CHALMERS

Benchmarking project management maturity in two organisations

A case study focusing on the value of having an established project management model in an organisation

Master of Science Thesis in the Master's Programme International Project Management

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CHALMERS UNIVERSITY OF TECHNOLOGY

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Cover:
The picture illustrates the work needed to reach higher project management maturity levels.

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ABSTRACT

Today's changing business environment is putting pressure on organisations to ensure successful project delivery in order to reach the organisations' strategic goals. Outputs need to be measured and improved and the best practices need to be spread within organisations in order to remain competitive. Benchmarking models support the standardisation of working patterns within the whole organisation and encourage regular updates and adaptations (Office of government commerce, 2010; Project management institute, 2003; Software engineering institute, 2009). In order to enable the continuous improvement, methods for maintenance and spreading of knowledge and experiences need to be established.

The research in this thesis is aiming to compare project teams from two organisations where the projects have similar objectives even though they are not competing with each other by benchmarking their organisational project management maturity.

The research was conducted by modifying an already existing maturity model for benchmarking the organisational project management maturity based on the conclusions in a pre-study. Adaptations were made according to the recommendations in the benchmarking model and the proposals for improvement were based on the characteristics of higher maturity levels and evaluations organisations' needs. The reason for using an already existing model is due to compatibility issues, the organisations wants to be able to compare its maturity with other organisations. Eleven project teams were assessed through interviews. The quantitative results were analysed and evaluated. The findings based on qualitative responses were confirmed through quantitative data analysis.

The findings from the benchmarking stress the value of having an organisation wide organisational project management model with known practices and how to perform necessary processes for the planning, execution and delivery of each project. Even though projects with low maturity can deliver successful projects, the organisation can gain great advantages in increasing its project management maturity. The advantages may be represented in the form of increased profitability, facilitated monitoring of each project's progress and less dependence on certain individuals. The office of government commerce's (2010) in the United Kingdom claim that mature organisations are more likely to manage knowledge is another finding that is confirmed in this study.

I

Mätning och utvärdering av projektmognad i två organisationer

En fallstudie som fokuserar på värdet av att ha en etablerad projektledningsmodell

Examensarbete inom International project management

CARL HELLERED

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SAMMANFATTNING

Dagens dynamiska och ekonomiska företagsklimat sätter stor press på organisationer att försäkra sig om framgång när man driver projekt samt för att nå organisationens långsiktiga strategiska mål. Genom att skapa en kultur för att regelbundet mäta, utvärdera och förbättra sina processer inom organisationen bibehålls organisationens konkurrenskraft. Benchmarkingmodeller kan mäta organisationers projektmognad samt framhäver vikten av standardisering av arbetssätt inom organisationer samt utvärderar och anpassar dess metoder (Office of government commerce, 2010; Project management institute, 2003; Software engineering institute, 2009). Denna företagskultur med ständiga förbättringar kräver att kunskap vidhålls och sprids av alla individer inom organisationen.

I detta examensarbete undersöks och jämförs projektgruppers projektmognad från två organisationer. Målen med projekten är av liknande karaktär och projektgrupperna agerar i samma geografiska område, men trots detta konkurrar inte organisationerna.

Arbetet består av att anpassa och tillämpa en redan existerande benchmarkingmodell, då detta underlättar jämförelser med andra projekgrupper från andra organisationer. Anpassningarna gjordes efter de rekommendationer som finns beskrivna i modellen samt baserat på en förstudie där målet var att upptäcka organisationernas olika behov. Elva projektgrupper utvärderades genom intervjuer med deras projektledare. De kvalitativa slutsatser som kunde dras är även understödda av kvantitativa analysmetoder. Förbättringsförlagen som överlämnades togs fram med stöd av egenskaper för högre mognadsnivåer samt utvärderingar av organisationens behov.

Resultat från studien styrker värdet av att ha en standardiserad projektledningsmall inom organisationer där arbetssätt för hur genomförande av vissa processer såsom planering, genomförande och överlåtande finns beskrivna. Trots att projekt med låg mognad kan vara framgångsrika kan organisationer nå stora konkurrensfördelar genom att öka projektmognadsgraden. Dessa fördelar kan bestå av ökad lönsamhet, överskådlighet och möjlighet att agera proaktivt istället för reaktivt samt att organisationen blir mindre beroende av enskilda individer. The office of government commerce(2010) yrkar på att mogna organisationer är mer benägna att värdera, sprida samt hantera kunskap och erfarenhet, vilket även styrks i denna studie.

Nyckelord: Organisational project management, benchmarking, knowledge management, total quality management.

Contents

1 Background

The seed that generated the idea of this approach for a thesis was the benchmarking of organisational project management that was made in the course "organisational project management" at Chalmers University of technology. A project team at Göteborg&Co., who's task is to arrange a fair every second year was benchmarked and evaluated. They had a poor performance where standardisation, learning and continuous improvement were nonexistent. Today, the project team consists of three full time employees; most of the knowledge required is situated in the minds of these people. This fact makes the project completely dependent on these three individuals instead of being present in the organization's set of standardized processes. Probably, it is not possible to deliver the project successfully if one of the three is absent for a long period of time or when some of them will retire.

The HR manager in the main organisation was contacted and the results from the first benchmarking were presented. We decided to continue investigating the organisation's performance by involving more project teams within Göteborg&Co., the main organisation, as well as project teams with similar tasks belonging to an organisation called Svenska mässan.

Since the two main organisations are owned and managed by the city of Göteborg, the business region and local companies, no or only a little of competition exists between the different project groups and organisations. This fact was beneficial for the researchers since the organisations and project teams did not feel anxious to share knowledge about their practices to others.

1.1 About the companies

Göteborg&Co. is an organisation with in total 478 employees whose work only corresponds to the work of 112 employees due to temporary positions based on different projects' peaks and seasonal variation. The mission of Göteborg&Co is to market and develop the city of Göteborg when it comes to tourism, meetings and events. Their vision is to make the city of Göteborg into one of Europe's most attractive regions to live and work in and to visit. It is primarily a project based organisation where different subdivisions are arranging and organising different events, fairs and festivals independently.

Svenska mässan is an organisation with around 400 employees. It is administered as an independent foundation but governed by local politicians and representatives from local companies and universities. Their mission is to enhance the conditions of the local trade and industry. Each year, around 30 fairs and 100 conferences are being arranged with around one million visitors.

1.2 What we know

Working with different types of projects within an organization requires standard models in order to deliver successful future projects repeatedly, improve both the quality of future projects and gain knowledge and learn from past mistakes. Even though most of the projects launched today are being documented, one has to consider how knowledge sharing paths and trends from these projects are being successfully reused.

1.3 What this research can provide

The intention is to get an overall view of the organizational structure in order to benchmark the different improvement areas. By applying selected part from the latest theories and methods based on conclusions from academic sources within project management, a new and improved method will be presented that can be applied into the organization where standardised working patterns and more sophisticated communication channels are used and where organisational learning is occurring as a base for continuous improvement.

2 Method

By benchmarking different departments and different organisational subdivisions in a project based organisation, the aim was to identify areas of improvements within the company's project management practices. Both qualitative and quantitative methods have been used for interpretations and analysis.

2.1 First interviews

Some project groups within Göteborg&co and Svenska Mässan have been interviewed twice in order to obtain information about their project management practices. The degree and form of the support from the main organisation and other project teams were also considered for the next coming benchmarking as well as detecting other issues that may affect their operations. The first set of interviews had a low degree of standardisation in order to create an open atmosphere with possibilities for spontaneous questions and answers. The degree of structuring was also low, which gave the interviewees the possibility to interpret in different manners based on his or hers attitude, stance and previous experiences. (Patel & Davidson, 2003, s. 71)

The goal of these interviews was to investigate what differences there can be between different projects and project teams at Göteborg&Co.in order to know what to measure apart from project management maturity and how to measure it in the benchmarking scheme.

These interviews focused on collecting qualitative data in order for the researchers to get a holistic understanding of the companies' and the project teams' project management performance, communication, knowledge management and resource allocation.

2.2 Development of a benchmarking scheme

A benchmarking scheme has been assembled and acts as the primary tool to measure the project teams' project management maturity, their practices for employment, organisational support as well as their management of knowledge and competence. Existing project management maturity models such as OPM3 and P3M3 have been investigated, evaluated and applied into a new model customised for Göteborg&co and Svenska mässan's needs.

2.3 Conducting benchmarking

From the formal benchmarking, a gathering of primarily quantitative data and trough interviews qualitative data were gathered for our research. The benchmarking involved a number of project organisations specified by Göteborg&Co. and Svenska Mässan as well as these organisations' portfolio/program manager. The benchmarking was considered to be:

- Functional - Functions and practices linked to project and knowledge management are ranked
- Competitor - By analysing project teams from two organisations within the same industrial sector
- Internal – The different project teams will be benchmarked individually, the teams within one organisation can be compared against each other.

Quantitative data was collected and in a later stage, analysed in order to support the qualitative interpretations and to help the researchers create proposals for improvement. The interviews had a high degree of standardisation in order to facilitate and ensure quality and consistency for the collection and eventual analysis of quantitative data. (Patel & Davidson, 2003, s. 72)

2.4   Analysis of the results from benchmarking

Results from the benchmark were an important source of quantitative data to us. Some of the information was interpreted through statistical analytical software in order to confirm qualitative conclusions and determine the factors that correlates with the project teams' organisational project management maturity. Linear regression and crosstabs distinguishes whether there is a significant correlation between different variables. (Dahmström, 2005, s. 204)

Since the research was based on a case study with a holistic, multi-case design, the findings were more reliable than a holistic, single-case design (Yin, 2006, s. 40). In order to improve the reliability even further, the answers from the interviews during the benchmarking were analysed and questioned by the researchers and representatives from the two organisations.

2.5 Developing proposals for improving the organisation's processes

The work followed the DMADV (Define-Measure-Analyse-Design-Verify) methodology for continuous improvements originating from six sigma, which is a business management strategy developed by Motorola. The first three steps were made by us; the last two are optional for the company to implement. Our knowledge about the theory and methodologies in Project management, Total Quality Management, Knowledge Management as well as organisational project Management was applied through a process of measuring performance and finding improvements to the organisation's processes. A feasibility study will have to be made in order to support the senior management's decision on how to deliver the proposed improvements. An analysis of the organizational links and working patterns to see where to optimize and when to do so is also necessary.

Define
- Research - case studies, journal articles
- Contact candidates for interviews

Measure
- Develop benchmark - define areas, scoring, database.
- Conduct benchmark

Analyse
- Identify best practices
- Investigate practices of other companies
- Statistical analytical tools
- Complimentary interviews if necessary.

Design
- Develop proposals to subdivisions
- Develop synergies to organisations

Verify the design
- Present the proposals
- Collect opinions from organizations
- Update and adapt proposals

Figure 1: Explanation of the tasks to be made in the study and possible improvement steps that should be considered by the organisation

2.6 Constraints

The research was only considering the projects at Göteborg&Co. and Svenska Mässan. Found correlations will probably not be applicable on project teams outside of the two organisations without a proper study. Our contact at Göteborg&Co has selected which project teams that was included in the study. No other area than project management practices, including knowledge management were benchmarked.

2.7 Purpose

The intention is to develop a benchmarking scheme, conduct the benchmarking as well as propose solutions for improvements. Methodologies from Business process management as well as portfolio and programme management were considered.

2.8 Goals

Some departments at Göteborg & Co, a company working for attracting tourists, events and fairs to the city of Göteborg is benchmarked in order to increase the organization's and subdivisions' performance within the project management field.

- Comparison of subdivisions against each other
- Comparison of current work methods against other similar organizations
- Identification the optimal activities and spread them throughout the organization
- Development homogenous work models to be implemented into the organization
- Promotion of a model where current and past knowledge can be stored and shared

2.9 Deliverables

- Benchmarking scheme.
- The organisations' current performance in project management maturity based on the P3M3 model.
- Proposals containing methods to improve low performing areas for each project.
- Proposal for senior management containing methods to improve the overall performance of the projects.

There is an aim to find strategic and organisational solutions that will give synergies for all or many of the subdivisions' performance.

3 Literature review

The literature review that is presenting the secondary data used for the thesis, includes articles from different academic journals, presentations from lectures, official benchmarking material from different institutes and organisations, books from courses, Chalmers library, e-books or borrowed from our supervisor. The most common key phrases that were used while looking for adequate journal articles were: "project maturity", "benchmarking projects", "process management" and "organisational project management". Articles containing case studies where a benchmarking was conducted and the issues that can affect a benchmarking were paid extra attention.

In several cases, the sources referred to in the books and journals were investigated further in order to get a deeper view in certain issues. The chapters about benchmarking, multi project management and TQM were written before the interviews and benchmarking in order to support the researchers in the development phase of the first set of interviews and benchmarking scheme. The reason for presenting knowledge management is that it is a major part that is related to our benchmarking for enabling the researchers to give academically verified proposals for improvement to the project organisations that were investigated.

3.1 Multiproject management

According to Dinsmore and Cooke-Davies (2006), projects can be divided into two different types with respect to their intention. The intention of a project can either be, business change, or business as usual. Successful multiproject management practices encourage business change by well adopting it into business as usual.

Patanakul and Milosevic (2009) define multi project management as an environment at the organisational-level where multiple projects are managed simultaneously.

