



**CHALMERS**  
UNIVERSITY OF TECHNOLOGY

# **Replacing discontinuous change with continuous improvement**

Influencing factors on organizations' capability to continuously improve

Master's thesis in Design and Construction Project Management

Mattias Hermansson  
Mikael Karlsson



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*Management*

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MATTIAS HERMANSSON

MIKAEL KARLSSON

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Department of Civil and Environmental Engineering

Division of Construction Management

CHALMERS UNIVERSITY OF TECHNOLOGY

SE-412 96 Göteborg

Sweden

Telephone: + 46 (0)31-772 1000

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Göteborg June 1016

Mattias Hermansson and Mikael Karlsson

The image shows two handwritten signatures in grey ink. The first signature on the left is 'MH' for Mattias Hermansson. The second signature on the right is 'Mikael Karlsson'.

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## **ABSTRACT**

Akademiska Hus has implemented several drastic changes recent years and is currently performing an organizational restructuring. One underlying reason for this restructuring is issues with consistency within the organization. The purpose of this thesis is to bring forth potential countermeasures to enhance consistency, and further aims to provide insights in how to establish a culture, and the tools necessary for a steady foundation, in which continuous improvements can prosper, and thus prevent the need for major changes in the future. The findings indicate that Akademiska Hus has great potential to reach further in the area of continuous improvements as they already possess vital elements required for higher levels. However, further efforts in including a larger portion of the organization in the innovation process is needed. This could be done by implementing a reward and recognition system, and by strategically aligning every-day tasks with the overall organizational targets. A key to do so is to implement a well-structured performance measurement system to monitor and steer the direction of improvements. Such system can further contribute to a greater understanding of organizational targets amongst employees by identifying, and communicating strategically important areas.

This thesis further investigates potential contributions partnering can bring to the organization in the area of continuous improvements. Partnering is essentially a contracting form with the aim to enhance collaboration between actors in the construction sector. The study identifies several benefits partnering can bring with it. Close collaboration can enable better communication and create mutually agreed goals and visions for the project organization. Further are the possible trade-offs between actors, such as the ability to share resources and solutions perceived as potential contributors to increase overall continuous improvements. The thesis conclude by recommending the implementation of an adequate performance measurement system to enable monitoring of the actual impact partnering brings with it compared to traditional contracting forms.

*Key words: balanced scorecards, continuous improvement capability, continuous improvements, incremental innovation, innovation and construction*

Från oregelbundna förändringar till ständiga förbättringar

Avgörande faktorer för organisationers förmåga att kontinuerligt utvecklas

Examensarbete inom masterprogrammet Design and Construction Project Management

MATTIAS HERMANSSON

MIKAEL KARLSSON

Institutionen för Bygg- och miljöteknik

Avdelningen för Construction Management and Economics

Chalmers Tekniska Högskola

## **SAMMANFATTNING**

Akademiska Hus har under de senaste åren genomgått omfattande organisatoriska förändringar, och står nu inför en omfattande omorganisation. En av förhoppningarna med denna omorganisation är att skapa en konsekvent organisation med homogena arbetssätt. Detta examensarbete syftar till att framföra förslag för hur Akademiska Hus kan skapa en innovationsvänlig organisation med en genomsyrande attityd att ständigt förbättras. Studien visar på att organisationen har en stor potential att utveckla den eftersträvade kulturen i en större utsträckning. Många nödvändiga verktyg och funktioner finns redan på plats, men det är fortfarande flera aspekter som kan utvecklas vidare. Vi föreslår att ett belöningssystem införs med syftet att uppmärksamma innovativa lösningar, och på så sätt engagera en större andel av organisationen i förbättringsarbeten. Genom att koppla ihop anställdas dagliga arbeten med övergripande strategier kan man uppnå en större förståelse för vad organisationen försöker uppnå, och därmed locka fram smarta idéer som bidrar till att nå övergripande mål. Ytterligare en viktig nyckel till att nå längre gällande ständig utveckling är att införa ett välstrukturerat mät- och uppföljningssystem. Genom att mäta och följa upp organisationens utveckling kan man styra utvecklingen åt strategiskt viktiga områden, och på så sätt kommunicera till anställda vilka områden som är av intresse att förbättra.

Vidare undersöks också hur samverkan/partnering kan bidra till ständiga förbättringar sett till ett organisatoriskt perspektiv. Den genomförda studien visar på flera fördelar samverkan kan medföra. Samverkan möjliggör närmare samarbete och effektiv kommunikation mellan aktörer, vilket i regel skapar gemensamma mål och visioner. Utöver detta finns det även stor potential inom samverkansprojekt, genom att exempelvis utnyttja det nära samarbetet som uppstår till att dela med sig av resurser och framtagna lösningar. Vidare föreslår vi i studien att det finns ett behov av att införa ett konsekvent uppföljningssystem för projekt, med syftet att möjliggöra en analys av den faktiska inverkan samverkan medför i förhållande till mer traditionella entreprenadformer.

Nyckelord: Balanserat styrkort, ständiga förbättringar, inkrementell innovation, innovation inom byggsektorn

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# 1 INTRODUCTION

This chapter will give an overview of the thesis, including a background, the purpose of the study and which research questions that will be answered. A brief overview of the methodology, as well as the delimitations will also be introduced.

## 1.1 Background

At present, buildings account for 40 per cent of the total energy use in Europe – giving rise to approximately a third of the region's CO<sub>2</sub> emissions (European Commission, 2009). The construction industry consumes billions of tons of natural resources and produces 22 per cent of total waste. To reduce this impactful environmental footprint, various EU directives have been introduced concerning e.g. energy consumption and emissions. The targets set in these directives are tough, and thus put demands on each member of the European Union, including Sweden. The environmental regulations deriving from these directives, in combination with a constantly toughening competition on the market forces organizations within the sector to continuously improve in order to stay competitive (SABO, 2011). Even though these are facts, previous works give the general view of the construction sector as unwilling to change and resistant to innovation (Gluch et. al, 2009). This thesis will examine how the Swedish governmental real estate company, Akademiska Hus works to continuously improve and develop their organization, and thus avoid falling behind competitors. It further investigates what effects collaborative projects have on continuous improvements and innovation. It should be noted that this thesis is constrained to the department working with property building and development, and will not treat the department responsible for property management.

Akademiska Hus is located in six regions across Sweden, and with its approximately 400 employees and a net worth of above 60 billion SEK (Akademiska Hus, 2016) it ranks as Sweden's second largest real estate company (Fastighetsvärlden, 2015). For such large organizations to operate efficiently demands for clear objectives, comprehensive business strategies and proficient communication lines, but also consistency throughout the organization. The latter is an area in which Akademiska Hus aims to improve, and has done so for some time without sufficient success. This has forced the organization to implement drastic changes in recent years, including a merger of the regions who previously acted as individual companies, as well as a restructuring currently taking place.

As previously mentioned, this thesis will examine Akademiska Hus' current routines and strategies to continuously improve. It will also put this into context with relevant literature with the purpose of identifying potential areas of improvement. One area of interest is cross-organizational collaboration, which is said to play an important role when dealing with development and implementation of innovation in construction (Gambatese & Hallowell, 2011; Pries & Janszen, 1994). This thesis will therefore analyze how the collaborative contracting form called partnering can contribute to improvements and innovation.

## 1.2 Purpose and research questions

The purpose of this thesis is to investigate how Akademiska Hus can further increase their continuous improvement capability through innovation. Innovation in the sense of continuous improvement is about minor changes, such as new ideas and enhanced processes that contribute to the organization's continuous learning and development. To be able to achieve this, the following research questions will be answered:

*How can Akademiska Hus work strategically on an organizational level to increase their capability to continuously improve?*

*What effects do collaborative projects have on continuous improvements and innovation?*

## 1.3 Scope and limitations

This thesis has been performed in collaboration with Akademiska Hus and Chalmers University of Technology. Since this is a case study, solely the organization Akademiska Hus will be analysed. The thesis is further limited to looking in to the part of Akademiska Hus working with property building and development, and will not treat the property management department.

Akademiska Hus applies a mixture of traditional contracting approaches and a more collaborative partnering approach. Only the latter will be touch upon since this thesis investigates how collaborative contracting forms can contribute to innovation and continuous improvements. The literature review includes an analysis of the term innovation as well as a section on how to measure performance in organizations, and which challenges that come with it. These parts are later connected in order to create a theoretical perspective on how organizations can work systematically, and strategically with innovation to increase their rate of continuous improvement in both projects and the organization as a whole. The literature review serves as a foundation for the interview study, where the theory is connected to how Akademiska Hus works in practice, but also according to strategic directives.

Empirical data was collected through internal documents shared by Akademiska Hus, and a set of interviews with personnel with a positional and geographical spread to ensure a holistic view on how the organization works.

## 1.4 Methodology

The thesis work was divided into three parts: a literature review, an interview study and an analysis of the findings. The initial step was a literature study, with the purpose of conducting relevant interview questions. The literature review continued in parallel with the interview study. The final step of this thesis was to connect and analyse the findings from the interview study and the literature review.

The literature used in this report was collected via scientific search engines, e.g. Google Scholar and Summon, accessed through Chalmers University of Technology. Key words, such as *balanced scorecards*, *continuous improvement capability*, *continuous improvements*, *incremental innovation*, *innovation and construction*, *partnering and performance measurement*, in combination with examining abstracts, conclusions and references used in the collected articles optimized the search process.

