project Management Institute, Inc.
- Project Management Institute. (2008b). *Organizational project management maturity model (OPM3)* (2nd ed.). Pennsylvania, US
- Rose, K. H. (2005). *Project quality management: Why, what and how*. Boca Raton, FL, USA: J. Ross Publishing, Incorporated.
- Sarshar, M., Haigh, R., & Amaratunga, D. (2004). Improving project processes: Best practice case study. *Construction Innovation: Information Process Management*, 4(2), 69-82.
- Ward, S. (1999). Requirements for an effective project risk management process. *Project Management Journal*, 30(3), 37-43.
- Wyssocki, R. K. (2011). *Effective project management: Traditional, agile, extreme* (6th edition). Hoboken, NJ, USA: Wiley