The interaction between the projects becomes an issue, the multiple project manager(s) need to make their decisions in order to maximise the advantages for all the projects instead of focusing on single projects. Practices such as planning, budgeting, resource and work load levelling and prioritising are necessary. Local suboptimum in some projects can occur for the cause of other projects with a higher priority. (Patanakul & Milosevic, 2009)

3.1.1 Project Portfolio management

The portfolio is an organisation's collection of projects and/or programs. The portfolio is created in order to facilitate the management as well as making it more effective in order to meet the strategic business goals. The senior management can assign resources to projects and programmes within the portfolio. (Project management institute, 2004)

During the last years, the interest in project portfolio management has increased for several reasons (Patanakul & Milosevic, 2009):

- As an essential response the increased challenges created by a more competitive, information rich, globalised and dynamic environment.
- Successful Project portfolio management capabilities can maximise the impact of innovation activities.
- Today, many activities that were previously viewed as operational are instead managed as projects.

The drivers for this "projectification" of companies and organisations are competitive pressures, improved success rates in projects and project management tools as well as the increased complexity of organisational activities.

Some key activities within portfolio management are (Project management institute, 2003, p. 26):

- Translating organizational strategies into specific initiatives or business cases that become the seed to programs and projects.
- Identifying and initiating projects and programs.
- Providing, allocating and reallocating resources to programs, projects and other activities.
- Balancing and aligning the portfolio.
- Supporting the organisational project management environment.

3.1.1.1 Aligning the portfolio

The project portfolio describes how an organisation's strategy is going to be implemented. The top management need to ensure an alignment between the project portfolio and the business strategy, the available resources and that the projects and programs are aligned together. Another key factor in achieving success is to ensure motivated and loyal personnel.

Whereas a business strategy lays out broad directions and determines what is to be accomplished, the portfolio of projects defines how the strategy is to be put into effect. The challenge for the top management is to keep the company's project portfolio aligned with the business strategy and with available resources as well as ensure that projects are aligned with each other. (Dinsmore & Cooke-Davies, 2006, pp. 11-12)

3.1.1.1.1 Aligning portfolio with business strategy

While aligning the project portfolio with the business strategy proposed by the senior management, decisions concerning how many projects should make up the core of the portfolio, what kind of projects(business as usual or business change), delegate responsibilities as well as decide when project are supposed to start and their allocation of resources. (Dinsmore & Cooke-Davies, 2006, pp. 12-13)

Collaboration is required between strategic business units and strategic project units. they need to decide how many projects should create the core of the portfolio, what kind of projects, delegate responsibilities, decide when the projects should be launched as well as giving them sufficient resources.

3.1.1.1.2 Aligning portfolio with available resources

The shortcomings often take the form of people, material equipment or information, even though all resources can be translated into money. For business and project planners, the challenge is to maximise the outcome of the available resources. Some common tools for managing resources are:

- Planning – packages of available resources needs to be designed and be consistent with reality.
- Budgeting – aggregating the budgets of the different projects, it will be possible to determine if the resources are allocated optimally.

- Resource levelling – Resource levelling can be used if projects need to allocate the same resource simultaneously or if a certain resource is unused at a certain point in time.
- Prioritising – in order to resolute major clashes, each projects need to be assigned a certain priority while the other will have to be put on hold until a certain resource is available.

If the present resources are insufficient for the project portfolio, an acquisition of an external resource will have to be made. In such a case, a feasibility study needs to be made to ensure profitability. (Dinsmore & Cooke-Davies, 2006, pp. 13-14)

3.1.1.1.3 Aligning projects with each other

The projects in the portfolio require coordination for available resources. In some project based organisations, independent project groups may have the power to acquire external resources. (Dinsmore & Cooke-Davies, 2006, p. 15)

3.1.1.2 Aligning projects with organisational structure

While managing projects, organising people and work in an appropriate way is a key success factor. The functional organisation, with a distinct hierarchy is being left behind in the modern business world while other organisational structures enabling higher flexibility are becoming more and more dominant. (Dinsmore & Cooke-Davies, 2006, pp. 15-16)

3.1.1.2.1 Project based organization

The project based organisation is very common in the construction industry. The organisation can be divided into two categories, those who are permanently employed by the company such as the board of directors, administrative staff and senior management. Several project boards are formed which one or several project managers are associated to. The project manager is situated on the level below the project board and responsible for the delivery of one or several projects' objectives. The project team's constitution is depending on where the project is situated in its life cycle. Once a specific task is completed, the team will be disbanded but in several cases, the person or unit responsible for the specific task may be assigned a new one within the same project or company.

The advantage with this organisational structure is the flexibility of labour, where the overhead created when someone is not adding value can be minimised easily but the structure has several disadvantages:

- A temporary project team is not having enough commitments to long term success.
- By paying on a piece rate, working quickly is prioritised over quality and solving problems ahead of time
- The project manager is the only persson who has an interest in fulfilling the objectives within the iron triangle.
- Since some of the personnel is temporary, difficulties can arise in the review phase resulting in a slower performance improvement rate of both the temporary contractors and the project organisation.

3.1.1.2.2 Matrix organization

The matrix organisation was developed in order to obtain the benefits from the project based organisation while not being affected by its disadvantages. (Maylor, 2005).

According to Dinsmore and Cooke-Davies (2006), an ideal organisation for projects is being constituted by the structure, expertise and discipline of a functional organisation while having the ability to focus on and deliver projects of a task force. The aim of the matrix organisation is to deliver projects but maintaining the organisation for future tasks. The matrix is not a fully stable organisation due to the option of creating situations where employees may lose motivation due to contradicting tasks and instructions from functional and project managers.

The matrix organisation is helpful in three cases:

- If there are several orientations of operations such as multiple customers or geographical differences.
- Where large amounts of information is needed to be processed simultaneously.
- When resources needs to be shared between functions and projects in order to economically justify its existence. (Mullins, 1999, ss. 542-543)

According to Maylor (2005) with support from Davis and Lawrence (1977, pp18-19) within a matrix organisation, the functional departments' objective is to provide resources by providing expertise through seconding personnel to projects. When a project or a certain task within a project is completed, the personnel can return to its functional department, enabling the possibility to keep technical competence within the organisation.

The matrix can be balanced based on which entity should possess the power; the project manager or the functional manager.

- In a **lightweight matrix or functional matrix** organisation, which is the weakest matrix organisation, the project manager coordinates projects but the functional managers are having more power and ability to influence. The responsibility for success is mutual between the different functional departments. (Maylor, 2005, p. 224)
- In a **balanced matrix**, the line managers are dependent on the activities ran by the project managers in order to secure income. The functional managers' power and ability to influence is equivalent to the project managers'. The major drawback is the so called "*two bosses problem*", where employees may be unaware of who to turn to in certain situations. (Maylor, 2005, p. 224)
- The **heavyweight matrix or project matrix** grants the project managers with the superior power and influence. The structure is beneficial when resources (such as functional pools of technical experts) are needed to be allocated on a periodical basis. (Dinsmore & Cooke-Davies, 2006, pp. 72-73)

3.1.2 Program management

According to the Project management body of knowledge (2003, p 24), program management can be defined as:

> *"Program management is the extension in scope beyond the temporary undertakings inherent in project management. Program management can include the whole life cycle considerations such as upgrades, additional releases and closure"*

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In contrast with a project portfolio, where the projects do not need to be interdependent, a program is a group of projects that are mutually dependent on each other. They may share a common goal and the final deliverable can be a deliverable product or service. Program management is a centralised management aimed to coordinate a group of projects or deliver strategic objectives. (Patanakul & Milosevic, 2009, s. 217). Dinsmore & Cooke-Davies (2006 , p. 289) are stressing that program management also should be regarded as a centralised coordination between projects in order to achieve the strategic benefits and objectives of a program.

According to OPM3 (Project management institute, 2003), the key activities within program management are:

- Managing stakeholder expectations
- Ensure that program objectives support portfolio strategies
- Prioritizing and allocate resources between projects in the program.
- Managing the scope that cover all the projects within the program
- Managing conflicts between projects.
- Managing the delivery of expected benefits.

The meaning and purpose of programs according to P3M3 (Office of government commerce, 2010) is to manage the complexities in delivering beneficial change. It should focus on improving project delivery and operational effectiveness in order to follow the stipulated strategic direction and it should only be regarded as a temporary and flexible organisation with a lifespan of several years. Projects will be initiated, executed and closed during the program's existence. Through program management, projects will be benefited with an umbrella organisation where coordination and integration of projects will aim to create synergies between projects and its specific outcomes and benefits and focus on delivery of organisational strategy (Office of government commerce, 2010, s. 2). The key activities and practices for successful program management are:

- Timescales with definite endpoints even though some flexibility will exist.
- A strong focus on benefits descriptions and realisations
- Stakeholder management at all levels
- Risk management through aggregation and operational transition
- Planning is oriented at delivering the outputs and managing interdependencies
- Beneficial change delivered through business cases

While comparing the proposed best practices of OPM3 and P3M3 (Project management institute, 2003: Office of government commerce, 2010) two common models that are used to measure organisational project management maturity, several similarities are found with a focus on benefits realisation, stakeholder management and managing the interdependencies. However, no risk management policy is described as a key practice within OPM3's description of a mature program management.

3.1.3 Projects and programmes as value creation processes

Szczepanek & Winter (2008) claims that projects and programs should be seen as value creating processes rather than the old view of a temporary organisation for production. Recent surveys higlight the need for a more strategic approach in project management, where value and benefits that contribute to the organisations are are having a greater

emphasis. Today, the primary key performance indicator of success is not how much an organisation can get out of each customer, but to what extent the customer can gain advantages in their market in terms of profitability, customer loyalty, market share or other interesting measure.

The value centric view is increasing in several industries, the primary goal is no longer a capital asset or a system within the right time and cost, but to create value for several stakeholder groups. These new prerequisites have created a need for a new framework where the value creating aspects are getting a higher priority in projects and programs alongside the traditional iron triangle containing time, cost and scope. Before, creating value for the customer was the primary goal of a project, but today, the intention is to mobilise customers in order to make them generate their own value. Investigations that presents and corroborates the customers' business and value creating process and later apply this knowledge to the organisation's projects in order to clarify the objectives. (Normann, 2001)
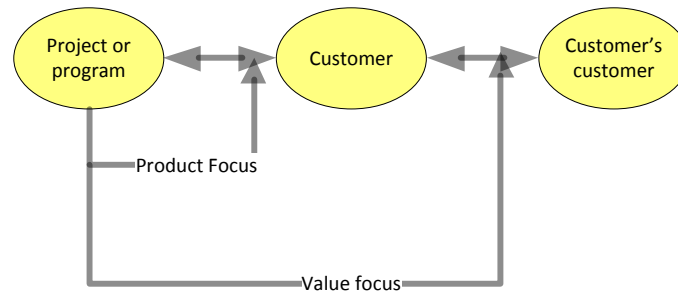
Figure 2: According to Normann (2001), it is essential to see the output of a particular project as a input to the customers' activity in a wider system.

3.2 Project maturity in project oriented organisations

Maturity is defined as an individual's or organisation's who has reached the final stage of development. If an organisation is considered to be mature, it possesses a sufficient amount of maturity in order to fulfil its objectives. By relating these definitions to projects, project maturity could be considered to be a state where the organisation can deliver its projects and fulfil the customers' needs.

As opposed to functional and matrix organisations, a project based organisation is an organisational structure where the organisation is composed by a board of directors and temporary project teams. (Maylor, 2005, pp. 222-223)
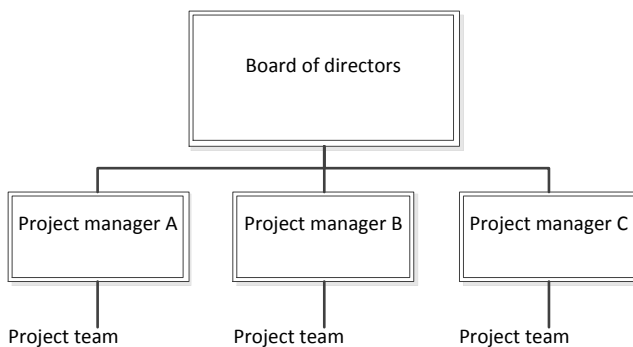
Each project is delivered by a semi-autonomous group that can be seen as a small company within the larger organisation. The project team members have no responsibility in the functional organisation or in other projects but their responsibility is to deliver the project within the specified budget, schedule and scope. (Boddy.D, 2002, p. 106)

Since no organisation will ever reach the full extent of development, it is more interesting to compare the different degrees of maturity in different organisations by making measurements in different ways in order to find areas of improvements. The results from observations, survey and benchmarking need to be considered for each organisation in order to improve their practices and project maturity. (Andersen & Jessen, Project maturity in organisations, 2003)

Each organisation has therefore to look at its own results and find out where the organisation has a great deal to gain in increased project maturity. Projects need more focus on the simultaneous thinking of hard and soft issues. The organisations need more knowledge and better understanding of the starting-point of the project. The project practice seems to be at its weakest at the operational level. (Andersen & Jessen, Project maturity in organisations, 2003)

Today, projects are not only seen as a tool for solving technical problems, they are also serving as a vehicle for business and change. Project maturity can be seen as an indication of the organisation's ability to initiate and execute projects for different and correct purposes. (Boddy.D, 2002)

The project oriented organisation is defined by Gareis (2005) as an organisation and its subparts that are using projects to fulfil complex and relatively unique processes. They possess specific strategies and organisational structures and a specific culture to manage projects, programmes and portfolios.