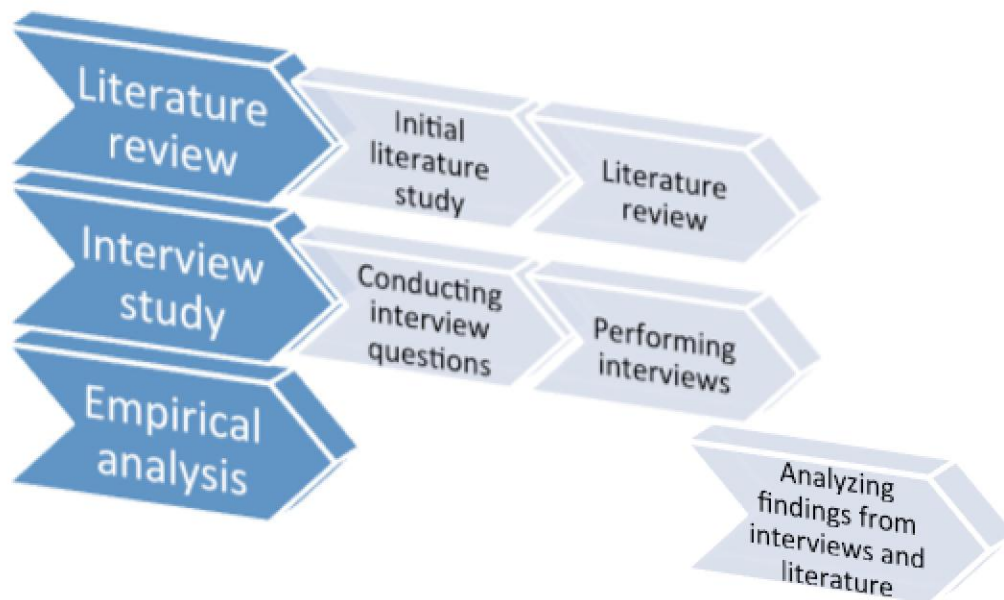


Figure 1: Overview of the process of conducting the thesis work.

For a more detailed methodology regarding the interview study and the empirical analysis, see chapter 3.

## **2 FRAME OF REFERENCE**

This chapter is introduced with an analysis of the term innovation, including a discussion on different views and definitions and what drives, as well as hinders innovation in organizations. This part is followed by how performance measurement is performed, and which challenges to overcome in order to implement a value adding measurement system. The chapter is concluded by looking into how organizations can work strategically towards enhancing their level of continuous improvement.

### **2.1 Innovation**

This chapter breaks down the term innovation by looking in to different definitions and models brought up in previous research and literature. How to manage, and what drives innovation is also included in this chapter, with a focus on the construction industry.

#### **2.1.1 Innovation in project based organizations**

Innovation is a rather broad concept with a wide range of definitions, which can be used to describe newly invented or produced products, methods, ideas and also the processes of introducing ideas, products or methods. (Innovation, n,d)

There are diverse takes on what the term innovation brings about depending on the context the concept of innovation serves in. An early definition of innovation, provided by Schumpeter (1934), is that innovation occurs when there are newly introduced products or substantial changes to existing products, new processes or methods adopted or invented, exploitation of new markets, the use of new raw materials and/or when there are changes in industrial organization. Although Schumpeter's definition originates from research in the early-mid 90s, it can be considered somewhat accurate even in today's view on innovation. Newer more current definitions of innovation have derived from these initial prerequisites that Schumpeter brings about in the 1930s, with the common denominator that more up to date definitions also bring about the aspect of value. Hence it can be considered to be clear overlaps in the different definitions of innovation which makes it somewhat graspable, but as Baregheh, et al (2009) implies, the concept of innovation lacks consensus to some extent. Based on the different forms of innovation brought up earlier regarding products, processes, materials and the organizational form, in a business oriented context, it is reasonable to assume that each innovation form might be defined based on different perspectives between organizations, teams, departments and disciplines as Damanpour & Schneider (2006) also notes.

The concept of innovation in an inter-organizational context has been researched extensively both in terms of soft parameters as organizational culture and attributes and sociopolitical aspects, as well as hard parameters as new technology, policies and economical aspects etc. (Gambatese, J. A., & Hallowell, M. 2011) Gambatese &

Hallowell further argues that there is lack of research regarding invention and implementation of the aspects we earlier defined as innovation, in the construction industry. Which this study will exploit regarding innovation situated as a key performance indicator focused towards Akademiska Hus' organization acting as a client within the construction industry, on a firm based level.

### **2.1.2 Managing innovation**

Innovation has been researched and debated for a long period of time, with the main focus in the early years of the research towards comprehensive technological innovation that might be regarded as groundbreaking inventions and implementation of these. (Birkinshaw, et.al, 2008) Thus the focus has been toward innovation in terms of causing substantial changes. In recent years the research has focused more towards finding innovation in the appearance of smaller changes, e.g changes in processes and practices for instance, which are referred to as radical innovation for the earlier mentioned comprehensive changes, and incremental innovation for the smaller changes. These forms of innovation are further explained in chapter x. (Birkinshaw, et.al, 2008; Slaughter, 1998) There is considered to be difficult if not possible to establish a practice suited for innovation management in all industries and for all organizations. According to prior research there are several different approaches on how to manage innovation, and although the different practices and approaches contribute to a deeper understanding of the innovation concept, it lacks a best practice for how to manage and implement innovation from an organizational perspective. (Tidd, 2001; Tidd 1997) Which can be related to an early organizational structure recognized as the contingency theory by Henry Mintzberg (1993). The contingency entails the theory of being no best-practice or best applicable approach on how to organize a company or to provide a framework for decision-making, but rather a contingent process depending on factors continuously changing, hence it necessitates continuous changes in practices and approaches to be suitable for the given situation. The contingency theory can be related to innovation management as seen in figure 2 below, in terms of how environmental contingencies is connected to innovation and organizations, and since innovation management as mentioned earlier, is unstable with many unknown factors depending on both internal as well as external prerequisites as well as complex individual characteristics. (Gambatese & Hallowell, 2011; Tidd, 2001)

To achieve a somewhat effective innovation management, it arguably requires empirical data and measures to provide understanding of existing innovations and on what levels innovation is taking place. Tidd (2001) suggest that measuring innovation on a firm-level can be done in two different ways basically, where one measurement area is relatively specific, where you measure new product announcements and patents available on the public market. The second approach is of a rather broader sort, where you would rather like to measure the sales of newly implemented products, smaller changes in processes and such for instance. Since we look at innovation from a contingency theory perspective, it is of essence to distinguish what impactful factors we have to consider in the context the research is

carried out. Hence fundamental data regarding the construction industry and Akademiska Hus is required.

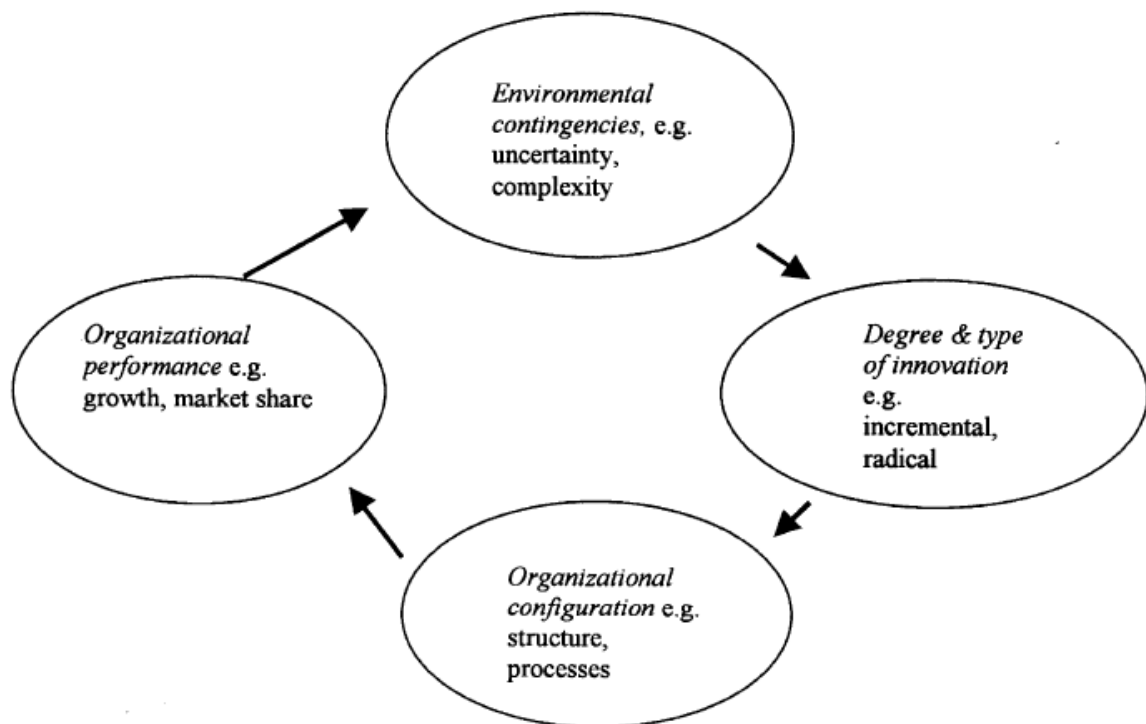


Figure 2: Connection between environmental contingencies, innovation and organizational settings and performance (Tidd, 2001)

### 2.1.3 Innovation and construction

It is widely accepted that the construction industry falls behind other industries in terms of overall development regarding a series of factors. (Frens Pries & Felix Janszen, 1995) Innovation is one factor seemingly hard for the construction sector to adapt and apply to the organizational structures, although constant innovation can be recognized with construction, it lacks utilization of the potential innovation brings about if compared to more successful industries, as manufacturing as a relatable industry form. This section will provide further insight in peculiarities and why the construction industry falls further behind in terms of innovation.