More specifically, the project oriented organisation has the following characteristics (Gareis, 2005):

- Management by projects is an explicit organizational strategy.
- Temporary organisations such as projects and programmes are used.
- The management need to consider networks and chains of projects as well as the organisation's project portfolio
- Project, programme and portfolio management are processes.
- Expert pools containing knowledge and know-how exist in the organisation.
- Through a project management office and project portfolio group, project management competence is assured within the organisation.
- By encouraging team work, process orientation and empowerment, a new management paradigm is applied

3.2.1 Measuring maturity

According to Andersen and Jessen (2003), measuring maturity in organizations is regarded as a subjective instead of objective measurement since most significant research is primarily focusing on what people are doing operationally. Skulmoski (2001) who recommend a view where competence and maturity should be linked

together for project success and not focusing only on action and where competence should be regarded as a combination of knowledge, skills and attitudes that supports performance.

The measurement can be made in different manners based on the organisation's needs. P3M3 (Office of government commerce, 2010) gives an opportunity to use a self-assessment in order for the organizations to get a direct and up to date evaluation of their project maturity. The disadvantage with this approach is that the self assessment may lead to results that are too optimistic instead of realistic. Therefore, the Office of Government Commerce recommends making the assessment with a third party in order to get more unbiased interpretation of the actual performance. However, the self assessment can provide organizations with key practices for effective project management and increased capability for reaching the next maturity level. (Office of government commerce, 2010, s. 3)

3.2.1.1 The three dimensions of maturity

The definition of maturity is including an individual's or an organisation's behaviour and competence. Within the business community, maturity is explained as the sum of action, attitude and knowledge. There is a strong correlation between competence and maturity. Skulmoski (2001) advocates a framework where competence and maturity are knitted together in order to increase project success.
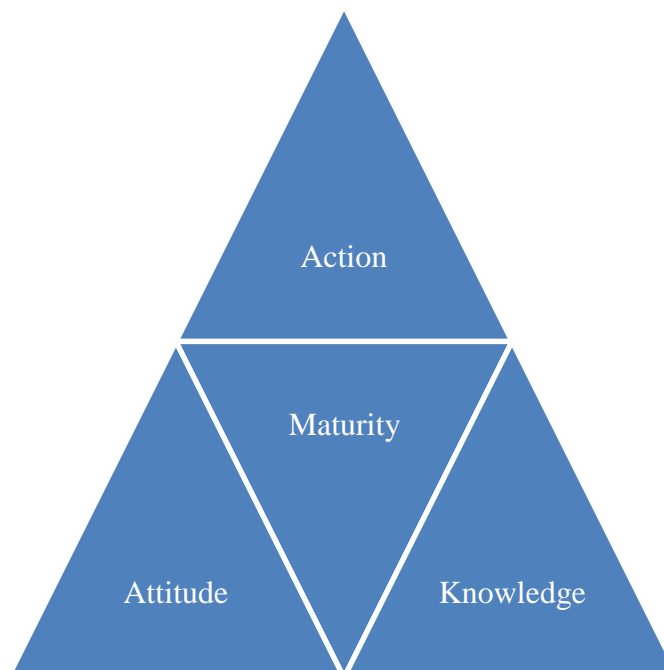
Figure 4: The three dimensions of maturity

These three factors form a triangle which originally is based on research in consumer behaviour by Simon (1955). This triangle has been debated and scrutinised by Williamson (1985) and March (1989) and later investigated by Helgesen (1992). In "Principles of systems" by Forrester(1968), where the researcher investigates the behaviour of social and business oriented decision making systems, a statement that belief is stronger than fact (perceived influence) is being made. On the other hand, a survey made at a business school in Norway shows that attitudes and knowledge are

stronger than the actions taken. (Andersen & Jessen, Project maturity in organisations, 2003, s. 457)

3.2.1.1.1 Knowledge

Knowledge is defined as the Capability to deliver the specified task. But it also incorporates the requirement of an understanding of the impact of willingness and action. According to (Andersen & Jessen, Project maturity in organisations, 2003), knowledge will in most cases be the most decisive parameter. By comparing with OPM3, their view of knowledge as a key driver for project maturity strengthens the idea of knowledge as an important asset for increased organisational project maturity. (Project management institute, 2003)

3.2.1.1.2 Attitude

Attitude is described as the willingness to perform and being involved in a certain task or project. Within attitude when a group or individual is undertaking a project, issues such as risk and uncertainty, the willingness to share power and responsibilities, cooperation as well as mental willingness is to be considered. (Andersen & Jessen, Project maturity in organisations, 2003, s. 458)

3.2.1.1.3 Action

Actually doing what the person or organisation is intended to do, in other words, the organisation's ability to act and decide. Even though Anderssen & Jessen (2003) states that knowledge is a key driver, the authors presents some cases where action is more dominant:

- People who starts to buy shares in the market place (action), develops an interest and accumulates knowledge.
- People can *act* based on their belief of what is true, rather than facts.

3.2.1.2 Different questionnaires

Even though there are many similarities between the most common organisational project management maturity models when it comes to the number of level and their descriptions, there are many differences in the assessment framework. With the piece of information of its maturity that the organisation will gain from the benchmarking process, the organisation will have to examine what will be needed to be done in order to improve.

3.2.1.2.1 OPM3

OPM3 self assessment is composed by 151 questions where the answer is either yes, if the organisation fulfils the asked request or no if it does not. If the software version is used, two lists will be generated after completing the assessment, the first list will contain the best practices that are integrated in the organisation and the second contains the best practices that are not demonstrated by the organisation. The software will generate charts and bars where the overall maturity of the organisation is presented, a more detailed view for each domain, the organisation's maturity in terms of each stage and a bar chart representation of the organisation's maturity by domain and process improvement stage. (Project management institute, 2003, pp. 42-44)

3.2.1.2.2 P3M3

The assessment contains nine questions for project, program and portfolio, resulting in a total of 27 questions with five different alternatives where the user must decide which of five descriptions that most represents the organisation's current capability. The first question in each section is of general character. Seven questions are then following with the following themes:

- Management Control
- Benefits management
- Financial management
- Stakeholder engagement
- Risk management
- Organisational governance
- Resource management

The final question is a cross check, which provides a more holistic view between the different perspectives and an overall project, program and/or portfolio management capability. (Office of government commerce, 2010, s. 4)

3.2.1.2.3 Prince2

Prince (Projects IN Controlled Environments) was developed by the British government in 1989 for developing a standardised methodology for the management of IT-projects. Its successor, Prince2 was released in 1996, and by the beginning of 2007, more than 250000 project managers are certified as "Prince2 practitioner". (Murray, 2007)

Later versions are more generic and are widely adopted by organisations in the private and public sector worldwide. Even though Prince2 is not focusing on essential project management practices such as leadership and people management, but on creating a common methodology and language between customers, users and suppliers who form a project board in order to minimise the probability and impact of mistakes and learn from experiences to facilitate profitability and efficiency. (office of government commerce, 2009)

According to the Office of government commerce (2010), the following reasons are the key driver for having developed a maturity model for measuring an organisation's Prince2 maturity.

- understand the key practices in effective project management
- identify key practices needed to achieve the next maturity level
- can be used by clients in order to consider the risks connected to external projects

Extensive research has also been made in order to identify the primary sources of project failure or overruns in time and costs or lack in scope. The most common reasons for such occurrences are (Office of Government commerce, 2010, s. 8):

- Design and definition failures
- Decision making failures on sponsor level
- Discipline failures
- Supplier management failures
- People failures

3.2.1.3 Ladder of maturity

Several maturity models such as CMMI and OPM3 use a ladder to present the result of an assessment. It enforces the picture of a maturity that evolves through steps and stages over time. (Andersen & Jessen, Project maturity in organisations, 2003)

3.2.1.3.1 Rejecting the ladder

Gareis (2005) consider a ladder is a too rigid model to present an organisation's project management maturity. In order to be able to present the organisation's capability in more detail, a spider web presentation is suggested as an alternative to describe the needed competencies in a project oriented organisation's processes. (Gareis, 2005).

3.3 Benchmarking

According to AT&T, benchmarking can be defined as:

"A structured discipline for analysing a process to find improvement opportunities".

The fundamental purpose of benchmarking is to compare a product, service or process in your own organisation with an equivalent entity from another and implement improvements based on the information obtained from the benchmarking. It should not be seen as simple plagiarism since it requires a deep knowledge of the company's own processes as well as an ability to apply another's organisation's practices into the own organisation's processes. It is important to stress the fact that within benchmarking, the study is not about other organisations' products or services, but their processes. There is a need for trust between all the parties in all the phases of the benchmarking. In most cases, there is no will of hiding information and knowledge between companies from different industries, but competitors may not want to share their view on how to manage a process. (Bergman & Klefsjö, 2003, s. 447)
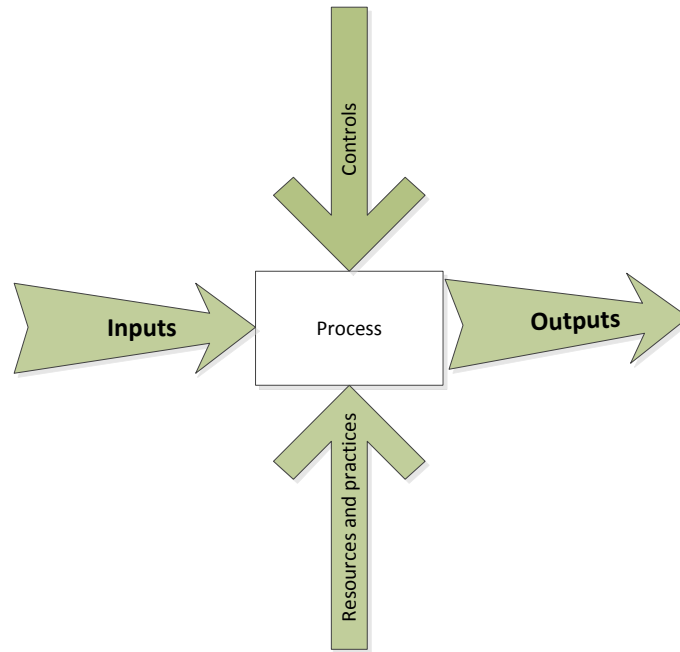
Figure 6: A process and its main elements.

Even though benchmarking is strongly related to processes, benchmarking of the practices within project management can be beneficial for organisations. Processes can be seen as a set of activities that are repeated with little variation whereas projects have a clear start and finish and a set of goals to be achieved that are unique. The outputs of a process depends on how the process is managed by controls, resources and practices as well as its inputs that may come from other organisations and suppliers. Due to this distinction, it is essential to adopt a definition of benchmarking that is related to a project oriented environment. The project management body of knowledge (PMBOK) (Project management institute, 2004) defines benchmarking as:

"Benchmarking involves comparing actual or planned project practices to those of other projects to generate ideas for improvement and to provide a basis by which to measure performance. These other projects can be within the performing organization or outside of it, and can be within the same or in another application area." (Project management institute, 2004)

After the benchmarking of project management practices, adequate improvements should be made in order to increase the project management maturity which may achieve a competitive advantage but regularly, organisations miss out on capitalizing on their intangible assets (Jugdev & Thomas, 2002, s. 11). Based on case studies made by the project management institute, the following advantages have been identified as beneficial for organisations to introduce: (Project management institute, 2009, p. 4; Project management institute, 2006, p. 6)

- Instituted many new project management best practices, processes and checkpoints
- Gained and secured strong top management support for project management, continuous improvement
- Developed the ability to predict project outcomes accurately
- Establishing the right objectives so each project delivers real business value

- Providing empirical data in order to facilitate identification of causes and responses to when a project is not on track to deliver its targeted business value
- Improving project planning and execution

3.3.1 Best practices

Best practices are the optimal way currently recognized by the industry to achieve a stated goal or objective. Applying this to a project environment, best practices means that the organisation can deliver projects predictably and consistently as well as implement organisational strategies successfully. Since new methods develop over time through continuous improvements, best practices are dynamic. (Project management institute, 2003, pp. 13-19)

3.3.2 Benchmarking and projects

By just comparing some projects against each other, no major gain will be acquired due to every project's degree of uniqueness. Benchmarking can be successfully applied to project management by comparing on organisation's practices with other organisations. In such assessment, it is necessary to search for practices that correlate strongly with project success. In the benchmarking process, comparative measurement is a core activity, but in order to improve, the organisations need to make a subjective evaluation of the best practices can yield valuable knowledge. (Dinsmore & Cooke-Davies, 2006, p. 64; Oakland, 2003, p. 151)

3.3.2.1 Internal

While conducting an internal benchmarking procedure, the goal is to find the sub organisation with the best practices in a certain area of interest. The practices can then be analysed, adapter and transferred to other parts of the organisation in order to achieve an improved overall performance. These sub organisations may be sites, departments or countries within a larger organisation.

3.3.2.2 Competitor

While benchmarking against some competitors, the aim to generate results that describes the company's performance compared to its competitors. In such case, it is very uncommon to get information from the competing organisations as well as their best practices.

3.3.2.3 Generic

A more generic perspective can help the company to compare its practices against companies in different industries. This generic view can assist the organisations by showing the maturity of its organisation or industry sector compared to all other sectors.

3.3.2.4 Functional

By making functional comparisons with organisations who are performing similar activities or in similar fields, the organisation can gain knowledge of its performance. A major advantage with this method is that the company who are performing the best practices are more prone to share its ways of working.

3.3.3 Benchmarking and its relation to TQM

Many successful companies are using benchmarking as a tool for finding improvements in any of the organisations' processes such as main-, management- or support processes.

According to Watson (1992), the purpose of benchmarking is to improve a key process which will lead to a higher customer satisfaction. The author describes the benchmarking process with the following six steps:
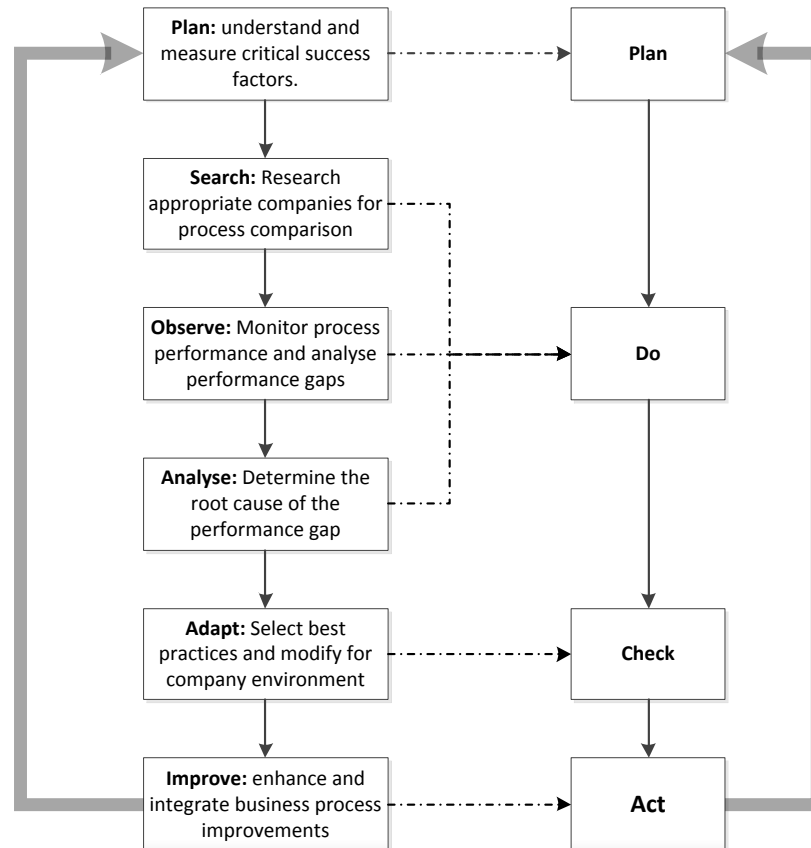
Figure 7: The benchmarking process according to Xerox (Watson G. , 1992; Bergman & Klefsjö, 2003), and its relation to the P-D-C-A cycle.

These steps can easily be related to the P-D-C-A cycle where the goal is to improve a process with an objective to customer satisfaction that exceeds the satisfaction delivered by the company's competitors. (Bergman & Klefsjö, 2003)

3.3.4 Processes and process management

A process is a set of activities with a specified beginning and end. It uses resources of an organisation and adds measurable value **repeatedly** to the internal or external customer. This definition may be interpreted as very mechanical such as assembly lines or machines. Processes require coordination by people and their competences and skills. Today, significant process improvements have already been made within manufacturing, while other processes, such as administrative processes and workflows

have been neglected giving them a huge potential to be benchmarked and improved. (Bergman & Klefsjö, 2003)
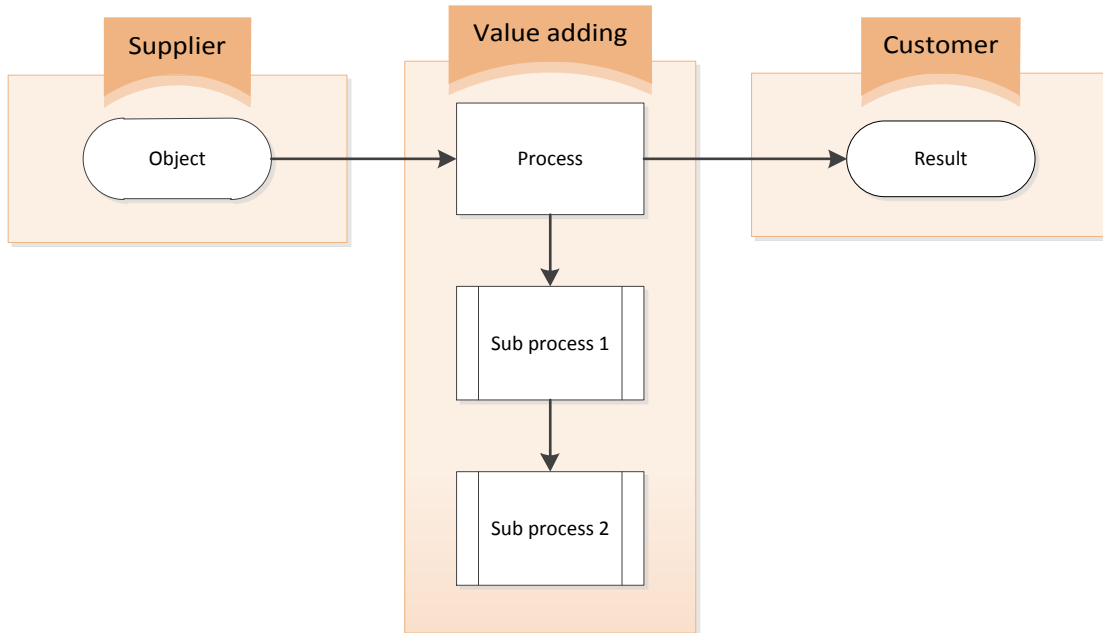
Figure 8: a process uses resources and adds value for the internal or external customer

3.3.4.1 Classifying processes

Processes can be classified based on their aims (Bergman & Klefsjö, 2003).

- Management processes - The task is to settle the targets and strategies of the organisation as well as improving the organisation's current processes. Management processes are having internal customers
- Main processes - The purpose of the main processes us to deliver products or services in order to create value to the external customers. Examples of such processes are product development, production and distribution.
- Support processes - The objective of the support processes is to provide resources to the value creating processes of the organisation.

3.3.4.2 Immature organisations

Even though an organisation is considered to be immature while assessing project, programme and portfolio management, it can still deliver excellent results occasionally. Usually, managers primarily work in a reactive rather than proactive manner. Due to lack of accurate estimating methods, budgets and schedules are frequently exceeded. The quality of the deliverables is likely to be compromised in order to fulfil the requirements in the budget. Validation and verification of the deliverables may be omitted or reduced in order to meet the budget and schedule requirements. The results of processes can be entirely depending on the availability of specific individuals since there is not enough organisational infra structure. Long term success and continuous improvement of the organisation is threatened. (Office of government commerce, 2010)

3.3.4.3 Mature organisations

As opposed to immature organisations, a mature organisation has an organisation wide set of standardized and defined processes. These standardised processes can be tailored

to meet specific requirements and can be changed if necessary. Team members are aware of the processes' approaches through frequent and planned communication. Responsibilities and roles are clearly defined and communicated to the whole organisation. Managers can monitor progress in projects against plans as well as the quality of the deliverables and customer satisfaction. The performance of schedules will be evaluated based on knowledge and quantified information. These procedures ensures that budgets and schedules are realistic and achievable as well as its current performance in a specific project. Organisational learning from previous experiences, establishing and embedding management processes as well as insurance of the acquisition, preservation and application of skills and competencies are of great importance. (Office of government commerce, 2010)

3.3.4.4 Maturity levels

There are five maturity levels within CMMI, P3M3 and four different stages in OPM3, that can be applied to the whole concept (project, programme and portfolio) or any of the three individually. It is not necessary to measure the maturity in all areas in order to find areas of improvements. Organisations can identify areas of process improvement in order to increase its maturity. The intention is to continuously improve in the long term, even though short term improvements can achieve specific goals. Even though there are five or four levels, the intentions are not that all organisations should obtain the highest level with optimized processes; each organisation needs instead to decide and prioritise their optimal maturity level depending on their business needs. (Office of government commerce, 2010, p. 13)

Table 1: Comparison of the different maturitylevels in different maturity models

	P3M3	CMMI	OPM3
Level1	Awareness	Initial	None
Level2	Repeatable	Managed	Standardize
Level3	Defined	Defined	Measure
Level4	Managed	Quantitatively managed	Control
Level5	Optimized	Optimizing	Continuously improve

3.3.4.4.1 Level1 – awareness of the process

Within P3M3, documentation and descriptions of important project management processes are not regularly present within the organisation. Generally, they are acknowledged by managers, but the actual practice is determined by events or individual preferences. These practices bring undeveloped processes, even though the organisation may want to develop their processes in the future. Necessary activities for better practice may be totally ignored or only partially fulfilled. Due to lack of standardization, the terminology may be interpreted in different ways in different parts of the organisation. Even though a level 1 organisation can deliver successful projects, these successes are not occurring because of an organisations wide knowledge and

capability, but by individual competencies. Level 1 organisation's often abandon processes in hard times, and are not always able to deliver successful projects on a regular basis. (Office of government commerce, 2010, p. 13)

While comparing with CMMI, the difference between an initial process and a managed process is stressed in the assessment framework. The former is characterised by a lack of generic goals and some of the specific goals are not satisfied. A performed process on the other hand satisfies these specific goals and results in important improvements. These improvements can be lost in the future unless they are institutionalised. (Software engineering institute, 2009, p. 23)

3.3.4.4.2 Level 2 – repeatable process

At this level, the organisation will be able to demonstrate some established management practices. Key individuals ensure recurrent success of the organisation. Progress and status tracking is available for the management at certain points in time, e.g. when major milestones are reached. Even though the organisation is more mature than level1 organisations, there is still a significant risk of exceeding the budget and schedule. Reasons for this are:

- Unclear responsibilities
- Inconsistencies in business objectives
- Limited risk management
- Lack of experience in change management
- Inadequate communication plans

The second level within CMMI is named managed process. Compared to a performed process, a managed process is supported by a basic infrastructure. This process discipline ensures that the planned practices are performed during stressful times. (Software engineering institute, 2009, pp. 23-24)

3.3.4.4.3 Level 3 – defined process

Standardisation, documentation of the required technical processes and management in order to meet the organisation's requirements are relatively well integrated. Process ownership and responsibility is assigned to people whose task is to ensure consistency and process improvements within the organisation. Planning and controlling of such improvements are probably based on assessments in order to select and allocate adequate resources provided by the organisation. The top management are aware of the progress and are providing support.

Differences between level 2 and level 3 are:

- The scope of standards
- Process descriptions and procedures – stated purposes, inputs, activities, roles, verification steps, outputs, acceptance criteria.

These differences facilitate a more proactive management of the processes and understanding interrelations. (Office of government commerce, 2010, p. 14)

Many similarities are found in the CMMI model, where a capability level 3 process is characterized as a defined process. A defined process is a managed (capability level 2) process that is tailored from the organization's set of standard processes according to the organization's tailoring guidelines and contributes work products, measures, and

other process improvement information to the organizational process assets. A level 3 process is more proactively managed thanks to previously stated measures and an understanding of the relations between the different process activities. (Software engineering institute, 2009, p. 24)

3.3.4.4.4 Level 4 – managed process

By introducing quantitative metrics and methods for controlling and monitoring processes, quality and process performance can be measured and a mature management of processes is assured. The data collected will contribute to the organization's overall performance measurement framework. Commitment from senior management is omnipresent by actively promoting innovation in order to achieve the organisation's goals. The increased predictability and process performance are also benefits that are granted to the organisation. (Office of government commerce, 2010, p. 14)

These metrics for measuring, controlling and monitoring are found in the description for the fourth level in CMMI. The software engineering institute states that some kind of statistical and other adequate quantitative methods should be used while managing the process. They stress the importance of an understanding of quality in statistical terms throughout the life of the process. (Software engineering institute, 2009, p. 24)

3.3.4.4.5 Level 5 – optimized process

By considering changing business needs and other external factors, the organisation will aim to optimise its quantitatively managed processes. Through project portfolio analysis, it will predict future demands and the capability required to fulfil these needs. Senior management are committed to reinforce the need and potential for capability and performance improvements as well as ensuring an ability to rapidly respond to changes. The organisation learns from previous experiences and the gained knowledge will facilitate the understanding of causes of variation. Through quantitative feedback, the organisation can obtain quantitative feedback from the integrated processes and from validating innovation. Through scoping, sponsorship, commitment, planning, resource allocation, risk management and benefits realisation, the organisation will be able to integrate organisational objectives with business plans. (Office of government commerce, 2010, p. 14)

The fifth and highest level within CMMI is called optimizing process. There are no major differences with the highest level in P3M3. Continuous improvement, understanding causes of variation as well as an organisational will for innovations in order to improve further. (Software engineering institute, 2009, pp. 24-25)

3.3.5 Benchmarking according to OPM3

Three different basic elements of OPM3 are knowledge, assessment and improvement. Knowledge, which is the primary driver, affects assessment which motivates and shows a future organisational improvement. Each organisation will obtain a score between 0 and 151 based on the answers from the questions. (Project management institute, 2003, pp. 7-10)

3.3.5.1 Knowledge

It is necessary for the organisation to prepare for an assessment of its project management maturity. A thorough understanding of the contents of OPM3 and organisational project management maturity has to be established in the organisation.