#### 2.1.3.1 Reluctance and absence of innovation in construction

Innovation in the construction industry is widely acknowledged as an aspect hard to control and manage with a low rate of innovation activity in comparison to other industries in general. The absence of innovation within the industry is perceived to be caused by the unique characteristics that construction projects brings about. (Koskela & Vrijhoef, 2001; Winch 2010) There are several hypotheses and studies regarding why innovation management has considered repeatedly failing within the construction industry. Koskela and Vrijhoef (2001) suggest that previous research points out several causes that may hamper innovation as follows;

- (1) Lack of properly developed and implemented feedback mechanisms.
- (2) Reluctance within the supply chain to acknowledge the impact of their role toward other actors involved in the supply chain.
- (3) Denial of recognizing non-value adding solutions to problems that arise where the construction industry in general neglects problems that have no impact on perceived value for the organization.
- (4) Absence of adopting developed solutions in prior projects and apply them to future problems in upcoming projects.

Van De Ven (1986) suggested as early as in the 1980s in addition to the more straightforward issues in practice presented above, that attitude and psychological aspects will play an important part as well. Van De Ven argues that people and organizations tends to focus on and manage existing practices due to basic psychological limitations when it comes to adapting to complex changes, hence a question regarding how to motivate people to give attention to innovation is raised.

### **2.1.3.2 Innovation models in construction**

Concluded from the extensive research that is available regarding innovation and construction Slaughter (1998) attempted to merge the prior research results into a more understandable context of innovation in the nature of construction. Slaughter suggests that construction innovation can be categorized accordingly to radical, incremental, modular, architectural and system innovations. We will further in put emphasis on the upper mentioned innovation forms considering these forms to be essential for the construction innovation research this paper provides.

Radical innovations is as it sounds a comprehensive type of innovation form that can appear as new technology or something that will have an major impact on the industry itself, causing essential parts of the industry to go through change. Radical innovation is regarded as highly unpredictable in terms of when it is taking place and the extent of the impact it may cause. Slaughter (1998) argues that most commonly derives from research bringing something new into play, often together with new companies or organizations exploiting the existing industry and market. In contrast to radical innovation, incremental innovation could arguably be described as the opposite to radical innovation. In comparison to radical, the incremental innovation appears as continuous small changes usually recognized within companies that have the knowledge and ability to develop and improve their business in terms of products, systems or processes. The incremental innovation is therefore somewhat predictable since companies themselves commonly are the driving force behind the innovation. The innovation form Slaughter (1998) distinguish as modular innovation concerns direct changes to a product or component that are of essence for the purpose the product serves in. Further a modular innovation, although changes are made in the product or component is not contributing to any changes in other implementation or processes that the product is a part of. Pries (1995) argue that from the presented innovation models, the upper mentioned incremental and modular innovation models are the most recurrent in construction, due to the majority of innovations in the construction industry originates from product and material producers. In contrary to modular innovation, architectural innovation



entails the concept of small changes in products or components have substantial impact on connected processes, systems or products. In the same fashion as the earlier described incremental innovation, modular innovation commonly is recognized internally with a company and does not necessitate interaction with other actors or even products or processes. While architectural innovation on the other hand necessitates extensive changes with processes and other product within the area the innovation acts in. And finally the last kind of innovation brought up is system innovation, which treats the complex system of implementing a number of innovations that are interconnected with each other and by some extent has to cope with each other, and also typically leads to changes in the connections to already existing components or systems in use. Although this type of innovation might seem complex and difficult to grasp and manage, its occurrence within the construction industry is at a quite high frequency due to the unique characteristics that comes with construction projects. Hence systems of innovations have to be reconfigured and adapted to the preferences for the actual project the system are supposed to be applied to. (Slaughter, 1998)

It is of essence to distinguish the different innovation models in the construction industry to be able to make efforts in finding what and why issues arise in the questions of innovation development in construction. The lack of awareness in an organizational context in general regarding what innovation contributes with in terms of performance is problematic and difficult to manage as Tidd (2001) stresses, arguably due to difficulties to connect recorded empirical data in terms of innovation to organizational performance and results. Tidd also notes that there are different levels on where you can identify innovation, for example on an internal level where a company's innovation is recorded and measured, or compared to a broader basis, where an industry can be measured and compared to other industries. Regarding previous measurement of empirical data, it is found to be more difficult to recognize a relationship between innovation and performance on a company-based level in comparison to the overview of an entire industry. (Tidd J, 2001) As we will focus on innovation on a company based level, which is perceived as even more difficult to identify and measure in comparison to broader targets, we will further need understanding regarding what drives the earlier mentioned construction innovation models forward.

### **2.1.3.3 Drivers of innovation**

There are a number of driving forces for innovation development and management, while some might be considered more influential, applicable on all levels of innovation, some drivers may only be connected to a company based level, or even project based level. (Bossink, B. A. 2004) Bossink (2004) attempt to classify innovation drivers into four different subgroups defined as:

- External pressure and demands
- Technological capability
- Knowledge flow and learning capabilities
- Boundary spanning

The first category entails external pressure from markets or governmental clients either demanding, or rewarding companies performing in an innovation oriented fashion. External pressure could also occur in the shape of regulations steering toward being innovative or subsidies for applying new innovations in projects. The technological capability comprises what was brought up in the previous. regarding innovation capabilities. It entails individual companies ability, hence capability to individually develop and implement products or processes. The third innovation driver Bossink mentions is essentially a rather complex issue to address, however in the context of this work, as it is constrained to an intrafirm level (one individual organization), it is narrowed down to focus towards research and development function, systems of gathering information properly, engaging the workers by educating and make sure they got the necessary competence and knowledge and finally the need of communication structures and systems that enables possibility to share experience and important information. The last innovation driver brought up as “boundary spanning” leads directly to an aspect argued to be of great essence in the context of innovation development. Boundary spanning is basically about engaging everyone in the process, utilizing all ideas, competences, knowledge and experiences that there is to find within the organization. (Bossink, B. A. 2004) Thus touches this matter of close collaboration forms that several researchers stress the importance of when dealing with development and implementation of innovation in construction. (Pries & Janszen, 1994; Gambatese & Hallowell, 2011)

Despite the straightforward explanations provided in the previous section, there is in addition the complex involvement of individual characteristics that need to be accounted for. According to Gambatese & Hallowell (2011) prior research shows that an organizations capacity of innovation is depending on several complex factors, such as organizational culture, senior managers’ influence, conflict management and the general attitude towards solving conflicts and sharing control amongst employees. Although these factors are assumed to have some impact on innovation capacity of organizations, it will not be researched further in this paper, but will although be considered and discussed.

#### **2.1.4 Innovation and close collaboration**

A commonly shared interpretation regarding innovation management and how to be successful in terms of innovation development is the need for effective collaboration, both within the organization as well as external collaboration between organizations. To be able to achieve a level of innovational success, Gambatese & Hallowell (2011) concludes from prior research, that shared vision and goals are necessary where resources and technical capabilities/competencies are shared amongst involved actors, as well as trade off in knowledge exchange between them. To effectively support these prerequisites, researchers tend to suggest close collaboration forms and commonly the concept of partnering, to be able to manage innovation properly and capitalize on the benefits partnering and close collaboration forms provides. The concept of partnering and closer collaboration in general has in recent years developed into a more common approach for streamlining project

collaborations and boost overall performance in projects. Although the partnering strategy has been growing lately and is widely utilized, it lacks consensus regarding the definition, which may differ between different industries and organizations as well as on an internal level. The construction industry is considered to be relatively new to adopt the partnering concept compared to other industries, which combined with unpredictable and diverse difficulties perceived as common in the construction industry, such as communication and coordination, results in even more diverse ideas of what partnering brings about. (Li, H, et al, 2000) For the intents of this paper, it is of importance to distinguish what partnering brings about in the context of the prior mentioned innovation models, as well as partnering on an organizational level for Akademiska Hus as basis for the upcoming case study. This section is purposed to provide insight in the wide definition of the partnering concept and how innovation in organizations can capitalize and emerge from a close collaboration approach.