3.3.5.2 Assessment

The assessment is divided into two phases. In the first, the organisation compares its current maturity state with those described by the assessment model. During the second phase, a more detailed study is made where the goal is to find specific capabilities that are associated to each best practice that the organisation either is or is not performing. The deliverables of the assessment phase may be a plan for improvements, a rerun of the assessment or an exit.

3.3.5.3 Improvement

The improvement phase is composed by three steps:

- Plan for improvements – develop a specific plan to achieve the outcomes associated with the capabilities of the relevant best practices.
- Implement improvements – the organisational change takes place according to the plan.
- Repeat the process – return to the assessment step to reassess it where it is currently on the continuum of organisational project management maturity or return to step three to begin addressing other best practices identified in an earlier assessment.

3.4 Quality

Quality has its roots in from the latin word "qualitas" meaning "of what". Nevertheless, there are several modern and more sophisticated definitions such as:

- "Conformance to requirements" (Crosby, 1980)
- "Quality should be aimed at the needs of the customer, present and future." (Deming E. , 1986)
- "Fitness for use" (Juran, 1964)
- The degree to which a set of inherent characteristics fulfils the requirements" ISO (International organization for standardization, 2000)

Quality can be seen as conformance to specifications and zero defects from the producing side, while the user or customers are more interested in issues such as fitness for use and general satisfaction. To fulfil the customer requirements and specifications, methods such as Quality Function Deployment, Failure Mode and Effects Analysis, Variation Mode and Effect Analysis for identifying their needs are essential to be applied as well as conforming to specification requires statistical methods for monitoring and minimising the variation. (Raharjo, 2010, ss. 5-6)

Variation and dispersion is a frequent source of decrease in quality and a major cost driver and inevitable when tasks are being repeated (Raharjo, 2010, s. 7). Variations can be divided into two kinds, based on if the source of variation is assignable or not. The variation can either be assignable or random. Assignable causes can be analysed in order to create an improvement for eliminating or minimising the variation in the process. Random variation which is resulting from unknown causes will be needed to be supervised and investigated in order to identify new assignable sources of variation, which results in a new chance to reduce or eliminate it. (Bergman & Klefsjö, 2003, ss. 208-209)

According to Cooke-Davies & Arzymanow (2003, p. 472), investigating and assessing processes and activities in order to introduce future improvement are vital activities for remaining competitive in the long term. Improvements of the maturity of any technical process will lead to a reduction in the variance and an improved mean of its performance.

3.4.1 Improvement cycles

While looking for assignable causes of variation, a systematic approach is necessary to follow where the most severe problem is tackled first before tackling a less serious issue. (Deming W. , 1986)

- Plan - The principal causes needs to be identified and understood. Tools such as FMEA and brainstorming sessions for analysing the problem as well as evaluating different solutions to minimise or eliminate the problem.
- Do – The improvement team based on the specified plan from the previous activity.
- Check – The improvements that have been implemented will have to be investigated in order to see if the improvement delivered the desired effect.
- Act – This phase is aimed to increase the knowledge within the organisation. If the improvement of the process was satisfying, the changes should be made permanent. An analysis of the P-D-C-A cycle is also beneficial in order to improve the whole improvement process.

3.4.2 Project Quality management

Project Quality management in project is not an independent activity within the organisation that is run after each milestone or completion of a project aimed to measure the performance, it is a continuous process that starts and ends with the specified project. The aim is to prevent and avoid poor quality outputs. Its intentions are to increase the satisfaction of stakeholders and introduce incremental improvements to the activities within the project as well as removing unnecessary practices and continuously improving and monitoring of quality in all aspects of the project. (PM4DEV, 2008)

According to the PMBOK, project quality management is a process that helps the temporary project organisation to ensuring the fulfilling of policies, objectives and responsibilities that the project need to assure in order to obtain customer satisfaction. The process consists of three procedures (Project management institute, 2004):

- Quality planning – setting of quality objectives and the specification of processes and resources necessary to fulfil these specified objectives.
- Quality assurance – process aimed to provide confidence that the quality requirements will be fulfilled.
- Quality control – a process aimed to fulfilling quality requirements. (International organization for standardization, 2000)

3.4.2.1.1 Quality planning

In order to ensure that the project team will deliver the project's deliverables according to requirements, a checklist will be developed early and used during the implementation phase.

The project quality plan needs to describe the conditions of the needs and expectations of the stakeholders connected to the project in order to get a common understanding within the project team of the specified quality standard. The plan states the essential procedures and activities required to monitor and control the completion of tasks within the project as well as how to handle the case of adjustments in the quality standards (PM4DEV, 2008, p. 8)

3.4.2.1.2 Quality assurance

One of the purposes of quality assurance is to detect errors as early as possible, not only in the products and services that the project will deliver, but in the processes, procedures and activities that are used to deliver the project. By investigating these tools and methodologies to manage time, cost and scope as well as legislative and regulatory requirements, quality assurance will provide confidence among stakeholders that an efficient operation of the quality requirements is being made. (PM4DEV, 2008, p. 9)

3.4.2.1.3 Quality control

At the end of each process and activity, quality control should be conducted for verification purposes by measuring the outputs of the project. The procedure does not contribute to quality in itself, but its purpose is to identify problems and propose improvements in order to meet the stakeholders' quality standards and expectations as well as measuring how the project performs in its management of scope, budget and schedule. (PM4DEV, 2008, p. 12)

3.4.3 Total Quality Management

According to Bo Bergman and Bengt Klefsjö (2003), Total quality management is defined as *"a constant endeavour to fulfill, and preferably exceed, customer needs and expectations at the lowest cost, by continuous improvement work, to which all involved are committed, focusing on the processes in the organisation"*.

The quality work is a continuous process, and not a one-off project with an aim to optimize processes, products and services, but also supporting personal development of the personnel involved in the processes.

3.5 Knowledge management

According to Wiig (1998), "knowledge consists of truths and beliefs, perspectives and concepts, judgments and expectations, methodologies and know-how and is possessed by humans, agents or other active entities and is used to determine what a specific situation means and how to handle it." From an organisational perspective, knowledge can be considered to be a major competitive advantage and a strong factor in order to obtain a superior performance.

The management of knowledge can be seen as a set of methods, practices and values to enable an organisational development, measurement and distribution of knowledge in order to gain a return on the information and knowledge within the organisation. (Snowden, 1998)

Van Donk and Riezebos (2005) conclude that the measurement of knowledge in project based organisations is insufficient due to lack of instruments that can be used to explore a company's inventory. For this reason, the researchers develop such an instrument. Based on the idea that a company's knowledge inventory is strongly correlated with the

core activities, the instrument uses three stages for exploring the organisation's knowledge inventory; identify, measure and report.

Trials to confirm the existence of a link between the management of knowledge and competencies of companies with their performance have been made such as the works of Helfat and Raubitschek (2000) as well as McEvily and Chakavarthy (2002). Nonaka and Takeuchi (1995) are stressing the importance of nurturing the knowledge and that the management should support actions for acquiring, transferring, maintaining and exploiting knowledge through human resource management practices combined with information systems. (van Donk & Riezebos, 2005)

3.5.1 Communities of practice

Communities of practice are an important part of knowledge management; they are composed by a group of people sharing mutual capabilities. They can be formal and explicit and all communities have a common history referring to past failures and successes (CBI Guide to Knowledge Management, 1998). By organising the communities of practice where the different groups involved in different stages of the company's life cycle, knowledge can be transferred into a position where it can be applied. Knowledge management aims at transferring knowledge through communities of practice in order to share and create tacit knowledge (Vandaie, 2008, p. 921). A big challenge is to create this strategic and user-friendly establishment of communities of practice with strategically built knowledge sharing methodologies supporting the problem-solving processes. In virtual enterprises, by using strategic information systems, communities of practice can be created and self organised. A problem solving process or project can only be successfully implemented and used if it is being supported through a framework built up by strategically supported methodology. (Pollalisa & Dimitriou, 2008, p. 320)

3.5.2 Knowledge management in multi project environments

The value and importance of personal networks, regular discussion forums and rotation of personnel between projects are other means for transferring knowledge between projects. Social patterns can be seen as drivers for acquisition and transfer of knowledge even though other methods can be useful. (Bresnen, Edelman, Newell, H., & Swan, 2003, p. 163)

In order to transform a project organisation into a learning organisation, a systematic knowledge management approach is necessary. Documents and interactions with colleagues are considered to be the main sources of knowledge even though people need to sense a personal benefit from the documentation. Information systems are on the other hand the only effective tool for storing and accumulating knowledge even though the storage in several cases is too unsystematic. More formal practices apart from the post project reporting process are necessary in order to create an efficient and effective management of knowledge. (Kasvi, Vartiainen, & Hailikari, 2003, pp. 578-581)

4 Interviews

As stated in the method, two sets of interviews were conducted for the collection of primary data. The purpose of the first set was to collect information on what to measure apart from project management maturity, get a feel of the project groups' strengths and weaknesses as well as to gain trust among the interviewees.

4.1 First Set

The reason for selecting these project groups were that they all have different characteristics based on their customers, involvement within the main organisation and based on their ownership from other parties.

The organisations that participated in this part were:

- Kvalitetsmässan – a project group within Göteborg&Co. and external partners
- Global forum – a project group within Göteborg&Co. and external partners
- Kulturkalaset – a project within Göteborg&Co.
- Elfackmässan – a project group within Svenska mässan.

Interviews with our supervisor, the HR manager as well as the "portfolio manager" were also conducted in order to get a more holistic view on the organisations' opinions and analysis of projects.

4.2 Second set, benchmarking

While summarising the first set of interviews, the researchers decided to base the benchmarking scheme on an already existing model for measuring the maturity in order to gain a high credibility since there is a will for getting results that are possible to verify and compare with other organisations that have been benchmarked with the same requirements for each maturity level. Since we wanted to measure areas outside of organisational project management maturity, more questions were added following the same structure. This led to an adoption of the original model's levels and structure. The communication between the different project groups is considered to be an issue to be investigated in the benchmarking.

Factors were also identified in order to be able to compare the performance in the different areas with characteristics of the project team. The factors and the results were analysed with help from statistical software in order to support the qualitative reasoning with quantitative data. The following factors were identified:

- Size of project group.
- Education in Project management or not.
- Göteborg&Co. or Svenska mässan.
- Average project maturity compared to the other processes and its subcategories
- Fair or other event.
- High or low amount of communication with other project groups

4.2.1 Construction of a benchmarking scheme

Since the organisations wished to benchmark their project maturity with an already existing model in order to get results that are comparable with other external organisations, the researchers had to make a comparison and selection between some

common maturity models. CMMI for services, OPM3 and P3M3 were the models to be considered.

4.2.1.1 Selection of project management maturity model

The reasons for selecting The P3M3 model were the following:

- It is a public model where all characteristics and sample questions and necessary information are available online.
- Updated during 2009 and 2010.
- Three different perspectives. Where the questions are easily addressed to either project managers or senior management.

OPM3 was excluded due to the structure of the benchmarking scheme which consisted of 151 questions where the respondent could answer either yes or no compared to the descriptive multiple choice questions in different categories in the P3M3.

The model is developed by the office of government commerce in the United Kingdom, it was used with a few modifications made by the researchers. There is a self assessment available which consists of nine areas on for three different perspectives; project, program and portfolio. It is focusing on the following different activities within project, program and portfolio management:

- Management Control
- Benefits management
- Financial management
- Stakeholder engagement
- Risk management
- Organisational governance
- Resource management

4.2.1.2 Adapting benchmarking scheme to the organization

The researchers decided, based on the instructions by the supervisor, to develop an own benchmarking scheme based on more open questions instead of "mapping" descriptions of the project team as in the self assessment provided by P3M3. The reasons for this alternative are the following:

- The assessment consists of questions in English, since the interviewees' mother tongue is Swedish, mistakes in translation and interpretation should be minimised.
- More open questions will result in a more unbiased answer, followed by prewritten proposals of attendant questions that can facilitate the distinctions between the different levels of maturity.
- The interviewers will have a greater influence while deciding which maturity level that is appropriate in the certain area.
- The biasing will come from the interviewers, instead of the interviewees. Since the biasing will then be constant for all interviews, it will not have such big impact compared to the self assessment, where the biasing will be different for each respondent.

The process of deciding the maturity of the organisation is made in six steps within each of the nine areas, the first five are made during the interview while the last is made directly after the assessment by the researchers.

A presentation of the project management activity.

Attendant questions, based on specific characteristics of different maturity levels are asked for increased accuracy.

Contingent modifications are made before confirmation.

An open question is asked.

A short summary is made of the practices, the performance and intentions.