Connections between collaboration between actors and development of products, processes and methods is widely acknowledged and assimilated by most clients and other actors in the construction sector. It is somewhat common in EU that innovation based projects with some extensive focus towards development get financed on the basis of an external party when a close collaboration form is operated, with innovation or research purpose as basis. (Kadefors & Femenias, 2014) Besides the economic incentives minimizing the risk for organizations to be innovative, there are also some benefits directly connected between the success for innovation and close collaboration approaches. Kadefors and Femenias (2014) argue that close collaboration in interplay with research further may both lead to new ideas as well as boost the legitimacy of the newly developed ideas, hence give better conditions for the ideas to be spread and be acknowledged by others. In addition Gambatese and Hallowell (2011) notes that success within the innovation area is highly depending on factors that commonly are recognized as cornerstones in close collaborations and partnering approaches. As a higher level of resource availability by sharing resources amongst other parties involved, shared vision and mutual set goals and commitment from top management. (Gambatese & Hallowell, 2011; Nyström, 2005)

### 2.1.5 Summary of challenges and success factors

Table 1: Summary of challenges and success factors

Innovation area	Challenges	Success factors
<i>Innovation in construction</i>	<p>Development and implementation of feedback mechanisms.</p> <p>Get actors in the supply chain to acknowledge the impact of their role toward other actors involved in the supply chain.</p> <p>Adopting solutions developed in prior projects and systematically apply them to problems in future projects.</p>	<p>Implement guidelines for feedback and learning, and educate employees in the system to ensure consistency</p> <p>Create a mutual understanding of goals and targets. Partnering can be used as a strategy on a project level.</p> <p>Develop systems for sharing knowledge and ideas internally</p>
<i>Incremental innovation</i>	<p>Lack of knowledge regarding management of small continuous improvements</p> <p>Difficult to record empirical data</p>	<p>Awareness and knowledge of strategically important areas to improve in</p> <p>Educate employees and implement systems of gathering information in a proper way</p>
<i>System innovation</i>	<p>Implementation of several innovations – avoid sub-optimization</p> <p>Manage existing processes, services or products to cope with newly implemented changes</p>	<p>Distinguish the interplay between new innovations and existing systems</p> <p>Adapt processes, products and services to the performed changes</p>
<i>Innovation drivers/capacity</i>	<p>Acquire knowledge on why, and how to continuously improve</p> <p>Identify the driving force for changes and improvements</p> <p>Account for the organizational culture's impact on development and continuous improvement</p>	<p>Educating and enlighten the people within the organization. This can be done by setting individual targets in strategic areas.</p> <p>Should be done at a managerial level. When drivers are identified, resource allocation should be performed to ensure sufficient funding in key areas</p> <p>Commitment from CEO and senior management to create an openness towards new ideas and initiatives through encouragement and reward</p>

## 2.2 Performance measurement

This section will mainly focus on why and how performance measurement is performed, and which challenges that come with the processes of designing, implementing, managing and keeping the system up to date. These challenges are followed by a model called “the balanced scorecard”, which describes how to address many of the highlighted challenges.

### 2.2.1 An overview of performance measurement

In tradition, business has been measured solely in financial terms (Beatham et al., 2004). However, as the business environment has evolved over time, the amount of factors affecting how well we do business has increased dramatically. Since the industrial era several game changers, such as globalization, digitalization and an increasing awareness of the environment and working conditions have affected the way we do business and successfully manage customers. These aspects in combination with rapid technological advances in the modern society put demands on organizations to quickly adapt and adjust to changes in order to stay competitive (Gluch et al., 2009). To be able to do so, it is vital to keep track on what makes the organization successful (Parmenter, 2015). This is called performance measurement. The routine of measuring performance has been implemented by more or less every organization in every industry, both in the private and public sector (Bititci et al., 2011).

Beatham et al. (2004) and Bower (2003) brings up three possible areas to perform, or rather compare performance; within the company, also known as internal benchmarking, or external benchmarking when the comparison is made with other companies. The latter can be performed both within the industry as well as comparing with other industries.

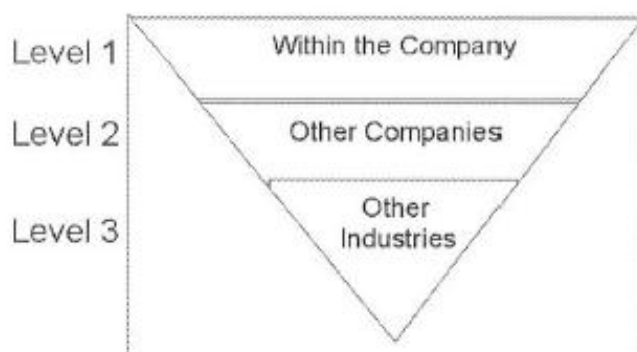


Figure 3: Types of benchmarking (Beatham et al. 2004)

Measurement systems serve various functions for organizations (Parmenter, 2015). Not only can an organization follow up on performance of different teams and time periods within the organization, it also gives the possibility to compare the organization with others. Parmenter (2015) highlights three main advantages that performance measurement brings with it:

- (1) As illustrated in figure 4 and 5 below, management can steer daily actions in a way that increases each team's contribution to good results. By knowing what is of most importance for the organization, employees within the organization know what to focus on, and just as important, what not to focus on. Without measurements you will not be able to execute well (Spitzer, 2007). The author further claims that measurements enhance understanding of how actions and strategies affect the outcomes. This understanding enables management to improve decision-making, execution and consistency, hence enables management to constantly improve the organization. It also provides warning signals in time if some strategy or team is malfunctioning. The latter could prevent drastic, costly measures to be taken, and instead solve the issue in time.

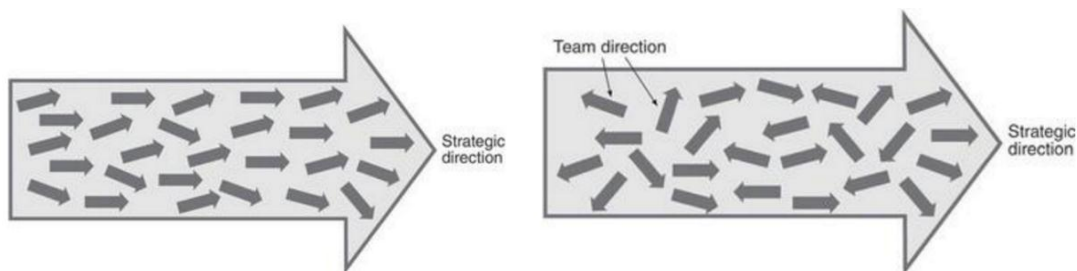


Figure 4 and 5: Steering with versus without KPIs (Parmenter, 2015)

- (2) Measuring performance actually improves performance as it enables people to see progress, hence motivating them to put in more effort (Parmenter, 2015). By measuring teams, and not individuals people are still being evaluated in an objective way, which is appreciated by the employees (Spitzer, 2007).
- (3) The fact that performance indicators can pinpoint which teams that perform well and which do not creates a wider ownership for the achieved performance. According to Parmenter (2015), this leads to empowerment and increased fulfilment for the employees since their effort is reflected in the KPIs (see below).

### 2.2.2 Distinguishing KPIs from KRIs

Although such a vast amount of organizations have implemented routines to measure performance, many fail to choose the correct indicators for the specific organization (Cox, 2003; Parmenter, 2015). A common mistake is to choose the simplest things to measure, or just to measure for the sake of it (Powell, 2004). For such a system to function and serve the intended purpose it is important to take into consideration which parameters that actually are the vital ones. To successfully do so, Parmenter (2015) argues that it is of great importance to identify, and distinguish between result indicators and performance indicators. First after understanding the difference between these, and their relation to each other, management can implement a suitable system.

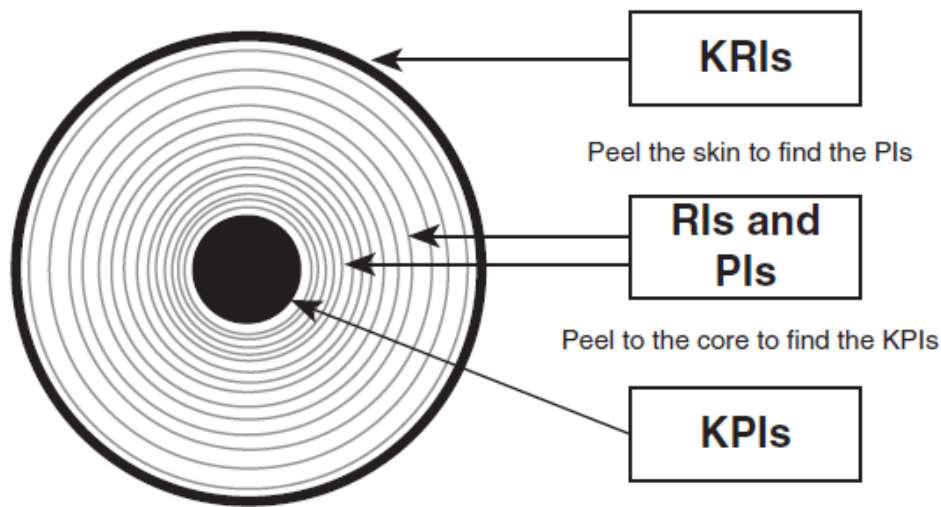


Figure 6: Correlation between result and performance metrics (Parmenter, 2015).

#### 2.2.2.1 Result indicators

Parmenter (2015) states that these should provide a holistic overview of how well the organization performs, but does not take into account how individual teams contribute to the results. Therefore result indicators are useful for measurement of the combined teamwork, but cannot directly point out potential issues within specific teams. These measures are often the result of many combined actions and give an indication on where the organization is heading. The most important result indicators for the organization should provide an overall view of the organization's result. Such result indicators are called Key Result Indicators (KRIs). Examples of KRIs are customer and employee satisfaction. Both these measures are affected by several aspects, which makes it difficult to pinpoint the underlying reasons for the performance, but gives important information on the overall performance.