The maturity in the certain area is graded based on the information collected.
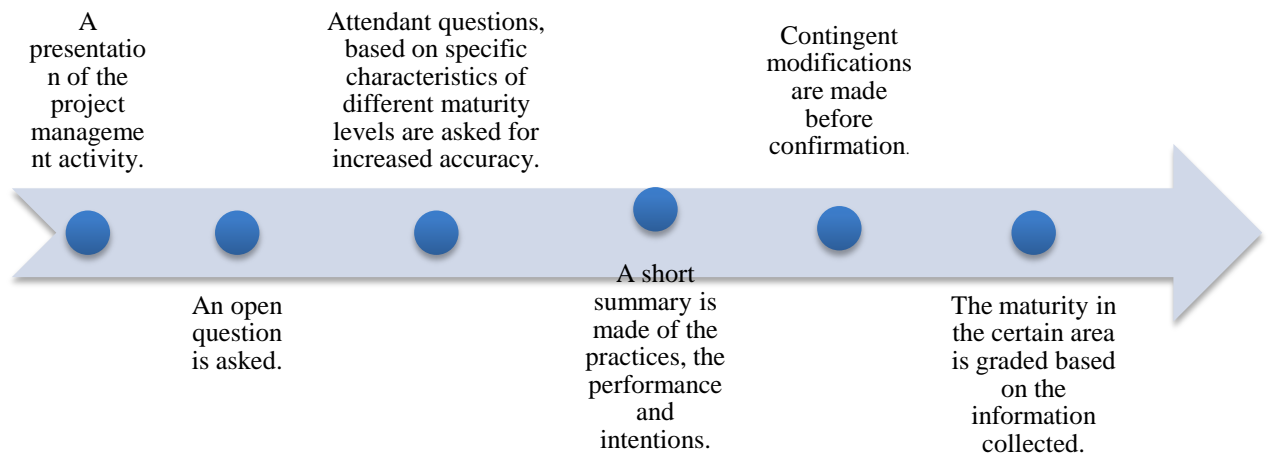
Several of the issues identified as areas of low performance were found within resource management (the organisation's ability to acquire, allocate and balance the resources required to fulfil the needs for successful delivery of projects) and long term achievement of strategic goals. Therefore, the category was split into two different areas in order to get a clearer picture. By calculating an arithmetic mean between the areas, an overall rating for the resource management performance can be obtained for comparison with other external organizations.

Another modification of the model consists of adding a set of questions related to knowledge management where the organisations' abilities and practices within knowledge sharing, knowledge creation and knowledge capturing are being investigated, measured and finally compared against each other.

4.2.1.2.1 What to measure

In order to measure organizational project management maturity, the benchmarking scheme was built up by formal questions to gather quantitative and comparable data followed by discussions in order to obtain qualitative descriptions and a more holistic view of the organization's practices with topics that are regarded as key areas within organizational project management by P3M3.

4.2.1.2.2 Characteristics of the different levels

The office of government commerce (2010) has described typical behaviours, practices and methods for each maturity level and management activity. The practices and methods that could be applicable while producing the benchmarking scheme were analysed and selected for enabling fast follow up questions during the interviews in order to distinguish the maturity level of a project team.

4.2.1.2.2.1 Management Control

Within management control, internal tools for maintaining the correct direction through the project life cycle are found. Leadership, scope, stages and regular checkpoints where projects can be redirected or stopped are the key factors for ensuring a successful

delivery of the project within the tolerances set by a controlling body based on the broader organizational requirements (Office of government commerce, 2010, s. 9).

Within management control, four key activities were identified; documentation, planning, monitoring and project management competence. In the lower maturity levels, these activities are poorly identified and managed where roles and responsibilities are not defined, standardised or only used during parts of the project life cycle. The intermediate levels are more focusing on distinguishing whether the practices used are standardised between projects and the processes used for managing the project. The characteristics of a high maturity are primarily focusing on sharing of information between projects for future improvement and achieving objectives for change.

4.2.1.2.2.2 Benefits management

Managing benefits constitutes of processes for ensuring the desired objectives such as Key performance indicators and business change outcomes in measurable terms using a structured approach and organizational ownership. The complexity of change management should be built into the organization's framework in order to deliver attractive projects for the customers. Definitions of dependencies between the benefits to be delivered and descriptions on how to conduct the work necessary to achieve the desired benefits and not just the project outputs must be presented, understood and delegated.

Benefit management involves the processes for delivering the project's objectives and goals that are not only based on the outputs of the project as is common for immature organisations but on measurements of the performance of a specific activity. Change management is a central topic as well as ways of measuring long term achievement for the organisation's customer satisfaction through delegation of responsibilities and coordination between several projects. For achieving a high maturity rating within benefits management, frequent collection and analysis of the performance metrics should be made for improvement of future projects.

4.2.1.2.2.3 Financial management

Financial managing involves practices for continuously improving the estimates while budgeting, managing the costs of delivering the business case through formal review stages and evaluating costs and benefits associated with alternative actions. Appropriate methods for funding the projects are seen as another of the available key tools within financial management.

Budgeting, monitoring of costs, cash flow management and funding are the primary activities within financial management in the P3M3 model. The characteristics of an organisation with low maturity within financial management are revealed through a poor or nonexistent financial control or inconsistency in the practices that are used. By standardising the practices, the third level can be reached but for obtaining a higher maturity rating, the organisation should be able to prioritise between investment opportunities by monitoring financial tolerances, reporting progress through appropriate earned value concepts and continuous improvement of the cost estimation techniques and reviews with senior management.

4.2.1.2.2.4 Stakeholder engagement

Stakeholder management contains processes for identifying stakeholders as well as informing and involving them in the decisions that have to be made for ensuring a successful delivery of the project through communication channels.

Cooperation with partners and sponsors, communication with general public and visitors are the primary areas of the adapted model for measuring project maturity of Svenska mässan and Göteborg&Co. The low level characteristics are that the stakeholder engagement and communication is rarely used and if they are used, it is due to personal initiatives instead of a structured approach. While the intermediate maturity level is focusing on standardised approaches and practices, the highest maturity levels are requiring formal methods for analysing the stakeholders' capacity of influencing the project, conflict resolution and an organisational culture that values bi-directional communication and stakeholder engagement.

4.2.1.2.2.5 Risk management

For successful project delivery, threats and opportunities need to be managed in order to minimize the probability and impact of risks as well as maximizing the occurrences of external and internal opportunities. Responses to risks and opportunities have to be made in an innovative and proactive manner and the processes for identifying, measuring and managing risks have to be made on

A project team will need to have appropriate practices for identifying, measuring and quantifying as well as continuously managing risks and opportunities. By having consistent approaches through the whole organisation in addition to establishing methods for demonstrating the value of risk management and implementing risk management practices in the decision management processes a high maturity rating can be obtained. Immature organisations on the other hand, are due to a lack of the above mentioned practices more sensible to be affected by the impact of internal and external threats and risks and not ready for taking the advantages of certain opportunities.

4.2.1.2.2.6 Organizational governance

Projects need to be aligned with the organizational strategy by considering the start-up and closure and how the alignment is supported during the whole project life cycle through an efficient and effective sponsorship. The major difference between management control and organizational governance is the within the control perspective; management control focuses on the internal control while organizational governance focus more on the instruments for controlling external factors for supporting the progress of the organization through project delivery.

Within organisational governance, methods for start-up and closure of projects and sponsorship for fulfilling the organisation's strategy through aligning projects and their deliveries are measured. An immature organisation is characterised by lack of business control, informal governance where projects are initiated on local needs instead of long term strategic visions, missions and goals. Mature organisations have regular periodic reviews of the effectiveness where the senior management can sponsor and demonstrate their commitment to improve business performance.

4.2.1.2.2.7 Resource management

All resources needed for project delivery need to be managed properly. P3M3 considers human resources, space, information, tools and supporting teams to be the most vital

resources for successful long term project delivery. In our case, Human resources with all its processes and practices are measured in a separate category since several interesting issues were discovered in the first set of interviews. Within resource management, the project suborganisations' processes for acquisition, planning, exploitation as well as planning and prioritizing are measured and evaluated. By increasing the maturity in this area, the project team can obtain a more efficient and effective application of its resources.

In this case, resources are primarily constituted by space, supporting functions from the governing organisation and the project teams' connections to the industry. In order to get a high rating in the resource management area, there must be a system for allocating support functions and space as well as a diplomatic behaviour while using the personal connections.

4.2.1.2.2.8 Human resource management

In most of the projects in the two organizations, temporary personnel are recruited, employed, trained and finally moved to another project or laid off. The practices and its' results for these processes are going to be measured, evaluated and compared in order to give proposals for a higher degree of efficiency by the personnel employed within the organization.

Mature organisations ensures that there are induction and extraction plans, a flexible availability of personnel that enables movement between projects and programmes, as well as collaboration to use the optimal set of skills, personal properties and competences in each project within the whole organisation while less mature organisations are using less coordinated methods and where the organisation can be dependent on key individuals.

4.2.1.2.2.9 Knowledge management

The measurement of the maturity within Knowledge management is structured through collecting information of the project teams' view on formal training, accessibility of databases and reports, mentoring programs and participation in professional networks and how these practices are applied to increase the long term performance of projects and strategic goals.

Even though knowledge management is not measured in its own category within P3M3, several behaviours and practices are described in the model's generic attributes. Mature organisations are aiming to obtain performance improvements through training and mentoring instead of being uncoordinated. Regular performance reviews, use and maintenance of information and having knowledge transfer as an inherent behaviour within the organisation are other key characteristics of a mature organisation as well as meetings and seminars where knowledge can be created, developed and transferred. Sources of useful and helpful information with smart referencing systems are also characteristics of a mature organisation.

4.2.2 Conducting benchmarking

During the first set of interviews, four project managers of teams with different properties were interviewed in order to decide what processes, apart from project management maturity that were interesting to investigate. The second phase comprises measurements on eleven different project teams, four from Göteborg&Co. and seven

from Svenska Mässan. During the interviews, the two researchers and one project manager were present

All interviews were aiming to obtain information in order to decide the level of maturity within the different management areas while some questions were asked in order to be able to know more about the organisations' practices. This information was considered while developing the proposals for improvement in some project teams' practices.

4.2.2.1 Collecting information and analysis

The benchmarking scheme developed by the researchers contains questions and topics for follow up-questions about specific practices that are involved within the key areas of project management according to P3M3. The questions and the topics are based on certain behaviours that are typical for each maturity level.

4.2.3 Findings

While examining the data collected from the interviews, differences in the level of organisational project management maturity made by computing averages and correlations. One of the organisations, Svenska Mässan is using a standardised organisation wide project management model. This approach is one of the reasons for a higher mean and lower standard deviation in performance between the different project groups within Svenska mässan.

The findings were handed over to senior management within Göteborg&Co. and the project managers involved in the study.

4.2.3.1 Differences and similarities within the organisations

There are several similarities and differences between the two organisations. Göteborg&Co. is arranging events, conferences and some fairs, but its major activities is based on "day-to –day" work instead of projects while Svenska Mässan is primarily aiming to deliver their business case through projects with a high degree of resemblance. This can be seen as a key driver for having implemented an organisation wide project management model where activities such as scheduling, budgeting and delivering are standardised between the different project teams. The project teams investigated at Göteborg&Co. are working more independently, with little interdependencies and cooperation between the project teams as well as less consultation and reporting to the main organisation.

4.2.3.1.1 Standardised project management model

The project teams at Göteborg&Co. have developed their own practices for managing their projects in order to fulfil the specified requirements for the deliverables of its sponsors and customers. Budgets, and schedules are based on previous projects and the intention is to have it open at all times in order to monitor the progress and eventually take necessary corrective actions, even though that is not always the case. All project managers state that the model is standardised within the project team over time, but not with other project teams in the organisation.

Svenska Mässan has developed even further. They have a standardised model for planning, execution and delivery of projects. All information is available for the employees through the intranet in order to facilitate some administrative tasks, inspiring

and learning from each other as well as enabling the senior management to monitor the progress throughout the whole project life cycle.

4.2.3.1.2 Similarities between project deliverables

All operational projects at Svenska Mässan share the same goal, organising a fair and/or a conference within their own premises. All projects share the same support functions such as web-publishing, accounting and production; even personnel are moving between project teams for balancing the needs of specific projects based on where a certain project is situated in the project life cycle at a certain moment in time. This high amount of similarities and common support functions facilitates the customisation of a project management model as well as deepens the impact of it.

The project groups at Göteborg&Co. are more loosely connected to the parent organisation and with specific objectives such as:

- Fairs or conferences
- Festivals for tourists and population of the city
- Attract and arrange major sports or cultural events
- Attract companies for establishing connections with organisations in the south west of Sweden

Since there is a higher degree of dispersion between the objectives of projects, there is no established organisation wide project management model yet, even though they are developing one for the moment. The only common support functions are for activities such as HR, accounting and legislative; tasks that are not connected to a project's deliverables. There is a difference in managing the personnel during the peaks and valleys in the projects, at Svenska Mässan, individuals can work for several projects simultaneously and be transferred between project teams, but for most project teams at Göteborg&Co., temporary personnel is employed and extracted depending on the projects' needs.