#### 2.2.2.2 Performance indicators

In contrast to result indicators, performance indicators can be linked to specific teams within the organization (Parmenter, 2015). To know which teams that are successful, and which are not is important if the organization wants to improve. The most vital performance indicators are classified as Key Performance Indicators (KPIs). Cox et al. (2003) defines key performance Indicators as "compilations of data measures used to assess the performance of an operation. They are the methods management uses to evaluate employee performance of a particular task. These evaluations typically compare the actual and estimated performance in terms of effectiveness, efficiency, and quality in terms of both workmanship and product" (pp.142). An important notation made by Parmenter (2015) is that KPIs can be linked to specific employees, or teams, which thereby are directly accountable for the performance. For example, the number of faulty products returned will probably affect the KRI customer satisfaction, and could be linked to e.g. the quality manager.

What characterises a KPI is that it is not expressed as financial measures, and is measured frequently (Parmenter, 2015). For a performance indicator to be classified as key, it should have a proven, significant impact on some of the KRIs. Another criteria is that it must be important enough for the CEO and senior management to follow up on it. Otherwise it is not important enough to be treated as a KPI. Above these, Beatham et al. (2004) claim that KPIs should be easy to collect and understood, as well as encouraging the right behaviour.

### **2.2.3 Challenges with performance measurement**

As noted in previous sections, there are some difficulties to overcome in order to reach a well-functioning measurement system that adds value to the organization. Powell (2004) divides the performance measurement process into sub processes, consisting of:

- Designing the system
- Implementing the system
- Managing through measurement
- Refreshing the system

In each of these processes, different challenges emerge.

#### **2.2.3.1 Designing the system**

As we already touched upon, the first challenge when designing the system is to choose representative indicators to measure (Kaplan & Norton 2007, Parmenter, 2015; Powell 2004). There should be a definite connection between the measured indicator and the actual result of the organization. Parmenter (2015) illustrates this with an airline example. The reason for measuring the amount of delayed airplanes is the costs that derive as a direct or indirect result of the delay. A delayed airplane has to use more fuel to reach the destination on time, and possibly faces additional airport surcharges.

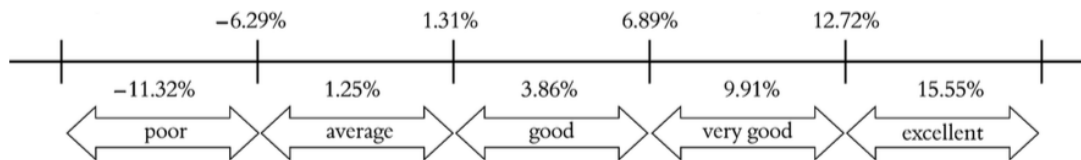
When designing the system, the KRI or KPI must also be defined in order to be measured. This includes how to measure, as well as defining when the performance is considered to be good (Beatham et al., 2004; Yeung et al., 2008). Yeung et al. (2008) give two examples of when these two aspects could cause problems:

“An assessor may use ‘Percentage of conformance to the specifications’ to measure quality performance while another assessor may adopt ‘Number of non-conformance reports generated per month’ to measure it” (pp.1231).

“A 2% reduction in project cost may represent ‘good performance’ to someone who is not too demanding; but a 5% reduction in project cost may be perceived as ‘average performance’ to someone who has a higher expectation” (pp.291).



To avoid these issues, a suitable assessment criteria must be chosen for each KPI (Yeung et al., 2008). For example, some KPIs are preferably measured with deviations, e.g. variation of actual completion time put in relation to finally agreed completion time, as illustrated in figure 7. In this example, the score is considered as average if the deviation falls somewhere in between the range of -6,29% and 1,31%. This method of designing and assessing the KPI eliminates the possibility that the KPI is up for interpretation (Beatham et al., 2004; Yeung et al. 2008).



Range for each performance level in relation to QI of time performance

Figure 7: Potential assessment criteria for KPI (Yeung et. al, 2008).

### 2.2.3.2 Implementing the system

When implementing a new system in an organization a potential issue is to access the data and documentation needed to follow up on the designed system (Powell, 2004). If previous routines did not require to follow up on the needed data there is a probability that there is no data, or that it takes a lot of work to acquire it.

Assuming that the data is in place, the next phase is to make people within the organization use the developed system (Kaplan & Norton, 2007; Powell, 2004). To do so, there is a need for education on what, and how to follow up on the data as well as a need to clarify why the new system is implemented. If employees do not see the meaning of the system, they might not set aside time and resources to use it. This claim is supported by Parmenter (2015). Although, Parmenter argues that it is not enough to educate and inform employees in a single workshop. The commitment from the CEO and senior management to drive and develop the newly implemented measurement system is vital to achieve a change in the corporate culture, and to avoid falling back into old habits and processes of working.

Even though many researchers highlight the importance of communicating the organizational goals and vision, an important aspect to keep in mind is to enable employees to actually understand what these mean (Kaplan & Norton, 2007). The authors stress the importance of clarifying how the business strategy is translated into the day-to-day work, which they problematized with an example:

“I believe in the mission statement. I want to act in accordance with the mission statement. I’m here with my customer. What am I supposed to do?” (pp.153).

### 2.2.3.3 Managing through measurement

A challenge both Parmenter (2015) and Powell (2004) stress is the need for a cultural shift in many organizations. To enable management to keep focus on reaching targets, performance data must be easy to collect and presented to them in a

suitable manner (Beatham et al., 2004; Powell, 2004). Powell claims that many managers are presented with raw performance data, which results in a time-consuming process to make something out of the data. It also subjects the system to a risk of managers drawing their own conclusions, which can lead to unnecessary discussions to justify individual figures. A key to avoid these issues is to educate employees in how to present the performance data (Parmenter, 2015; Powell, 2004).

One of the most significant challenges facing managers today is that organizations tend to quantify more or less everything, even qualitative measures (Powell, 2004). The problem is not the fact that qualitative measures are translated into quantitative, the problem occurs when organizations perform excessive measuring. This causes too much work handling and analysing the data. The overwhelming data can result in management missing out on emerging patterns, which makes steering the organization in the right direction much more difficult.

#### **2.2.3.4 Refreshing the system**

The most challenging part is to keep the system up to date, by refreshing it as problems are solved, or new problems occur (Powell, 2004). Old templates and routines must be deleted as new ones are introduced in order to avoid using obsolete performance reports. Although adjusting the system is important, too many changes can cause difficulties when comparing current versions with past events. Powell (2004) and Kadefors (2014) suggest that a named performance manager should be assigned with the responsibility to ensure a well-functioning system.

#### **2.2.3.5 Challenges with performance measurement in construction**

A key issue according to Beatham et al. (2004) is that KPIs generally used in construction are post events, lagging measures that do not provide the opportunity to change. The authors further claim that results are generally not validated, hence subject to interpretation. However, to implement a performance measurement system that is suitable and comparable for each construction project has its difficulties. In contrast to mass-production industries each construction project is custom-built (Bower, 2003; Dubois & Gadde, 2002). This causes irregularities in terms of organization on site, deliverables, number of involved actors, scale of workforce etc. The construction sector can be seen as a complex environment involving a large number of interdependent actors, hence numerous interfaces (Dubois & Gadde, 2002). With every interface a new relationship derives that needs to be maintained professionally. Alongside these complexities competition and regulations regarding e.g. energy efficiency are constantly toughening (SABO, 2011). It is perceived as hard to identify and retrieve reliable measurement information, and even when valuable data is gathered and properly used to evaluate different projects, Mohamed (1996) argues that the unique project characteristics are a challenging aspect that goes with the construction industry.

New approaches to the overall construction process, from initial concepts to execution and full life-cycle management is said to enhance the competitiveness of

individual enterprises and the sector as a whole (European Commission, 2009). To stay profitable and to avoid falling behind competitors innovative solutions to reduce costs and increase efficiency are necessities in the modern construction industry (SABO, 2011). To achieve this, it is of great importance to understand what the organization does well and what could be improved.

Although, there is a lack of comprehensive and systematic studies on reliable and practical performance evaluation models for partnering projects that makes it difficult for management to evaluate construction projects in terms of performance (Mohammed, 1996; Yeung et al., 2007). The authors further claim that such a system could help to develop a benchmark for measuring the performance of partnering projects. However, due to the complex nature of the construction industry, benchmarking is found to be difficult. Hence it is reasonable to assume that the lack of consistent data collection and the vast number of different vital parameters in projects and businesses makes it even more difficult to perform external benchmarking, and thus internal benchmarking is a necessity for continuous improvement.

#### **2.2.4 Balanced scorecards**

The balanced scorecard is a system for aligning business activities to the vision and strategy of the organization, monitor organization performance against strategic goals, and improve internal and external communications (Kaplan & Norton, 2007). The system was introduced by Robert Kaplan and David Norton in 1992 with the purpose of revolutionizing conventional thinking of performance metrics. By stepping aside from traditional measuring systems, which solely treated financial metrics, management were able to get a deeper understanding of the actual performance of the organization. The authors, just as Parmenter (2015) and Chavan (2014), claim that these nonfinancial metrics are valuable for predicting future performance, and give information on appropriate actions to take. By linking the organizational goals with current actions, management can enhance execution and decision-making (Kaplan & Norton, 2007; Spitzer, 2007).

The balanced scorecard system can be divided into four sub processes, as shown in figure 8:

- Translating the vision
- Communicating and linking
- Business planning
- Feedback and learning

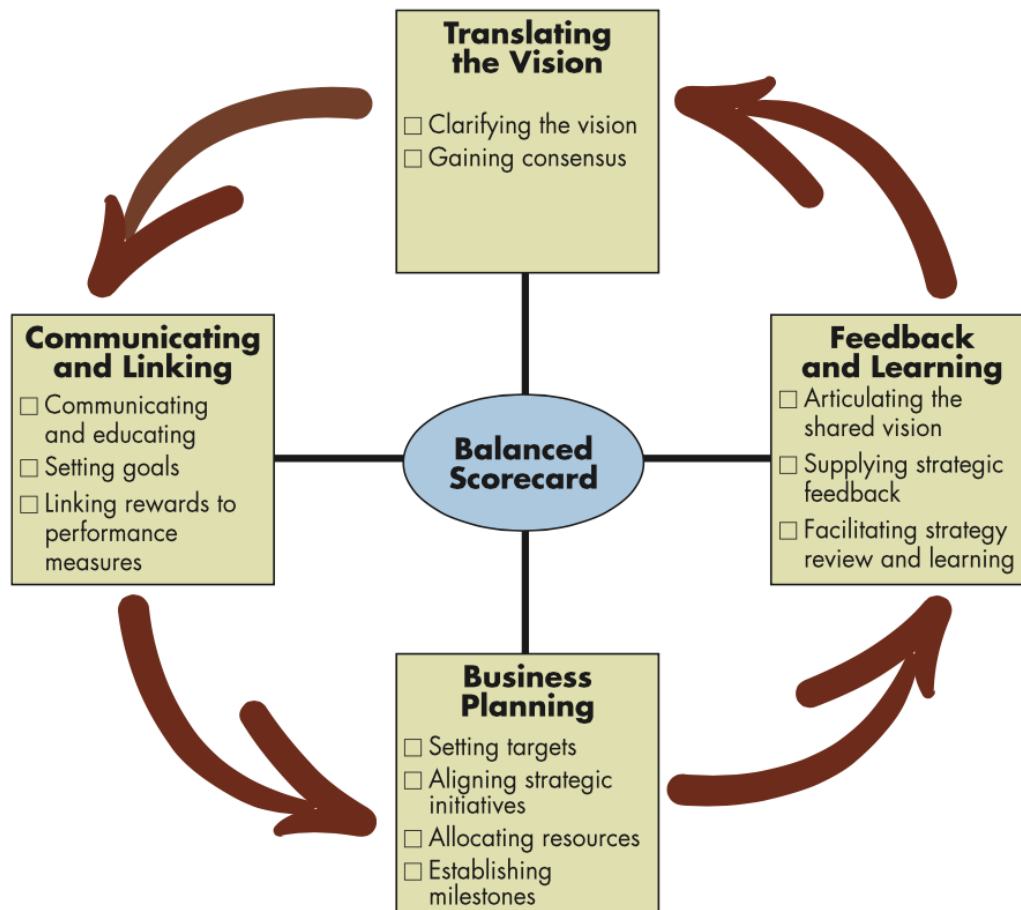


Figure 8: Processes within the balanced scorecard approach (Kaplan & Norton, 2007)

#### 2.2.4.1 Translating the vision

Many business visions are hard to grasp as they seem broad and ambitious (Chavan, 2014). E.g. becoming the number one supplier sounds great, but what does it actually mean, and which actions are necessary to take in different levels on the organizational chart? By translating the vision and strategy into an integrated set of objectives and measures, senior management can describe to employees what is expected of them, and how to reach it (Chavan, 2014; Kaplan & Norton, 2007). One approach for senior management is to categorize the organizational goals and the objectives and challenges for each category, but also agreeing on appropriate actions and targets (Chavan, 2014; Kaplan & Norton, 2007). This is illustrated in figure 9 below. When this process is finalized and agreed upon, it is time to move on to communicating the strategy and linking it to individual teams and employees. Although, before moving on, management should ensure that the challenges brought up in the previous section are treated. What is particularly important in this process are those challenges related to the design phase.

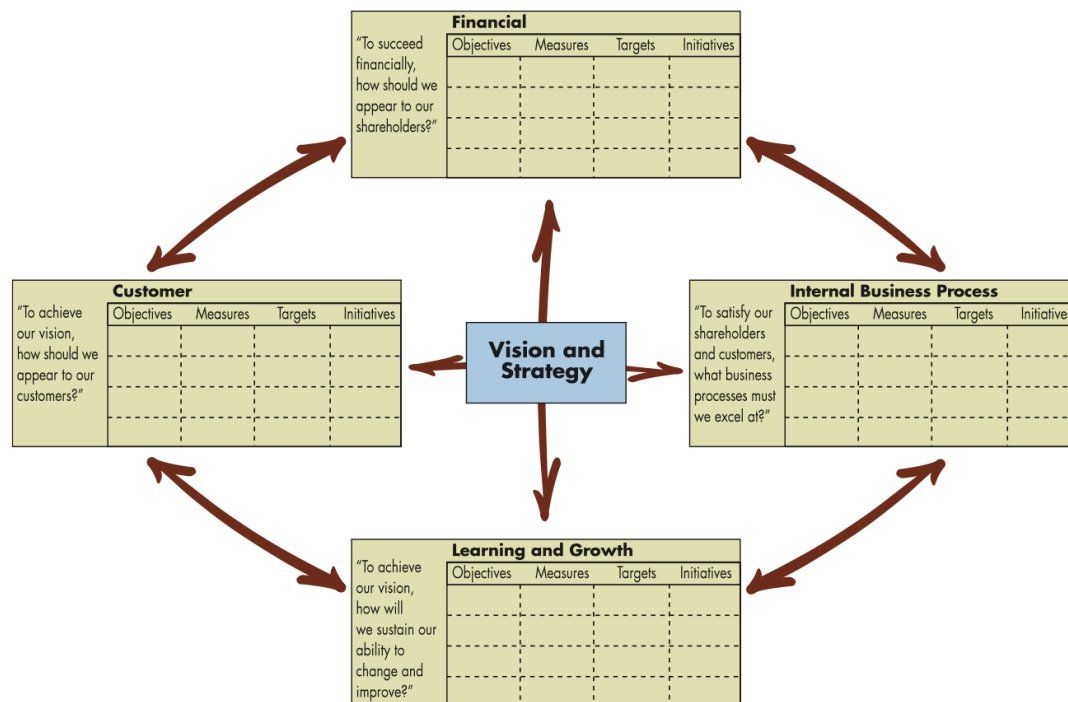


Figure 9: Translating the vision (Kaplan & Norton, 2007)

#### 2.2.4.2 Communicating and linking

After establishing appropriate objectives and metrics, it is time for implementation. This process enables management to communicate their strategy up and down the organization and link it to departmental and individual objectives (Kaplan & Norton, 2007). It is here management can ensure that all levels of the organization understand the long-term strategy and that both departmental and individual objectives are aligned with it.

For each category, in which the strategy is divided into, clear objectives and goals should be stated as well as a definition of success (Chavan, 2014). In figure 10 below, an individual scorecard is shown where the financial goals are stated on a corporate level, what metrics are measured as well as what is expected of single employees and teams (Kaplan & Norton, 2007). Providing individual employees with such scorecards enables them to act in accordance with the organization's strategy. If an organization for example wants to enhance customer satisfaction, staff must know what makes their customers satisfied; is it a lower waiting time?, or is the quality of the product, or service? Another thing to clarify is how this is measured at an organizational level, e.g. customer retention or number of new customers. All this information enables staff to make sense of the vision, strategy and goals set by top management (Chavan, 2014; Kaplan & Norton, 2007).

### Corporate Objectives

- ☐ Double our corporate value in seven years.
- ☐ Increase our earnings by an average of 20% per year.
- ☐ Achieve an internal rate of return 2% above the cost of capital.
- ☐ Increase both production and reserves by 20% in the next decade.

Corporate Targets					Scorecard Measures					Business Unit Targets					Team/Individual Objectives and Initiatives	
1995	1996	1997	1998	1999		1995	1996	1997	1998	1999						
Financial																1.
100	120	160	180	250	Earnings (in \$ millions)											
100	450	200	210	225	Net cash flow											
100	85	80	75	70	Overhead and operating expenses											2.
Operating																
100	75	73	70	64	Production costs per barrel											
100	97	93	90	82	Development costs per barrel											
100	105	108	108	110	Total annual production											3.
Team/Individual Measures										Targets						
1.																
2.																
3.																4.
4.																
5.																
Name:																5.
Location:																

Figure 10: Personal scorecard (Kaplan & Norton 2007)

This process goes hand in hand with the challenges brought up in the implementation phase in the previous section.

#### 2.2.4.3 Business planning

In this process the business and financial plans are integrated (Kaplan & Norton, 2007). Strategic priorities should be established and nonstrategic investments should be eliminated. The main purpose of this process is resource allocation to ensure that the most important strategic areas have the necessary funds. By using the scorecard as an aid, management can easily distinguish the most important areas from those that do not bring any value. By allocating resources, management indirectly sends a message to staff about what is prioritized.

#### 2.2.4.4 Feedback and learning

It is in the final process the challenge of refreshing the measurement system is addressed (Powell, 2004; Kaplan & Norton, 2007). Reviewing and evaluating how well the organization, teams and individuals perform is vital for continuous improvement. By introducing double-loop learning, the project organization can reflect upon what has functioned well, and what could be improved. This is a vital process before closing the project cycle, especially when working in a project-based environment where knowledge transfer easily is disregarded as the project organization is dissolved (Barlow & Jashapara, 1998).