4.2.3.1.3 Core business or independent groups

Svenska Mässan's core business is to arrange fairs and conferences in a profitable manner, where each event is regarded as a project. Göteborg&Co. on the other hand is having a few project groups aimed to deliver specific projects, but also a functional organisation whose task is to support and stimulate the industry, commerce and tourism in the region. At some some moments in time, Göteborg&Co., together with some partners are entrusted the task to arrange events of bigger character such as:

- The world championships in athletics – 1995
- The European championships in athletics – 2006
- The European youth championships in football – 2009

In these cases, personnel from project groups and the main organisation are mobilised temporarily to deliver the project. Since there is no standardised project management model with organisation wide tools and practices, these projects may be exposed of both internal risks, a long time to get familiar with work practices as well as the risks connected to a dynamic and insecure external environment.

4.2.3.2 Quantitative findings

While interpreting the quantitative findings, it is important to distinguish the difference between a factor and the level of maturity within a certain management activity. The factor is related to a certain property of a project, such as the length or budget of a project, while a management activity is each ingredient to the average project management maturity.

Several correlations were found between the performances in project management areas with the following factors:

- Svenska Mässan or Göteborg&Co.
- Educated project manager
- The level of maturity

There were some strong correlations between management areas and between the factors themselves. Strong correlations between organisation (Svenska mässan or Göteborg&co.) and the degree of project management training among the project managers is considered to be a proof of different policies for the education and further training of project managers between the two organisations. The budget size is strongly correlated with the type of event that is arranged, this finding is fully logical since it is more costly to arrange a fair than a conference. The latter finding is not connected to a project management practice and will not be considered in the conclusions as opposed to the first correlation

4.2.3.2.1 Correlations with the different factors

Some of the prerequisites of the project groups identified are strongly correlating with the average project maturity of the specific project team as well as some factors connected to the project team's organisation can correlate with the performance in some management areas.

4.2.3.2.1.1 Budget size

No significant correlation can be found between the budget of a certain project and its maturity. The reason for this finding is that Svenska Mässan is using the same project management model for all projects

4.2.3.2.1.2 Svenska mässan or Göteborg&Co.

The governance and sponsorship is the most strongly correlating factor with the organisational project management maturity of the project team. Svenska Mässan's infrastructure and with an organisation leaning towards a heavyweight matrix structure instead of independent project groups is granting a higher performance through synergies between the groups through rotation of employees, standardised working patterns and clear career paths.
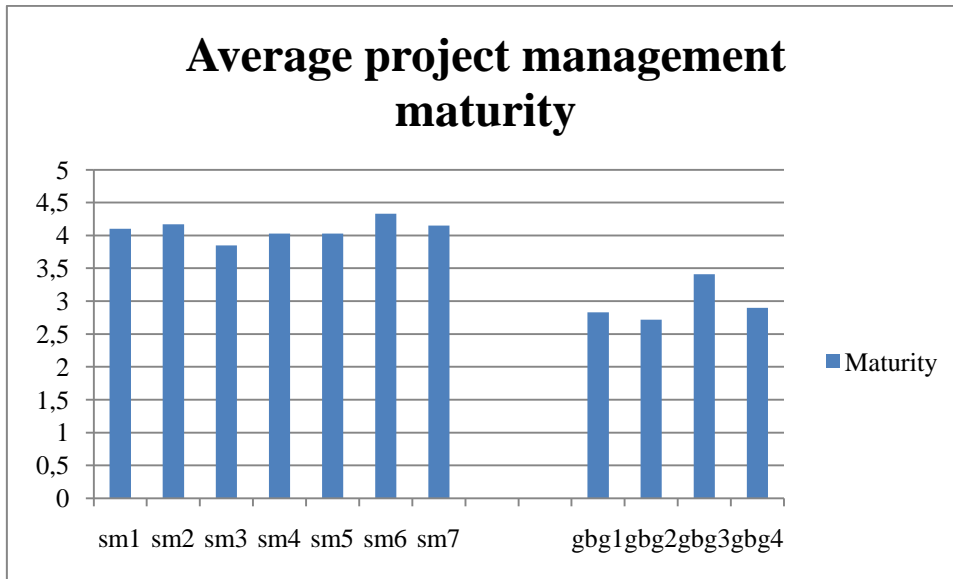
Figure 9: The average project management maturity at Svenska Mässan(sm) and Göteborg&Co.(gbg)

In the figure below, the performance in the different management areas are presented. It is possible to distinguish a higher level of organisational project management maturity and a smaller amount of dispersion between the project teams at svenska mässan compared to the project teams within Göteborg&Co. and Svenska Mässan.

Figure 10: The performance of the different project management areas among the project teams participating in the study.

4.2.3.2.1.3 Educated project manager

Whether the project manager has gone through a project management course either at work, at a university or other educational provider or no project management training at

all is correlating with the project team's maturity, especially in the fields of management control, benefits management and knowledge management. Since knowledge management and governing organisatio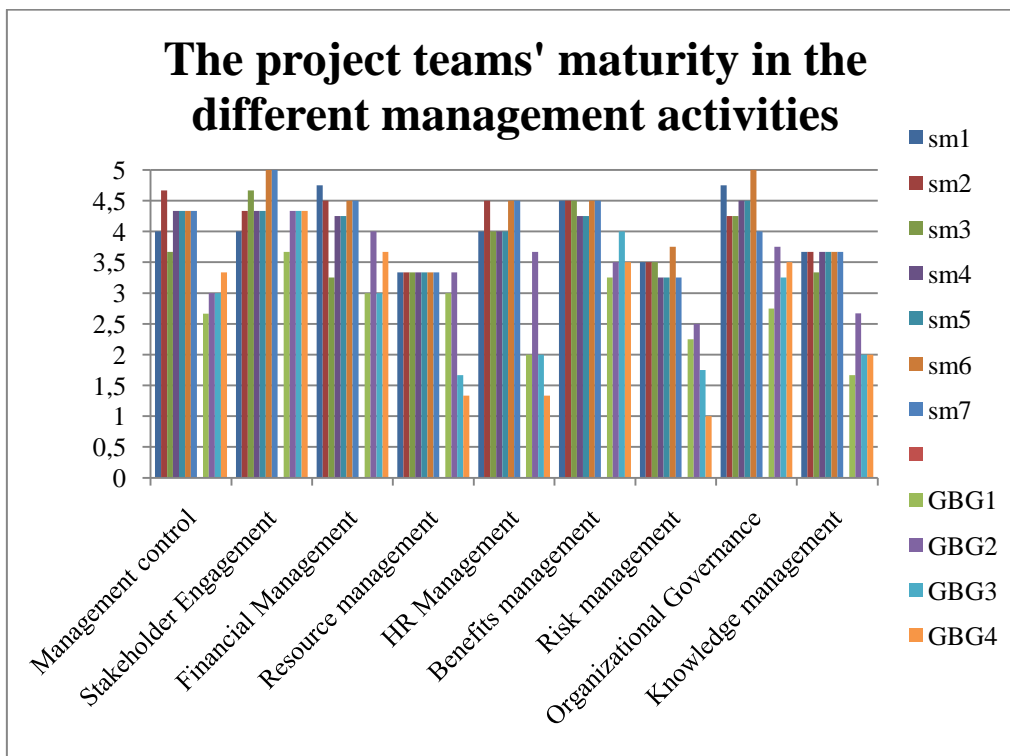n correlate strongly with each other, it is more likely that the knowledge management practices are more dependent on the governing organisation's strategic intent than the project managers' competence. The management control and benefits management areas are focusing more on activities that are prominent in generic project management training literature such as the PMBOK.

4.2.3.2.1.4 <u>Fair, conference or other event</u>

Whether the goal of the project is to deliver a fair, a conference or other type of event such as a city festival is not affecting the project teams' average project management maturity or specific area.

4.2.3.3 Project maturity

The different management practices are measured separately but by summarising all areas for each project and considering means and deviations with respect to the different factors, conclusions based on the existence of correlations can be made.

4.2.3.3.1 Management control

The project teams' level of maturity is correlating strongly with the education of the project manager and to which organisation the project is governed by. Based on the results from the benchmarking, an educated project manager demonstrates a higher maturity within the activities such as documentation, planning, monitoring and perform corrective actions if a project is not developing in the desired direction. The most significant correlation is however the governing organisation. Svenska Mässan is providing infrastructure such as templates for planning, budgeting and information sharing for the project teams which grants the project teams a higher degree of maturity.

4.2.3.3.2 Stakeholder management

Stakeholder engagement incorporates activities such as cooperation and communication with partners, sponsors, visitors and the general public. All project groups show evidence of a high maturity within this discipline, no specific factor such as education, budget, project length and type of deliverable is generating a higher maturity. A reason for the high degree of maturity within stakeholder management is the organisational culture of the two companies where the mission of the two organisations is to cooperate with the industry in order to promote the business region for regional companies and global organisations are established in the geographical region.

4.2.3.3.3 Financial management

No strong and significant correlations are found between the factors even though education in project management and what organisation the project team belongs to tends to affect the maturity within this management activity.

4.2.3.3.4 Resource management

All project managers state that their connections with industrial organisations, unions and other key roles. Since some events may take place every second or even third year, a key competence for the project team is to have regular conversation and communicate with key connections in order to acquire information of specific markets and organisations involved.

The project teams at Göteborg&Co. use resources such as web, IT and marketing from external suppliers independently, while the project teams at Svenska Mässan are allocating such resources from the functional departments internally with standardised practices and processes.

4.2.3.3.5 Human resource management

There are major differences in the degree of maturity within the human resource management practices between the organisations but there are no significant correlations between a specific project's type, length or budget.

Svenska Mässan is aiming to keep personnel within the organisation by letting projects teams allocate personnel with specific competence for their more work intensive peaks. Similar pattern is used in one of the interviewed groups at Göteborg&Co. The system where personnel are primarily recruited from the organisation instead of externally has proven to generate a higher efficiency since the team members are familiar with systems, company culture and tasks.
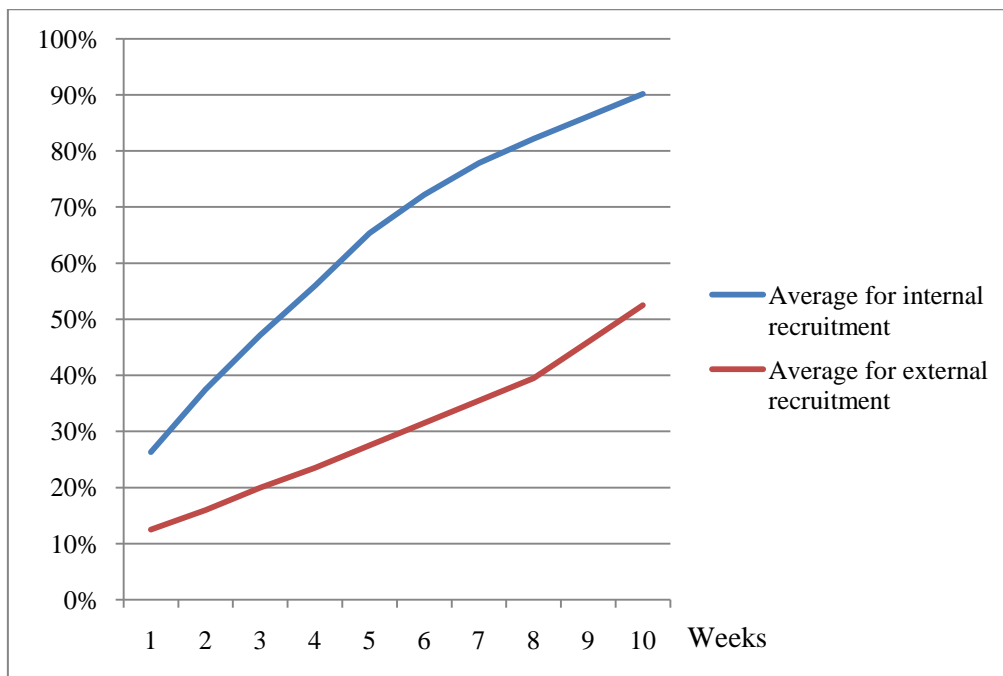
Figure 11: efficiency of new employee who joins a project team

Svenska Mässan is providing the employees with training programs for most roles within the project teams, giving the opportunity for the employees to develop their competence within their role as well as taking career steps into new professional positions.

4.2.3.3.6 Benefits management

Both organisations are measuring their performance and distinguish their success (iron triangle excluded) by different customer satisfaction figures that can be based on the number of visitors, business contacts and signed contracts for fairs and impressions on public events. The general view among the project managers at Svenska Mässan is that the performance of the exhibitors is insufficient. Therefore, an innovative approach has

been established, each exhibitor will be granted with a course of how to get out more of the appearance on the fair.

Fulfilling the needs and goals of partners are key activities of all the projects involved in the research. Changes to the project and its outcomes can be made if requested by the sponsors, even though the intention is to work in a proactive manner in order to minimise the waste of time, budget items or other resources. In some cases, the goals and requirements of the sponsors and partners are claimed by the interviewed project managers to be unrealistic, vague or immeasurable.

4.2.3.3.7 Risk management

Within Göteborg&Co, there is no organisation wide standardised approach for risk management practices. Each project team is managing their risks by their own principles based on earlier gained experience. The project teams within Svenska Mässan are using company-wide standardised templates for identifying possible internal and external occurrences and managing risks based on a SWOT-analysis. Their major drawback of this way of working is that they are not quantifying the risks identified, which makes it more complicated for them to prioritise between the risks and its possible impacts in order to support the decision making process. Another drawback of Svenska mässan's risk management practices is that is not regularly updated officially through the project life cycle even though it is in most cases made in the mind of the project managers.