## 2.2.5 Summary of challenges and success factors

Table 2: Summary of challenges and success factors

Process	Challenges	Success factors
<i>Designing the system</i>	<p>Measure and monitor relevant metrics</p> <p>Mutual definition of KPIs and good performance</p> <p>Consistent assessment of KPIs</p> <p>Translating the vision</p>	<p>KPIs must have a significant impact on some KRI. This is achieved by analysing which metrics affect the result in the specific area.</p> <p>Decide on a managerial level how each KPI is constructed and measured, as well as clarify what good performance implies.</p> <p>Decide on a managerial level how each KPI is measured and assessed to avoid interpretations.</p> <p>Agree on goals, and how staff should carry out their day-to-day work at an operational level to contribute to good results. This includes defining specific targets for individual employees and teams, and guidelines for how to reach them.</p>
<i>Implementing the system</i>	<p>Access data needed for measuring and monitoring</p> <p>Acceptance, and usage of the system throughout the whole organization</p> <p>Create a mutual understanding of how the system serves as a strategic tool</p>	<p>Proper documentation routines.</p> <p>Educate employees in how the system works, as well as clarify the purpose of the system. Commitment from CEO and senior management is needed to send a message to staff that it is important that they implement the system into their day-to-day work.</p> <p>Communicate, and link organizational goals to individual employees' every-day objectives. Set individual targets and clarify how they are related to the overall strategy. Also clarify how to properly work towards the set targets.</p>
<i>Managing the system</i>	<p>Enable management to easily collect data</p> <p>Present data properly to management to avoid interpretations and time consuming analyses</p> <p>Avoid excessive measuring</p>	<p>Educate employees in how the system works, as well as clarify the purpose of the system. Commitment from CEO and senior management is needed to send a message to staff that it is important that they implement the system into their day-to-day work.</p> <p>Create guidelines for how to present data, as well as communicate why a consistency in how data is presented reliefs management.</p> <p>Measure only those metrics with a proven impact on results. Use business planning to allocate resources to strategically important areas, and eliminate processes that do not contribute with a positive impact.</p>

<i>Refreshing the system</i>	Keep the system up to date	Eliminate out-dated, and obsolete routines. This can be done by implementing double-loop learning and reflect on why e.g. current routines, templates and metrics are used, and if there is a need for change.
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## **2.3 Enhancing continuous improvement**

This section examines how organizations can work strategically to enhance their level of continuous improvement (CI) through implementation of an idea management system, and how to measure and monitor the system. Internal benchmarking is later introduced as a tool for creating a framework within the organization with the purpose of identifying best practices.

### **2.3.1 Strategically working with continuous improvement**

Bessant and Francis (1999) define continuous improvement as “an organization-wide process of focused and sustained incremental innovation” (pp.1106). Continuous improvement is dependent on a sufficient amount of new ideas, which contribute to bringing the organization forward, and thus involves the commitment of a high proportion of the organization. One decisive factor for inspiring employees to bring forth new ideas of how to improve in their day-to-day work is the organizational culture, or more specific the attitude towards “how things are done in this organization” (Bessant & Francis, 1999). Openness from management towards new ideas and suggested improvements is essential for the process of continuous improvement to prevail. Even though some ideas might not be relevant for some reason, e.g. issues with timing or relevancy to the overall strategy, ideas must be turned down properly. To ridicule or simply turn down new ideas without any constructive feedback will hinder a cultural shift in the organization, and thus slow down the process of continuous improvement. Instead, innovative initiatives should be rewarded and encouraged even though the suggestion might not be implemented. For a cultural shift to happen, the commitment of the CEO and senior management is highly important (Bessant & Francis 1999; Kaplan & Norton, 2007; Parmenter, 2015; Powell, 2004). Since changing behaviour patterns take time to learn and institutionalize, and are hard to copy or transfer, the first step taken by management should be to share strategic goals of the business (Bessant & Francis, 1999; Kaplan & Norton, 2007). Here, management must describe how the organization approaches issues of innovation, learning and renewal (Bessant & Francis, 1999). When this step is taken, the organization can start making impactful actions towards becoming a “learning organization”.

Bessant and Francis (1999) have outlined what characterizes an organization's level of continuous improvement in table 3 below. Where many organizations face challenges is in the transition from level 2 to level 3, where the process to continuously improve is integrated in the strategy. An organization classified as level 2 is systematically working through training of staff in problem-solving and has put in place systems for managing the flow of ideas and for rewarding and recognizing employees for their innovative initiatives. At this level, the organization has laid the foundation for working towards continuous improvement strategically. Level 3 behaviour moves the process forward, and includes a clearer strategic focus by implementing a policy for how to work with incremental innovation. Such policy involves measuring and monitoring the activities that contribute to bringing the development forward, e.g. cost reducing and time saving solutions.

Table 3: Evolution of CI performance and practice. Adapted from Bessant and Francis (1999).

Level	Performance	Practice
0 = <i>No CI activity</i>	No impact from CI	Problem-solving random No formal efforts or structure Occasional bursts punctuated by inactivity and non-participation. Dominant mode of problem-solving is by specialists Short-term benefits No strategic impact
1 = <i>Trying out the ideas</i>	Minimal and local effects only Some improvements in morale and motivation	CI happens as a result of learning curve effects associated with a particular new product or process - and then fades out again Or it results from a short-term input - a training intervention, for example, - and leads to a small impact around those immediately concerned with it. These effects are often short-lived and very localized
2 = <i>Structured and systematic CI</i>	Local level effects  Measurable CI activity - e.g. number of participants, ideas produced, etc.  Measurable performance effects confined to projects  Little or no "bottom line" impact	Formal attempts to create and sustain CI  Use of a formal problem-solving process  Use of participation  Training in basic CI tools  Structured idea management system  Recognition system
3 = <i>Strategic CI</i>	Policy deployment links local and project level activity to broader strategic goals  Monitoring and measurement drives improvement on these issues which can be measured in terms of impact on "bottom line" - for example, cost reductions, quality improvements, time saving, etc.	All of the above  Formal deployment of strategic goals  Monitoring and measurement of CI against these goals
4 = <i>Autonomous innovation</i>	Strategic benefits from:  radical innovations  incremental problem-solving	Responsibility for mechanisms, timing, etc., devolved to problem-solving unit  High levels of experimentation
5 = <i>The learning organization</i>	Strategic innovation  Ability to deploy competence base to competitive advantage	Automatic capture and sharing of learning  Everyone actively involved in innovation process

### **2.3.1.1 Measure and monitor CI**

Bessant and Francis (1999) argue that a formalized monitoring and measurement system can serve as a driver for improvement. In the context of continuous improvement, the purpose of measuring is to enable, and to keep track on the pace and direction of improvement. To successfully do so, the authors claim that the implementation of such a measurement system is best carried out by those directly involved in the process of establishing how the organization works in the area of incremental innovation, i.e. continuous improvement. Just as discussed in previous sections, implementation of a measurement system needs considerable attention regarding frameworks, including which metrics to monitor (Bessant & Francis, 1999; Kaplan & Norton, 2007; Parmenter, 2015). Functions, or teams within the organization which are responsible for this process must identify and use relevant metrics to focus their improvement activities (Bessant & Francis, 1999). Otherwise they will not be able to monitor and identify the pace and direction of the improvements made. Important strategic aspects to consider are therefore which areas that are most important to improve in, and which metrics have the largest impact on the progress.

### **2.3.1.2 Manage ideas**

For an organization to be innovative, there is a need to measure the number of initiatives brought forth by employees (Parmenter, 2015). Therefore, the process of measuring and monitoring is closely connected to the systematic management of ideas. At lower levels in table 3, there often is an inconsistent flow of ideas, but at level 3 and above, Bessant and Francis argue that a much higher volume of targeted suggestions is necessary. To efficiently manage and benefit from the new ideas, there is a need for an adequate system to receive and acknowledge ideas, categorizing them and ensuring their systemic implementation. Bessant and Francis (1999) suggest that incoming ideas are divided into four categories:

- Acknowledged ideas that are not directly implementable
- Those that can be implemented directly by the suggesting individual or group
- Ideas that require additional support from specialists
- Ideas that represent major projects that might be taken forward by a larger and more specialized group

Parmenter (2015), just as Bessant and Francis (1999), argues that space and time must be set aside for an adequate amount of ideas to come forth. Beside more formal systems, daily or weekly meetings could be introduced where current problems, and ideas of how to solve them are discussed.

One important tool for organizational learning and continuous improvement is internal benchmarking (Parmenter, 2015), which is introduced below.

### **2.3.1.3 Internal benchmarking**

“To remain competitive, organizations need a high rate of internal learning. Successful organizational learning and knowledge management require internal processes to support them and a vision that values learning and knowledge” (Hyland & Beckett, 2002, pp.1). A tool, or process to identify best practice within the company is called internal benchmarking.

Internal benchmarking is used to investigate the performance level internally in the company, which could for example be performed between offices located in different regions and according to Bower (2003) with the main purpose to strive for a framework for best practice, but may also be advantageously used further for identifying strengths or weaknesses for external benchmarking and competitive comparison as noted by Mohamed (1996). One of the main purposes of internal benchmarking is to reduce the number of non-value adding activities, hence creating a more efficient business model (Mohammed, 1996). Internal benchmarking is the first step towards enabling an external benchmarking process. Before knowing how well the organization performs in a specific area, an external comparison will not be executable.