4.2.3.3.8 Organizational governance

The only significant factor correlating with organisational governance, where the alignment of projects and other activities used to achieve the organisation's strategic goals is what organisation the project team belongs to due to the standardised project management model.

4.2.3.4 Knowledge management

Mentoring is made on ad hoc basis in both organisations but to different extent, where Svenska Mässan's project team members are more often engaged in mentorships compared to the employees in project teams within Göteborg&Co.. Specific cases of mentorship were presented during the interviews where the most prominent reason was political issues for a certain position since some projects are not only technologically complex, but also involve management of interests that may be conflicting. Pfeffer (1992) state that political power is essential to get things done in an organisation. For successful project delivery, the project managers need to develop a political will and an efficient use of their power in order to make his or her actions perceived as legitimate. Through the mentorship, the apprentice needs to learn how to build credibility, gather support and neutralise opposition. (Boddy.D, 2002, pp. 54-58)

There are nevertheless major differences between the two organisations' knowledge management practices. Svenska Mässan has a standardised approach to training, where key roles such as salesmen, project managers and controllers are being trained and seminars aiming to spread experiences are being held on a regular basis. The content of the training program is approved by the senior management. There have not been any measurements of the quality of the training, the seminars and the meetings, an issue that has been pointed out during the benchmarking, but that could be suitable for further research. Göteborg&Co.'s project teams are more independent, training for project team

members is more unstructured, with tendencies to be insufficient due to the use of temporary employees instead of transferring employees and its knowledge to another project within the same organisation.

Information is stored in systems in both companies, but to different extents, Svenska Mässan uses a business system where most information is available, while at Göteborg&Co, the information is stored within people. Each systems has its strengths and weaknesses, a database stores explicit knowledge permanently while consulting an employee enhances communication channels and personal self confidence. However, the organisation will in the latter case be reliable on certain individuals with specific knowledge and skills, this fact can create major performance set-backs when certain individual leaves the organisation.

5 Discussion and Conclusions

In order to gather the information that enabled the conclusions and proposals for future improvement, semi structured interviews were made instead of sending out surveys. Even though this method is more time consuming for researchers and interviewees, its advantages in quality were decisive while planning the research. During the interviews, the interviewee can ask for clarifications, answer in a more serious manner and a more trustful atmosphere can be established. The research was conducted with the help of another researcher. This has been very beneficial, especially during the interviews where one researcher could focus on transcribing while the other was asking the questions. There were also great advantages to cooperate with another researcher while analysing the results and estimate maturity levels and deliver proposals for improvement. It is also interesting to analyse the biasing of the questions, if the primary data is gathered through surveys, the questions and answers will be biased in different ways by the interviewee, whilst during interviews, the biasing will be made by the researchers and remain less fluctuating.

5.1 Conclusions based on the first set of interviews

The project groups managed by Göteborg&Co. are independently managed with almost no flow of communication between the different project groups. Everyone of the interviewed project managers stated that the retaining and distribution of knowledge within the project group when a temporary employee leaves the organisation is the most severe issue, even though the temporary employees of Svenska mässan are retained within the main organisation, but working for another project group. The main conclusion from this issue is that a measurement of how knowledge and communication within the organisation is managed can lead to improvements for all project groups within the organisations.

Two project managers within the Göteborg&co. concern stressed the waste in the form of schedule delays and economic losses that occur during the period of learning the project related tasks and processes, acclimatization to the organizational culture and familiarization to the politics when a new employee starts to work on a certain project before he has acquired knowledge and skills of the project group's patterns of working. By comparing Svenska Mässan's approach where employees are transferred to other project groups to Göteborg&co, where temporary employees are laid off, sources of improvement in project management, quality, and knowledge management can possibly be identified. By interviewing the temporary employees from both organisations, more qualitative data can be collected and analysed which will lead to conclusions based on the temporary employees' performance, amount of motivation at different points in time as well as their contributions to the project team and main organisation.

Two project teams at Göteborg&Co. are considering their website to be a weak spot where major improvements can and should be implemented. They all want a more dynamic platform where they can interact with important stakeholders such as their partners, visitors and customers. On the other hand, the main organisation has not provided the groups with an adequate solution, even though it could create synergies between them. A new standardised framework is under development which is aiming to give the project groups an improved ability to create a website with the ability to interact more deeply with visitors, partners and the general public.

A project manager at Göteborg&Co. claimed that there is a need for an umbrella organisation that aligns the projects and creates synergies. He considers the main organisation that is semi-publicly financed, to be inefficient due to an insufficient amount of external threat that triggers the major driver for change and learning, the instinct for survival. In this case, it is interesting to consider Edwards Deming's words:

"It is not necessary to change, Survival is not mandatory."

The three issues presented require more collaboration, communication and organisational infrastructure and support between the project groups within Göteborg&Co. Svenska Mässan is providing the project groups with such an umbrella organisation and seems therefore to be more mature when it comes to organisational project maturity. By benchmarking more project organisations as well as the senior management's view, more qualified conclusions can be made and by using a benchmarking scheme with standardised questions and answers, statistical tools can be used in the analysis process of quantitative data, together with qualitative data obtained from attendant questions in order to present adequate proposals for improvement.

5.2 Conclusions after Benchmarking

During the benchmarking, the conclusions made after the first set of interviews are confirmed with quantitative data and descriptive examples from the project managers' experiences. As previously stated, the governing organisation is the most dominant factor followed by the amount of project management training of the interviewed project manager.

5.2.1 Confirmation of conclusions from first set of interviews

During the pre-study, it was discovered that Svenska Mässan is performing portfolio and programme management activities which gives the opportunity to balance and align the projects. By having this organisation wide umbrella organisation that provides an infrastructure for the projects, Svenska Mässan performs better when it comes to organisational project management maturity since it is easier to standardise practices, communicate between the project teams and promote organisational learning.

5.2.1.1 The value of implementing an organisation wide project management model

The findings from the benchmarking confirm the conclusions from the first set of interviews. Svenska Mässan's standardised project management model generates a higher mean and smaller deviation in maturity for the different project management activities. Svenska Mässan's umbrella organisation contributes to the organisational project management maturity as well as to the performance of the project teams through standardised processes, for key activities.

5.2.1.2 Internal standardisation over time

During the first set of interviews, the project teams at Göteborg&Co. stated that they do have established processes within the project teams. These processes have not been spread and standardised into the other project teams of the organisation. An analysis based on the highest and lowest amount of maturity in the different management areas; the different project teams can transfer and adapt each other's practices and

standardising an organisationwide project management model in order to improve the organisational project management maturity.

5.2.1.3 Recruitment

According to our findings, the time for a new employee to adapt to a specific project team is much shorter if the person is recruited internally. All project teams at Svenska Mässan are using this method while only some of the project teams at Göteborg&Co. The organisation should aim to broaden this recruitment policy in order to decrease the waste in form of the time it takes to recruit, the familiarisation period of the newly employed and the loss of competence when the temporary employee leaves the organisation.

5.2.1.4 Knowledge management

Svenska Mässan is on regular occasions arranging seminars where each key individual with a key role, such as project manager, sales official or coordinator are supposed to share experiences, practices and knowledge. These seminars could be seen as a way of organising communities of practices as in Pollalis & Dimitriou´s (2008) resarch about virtual companies. Long term training programs are also being held for these key roles in order to ensure that their competencies are being preserved and developed.

5.2.1.5 Educating customers

The innovative approach of educating the exhibitors in order to increase their performance in order to get a higher return on investment is seen as evidence of improvement connected to the highest maturity level. The organisation is considering their customers' customers, an approach that advocated by Normann (2001). By applying the customers' business needs, the prioritisations while managing the projects can be more embedded and fulfilled.

5.2.2 Proposals for improvement

Göteborg&Co. should to create an umbrella organisation between the project teams by providing the appropriate tools for activities such as scheduling, budgeting and coordinating the work in order to reach the goals of the individual projects and the long term strategic goals of the organisation. While developing the new project management model, it is vital to gather information from the project teams' needs and current practices in order to deliver a model that will be used in an effective manner that generates benefits in the form of increased internal project efficiency. Activities from portfolio and program management such as resource levelling and coordination and balancing and aligning of project portfolio are also necessary to introduce to ensure transparency and effectiveness as well as discover areas where the project teams can help each other to reach the main organisations' strategic goals.

Another proposal, which is more controversial, is to integrate the Göteborg&Co.'s project teams that are arranging fairs or conferences with Svenska Mässan's umbrella organisation which provides the required resources as well as educated personnel during the more intensive phases of the projects. The projects will still fulfil the goals of Göteborg&Co., which are to develop and stimulate the industry and tourism in the region, even though the fairs and conferences are managed under a different organisation.

The individuals within Göteborg&Co.'s project teams with key roles such as project manager, sales officials or coordinators should be given the opportunity to participate in Svenska Mässan's seminars for sharing experiences as well as training programs for developing their competence.

Svenska Mässan obtains a high degree of maturity with standardised processes, practices and tools, which in turn generates a low dispersion of performance between the project teams. The most important area to improve is the activities connected to managing the risks of the projects. Risks are usually identified through a SWOT-analysis that is updated in the minds of the project team members during the project life cycle but not officially in the system. Another flaw in their risk management practices is the lack of quantification and measurements of the identified risks, a lack that will aggravate the possibility to make prioritisations and favourable decisions based on the risk management.

There are evidence of unrealistic budgets at Svenska Mässan which in the long term can obstruct long term success for the specific project, but also aggravate the aligning and levelling of resources between the different projects in the organisation's programmes and portfolio.

5.2.3 Occasional projects managed by Göteborg&Co

To develop and introduce an organisation wide project management model will benefit the occasional projects that require more people, generate a higher turnover and involve more stakeholders. Especially since these projects require a new temporary project team constituting of individuals allocated internally and recruited externally.

6 Implications for further research

During the research, strong positive correlations between organisational project management maturity are found with the following factors:

- If the organisation has implemented a project management model used in all or most projects
- Its relation to knowledge and knowledge management
- If the project manager has attended project management training and possesses the opportunity to develop his or her skills.

With these conclusions in mind, three different proposals for further research are hereby presented:

Development and implementation of a project management model for Göteborg&Co. is considered by the researcher to be the research topic that will create most business value for the organisation. Information of the project teams' practices will have to be gathered in order to develop a model with tools that will be adopted and used correctly. The development of the model should be made together with project managers, senior management, team members and other personnel that will be in contact with the practices and tools connected with the model.

Another future research topic would be to repeat the benchmarking after the new model is developed, adopted and adapted by the project teams in order to see if the organisational project management maturity has increased. The research should also investigate if a higher maturity generates a higher profitability, lower turnover of personnel or other affects other key performance indicators.

The third proposal for further research should aim at comparing the two organisations' knowledge management practices and generate proposals for improvement. Since the two organisations are not competing with each other, it should be possible to find synergies between the two organisations' practices by letting personnel from one organisation attend the other organisation's training, knowledge sharing and mentorship programs.

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8 Appendix A

	type	Education	Budget	organisation	length	Mgmt.ctrl	Stakeholder	financial	resource	HR	benefits	risk	governance	knowledge	average
type	1	,124	0,906	-,239	,311	,155	,139	,131	-,087	,032	,210	-,043	,222	,245	,130
Education	,124	1	,318	-0,846	,591	0,872	,254	0,747	,522	0,626	0,657	0,677	0,696	0,773	0,762
Budget	0,906	,318	1	-,477	,382	,312	,337	,323	,157	,294	,435	,242	,414	,460	,374
organisation	,239	0,846	,477	1	,279	0,909	,473	0,684	0,684	0,861	0,912	0,895	0,857	0,951	0,941
length	,311	,591	,382	-,279	1	,306	,214	,401	,120	,112	,110	,104	,145	,225	,214
Mgmt.ctrl	,155	0,872	,312	-0,909	,306	1	,516	0,81	,513	0,794	0,84	0,737	0,826	0,92	0,91
stakeholder	,139	,254	,337	-,473	,214	,516	1	,340	,159	,520	,594	,374	,495	,517	,561
financial	,131	0,747	,323	-,684	,401	0,81	,340	1	,537	0,742	,596	0,622	0,79	0,819	0,819
resource	-,087	,522	,157	-,684	,120	,513	,159	,537	1	0,865	,482	0,896	,569	0,725	0,739
HR	,032	0,626	,294	-,861	,112	0,794	,520	0,742	0,865	1	0,794	0,943	0,806	0,938	0,956
benefits	,210	0,657	,435	-,912	,110	0,84	,594	,596	,482	0,794	1	0,8	0,809	0,877	0,889
risk	-,043	0,677	,242	-,895	,104	0,737	,374	0,622	0,896	0,943	0,8	1	0,79	0,889	0,915
governance	,222	0,696	,414	-,857	,145	0,826	,495	0,79	,569	0,806	0,809	0,79	1	0,914	0,915
knowledge	,245	0,773	,460	-,951	,225	0,92	,517	0,819	0,725	0,938	0,877	0,889	0,914	1	0,989
average	,130	0,762	,374	-,941	,214	0,91	,561	0,819	0,739	0,956	0,889	0,915	0,915	0,989	1

Table 3: Correlations between factors and their affections on project management maturity