Mohamed (1996) has distinguished the major phases in the context of internal benchmarking, as are shown below in figure 11. In the preparation phase the commitment from all people involved has to be established so that necessary information for further measurement is gathered and available. This is a cornerstone and a fundamental term for enabling benchmarking as both Mohamed (1996) and Bower (2003) brings about. The process selection and process description phase that Mohamed (1996) brings about is basically what Powell (2004) calls “designing the system”, which was discussed in more detail earlier in this thesis. As previously noted, when designing the process it is of great importance to identify KPIs and KRIs (Parmenter, 2015). These must be carefully chosen in order to get the intended result of the internal benchmarking. When the indicators are decided upon, projects can be compared and analysed. Hence the information available and the selected key performance indicators to monitor and evaluate will come to play a central role in the subsequent steps of the internal benchmarking. If the correct indicators are measured, the organization should be able to distinguish which teams within the organization perform best in key areas. After the comparison is made, improvements can be carried out throughout the organization.

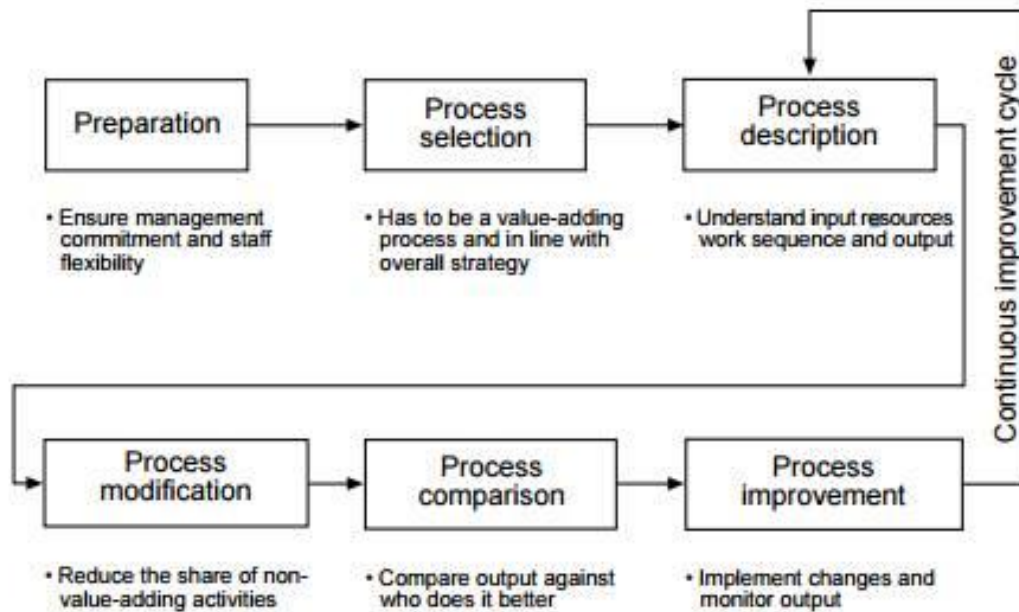


Figure 11: Main elements of internal benchmarking (Mohamed, S. 1996)

Even though internal benchmarking can be of great use for organizations, there are difficulties recognized with it. For the process of internal benchmarking to be successful and value adding to the organization demands, and consumes both time and resources. It also demands the commitment from all levels in the organization, from top management that has the authority and power to implement changes, to all the other levels that have to adapt and implement the potential changes (Mohamed, S. 1996). Therefore it is of essence that the strategy is carefully considered, not wasting any efforts. A key, according to Bower (2003) is to keep staff motivated by setting reasonable, but yet challenging goals, as well as continuously communicating results. Kaplan and Norton (2007), just as Bessant and Francis (1999) suggest that minimum threshold levels are set for each target. They further suggest that a suitable reward system is implemented, with the purpose of motivating employees to strive for reaching these targets.

### 2.3.2 Summary of challenges and success factors

Table 4: summary of challenges and success factors

Process	Challenges	Success factors
<i>Measure and monitor continuous improvement</i>	<p>Track pace and direction</p> <p>Identify strategically important areas to improve in</p>	<p>Relevant metrics must be monitored. These should be carefully chosen and give indications on where the organization is heading.</p> <p>Apply strategic business planning to identify, allocate resources to strategically important areas and eliminate processes that do not contribute with a positive impact.</p>
<i>Idea management</i>	<p>Ensure an adequate flow of ideas</p> <p>Generate strategically aligned ideas</p>	<p>Create a culture where ideas and initiatives are encouraged and recognized. By creating an openness towards ideas, a higher proportion of the organization is more likely to get involved. Set aside time for less formal discussions and meetings with focus on problem solving.</p> <p>Implement a policy for how to strategically work with continuous improvement where targets, and target areas are described and identified.</p>
<i>Internal benchmarking</i>	<p>Identify best practices within the organization</p> <p>Implement a value-adding system</p>	<p>Monitor and evaluate representative metrics for the specific area. To enable a comparison between e.g. offices, a consistency in how to document and follow up within the organizational is essential. Educate employees in how the system works, as well as clarify the purpose of the system.</p> <p>Eliminate out-dated, and obsolete routines. This can be done by implementing double-loop learning and reflect on why e.g. current routines, templates and metrics are used, and if there is a need for change. Since internal benchmarking is resource demanding, the commitment from a high proportion of the organization, as well as an understanding of the purpose is important to make the process more efficient. To ensure this, reasonable targets and rewards should be implemented to keep the level of motivation up. Management should communicate results and performance frequently.</p>

### 3 METHODOLOGY

Here, the steps taken towards conducting this thesis will be presented. This includes the observations made at Akademiska Hus through meetings, discussions and accessing their intranet, Aka Campus. Further is the interview study, and the process of analysing the empirical data described.

Regarding the methodology of the literature review, see section 1.4.

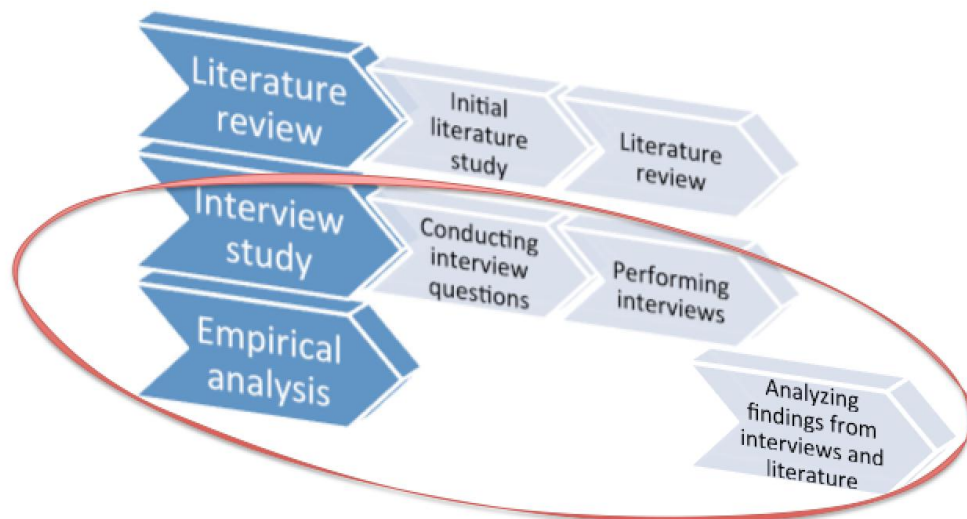


Figure 12: Overview of the process of conducting the thesis work.

#### 3.1.1 Exploring Akademiska Hus

Before introducing the interview study and the empirical analysis, it should be noted that much time has been spent at Akademiska Hus throughout the thesis work, which have resulted in several discussions, both formal and informal where valuable insights and ideas have surfaced. This was a necessary process for this thesis to prosper, and reach a point where it actually adds value to the organization. To bring forth potential ideas of tasks to take on we engaged in several brainstorming sessions and discussions and gained access to Akademiska Hus' servers and intranet to further explore their processes and project management tools. It was in this process the aim and research questions were formed.

#### 3.1.2 Interview study

The questions for the interviews were formulated and structured before the first interview, with help from our supervisors at Chalmers and Akademiska Hus. The questions were divided into two categories to cover both project and organization specific questions. The next step was to identify people with valuable insights to interview, which was done in cooperation with our supervisor at Akademiska Hus. Another important aspect to consider was to ensure a holistic view on the

organization, and thus selecting people with a geographical and occupational spread. With these factors in mind, 11 people were selected to interview, see table 5 below.

The interviews were performed in a semi-structured manner, where the researcher has prepared questions and areas to cover, but the structure might not be strictly followed (Bryman & Bell, 2011). Even though questions were prepared, they served mostly as a tool to steer the discussion, and avoid falling out of line for too long. This approach worked well since the interviewee had more knowledge than the interviewer, and could thereby deviate, and contribute with information and insights outside of the prepared framework. Although, to have some structure was of importance since the interviews were limited to one hour each.

Bryman and Bell (2011) highlight face-to-face interaction as an important factor in qualitative research. It allows for a discussion without any delay between questions and answers, resulting in more spontaneous answers, without an extended reflection. Therefore, the interviews were performed through physical meetings or videoconferences.

Each interview was voice recorded, and later transcribed to minimize the risk of making interpretations, or neglect valuable information.

Table 5: Interview scheme

<b>Date</b>	<b>Position</b>	<b>Region</b>
2016-04-14	Project Manager	A
2016-04-26	Project Manager	C
2016-05-02	Construction Manager	D
2016-05-12	Project Manager	A
2016-05-13	Procurement Manager	A
2016-05-17	Building Technology Advisor	B
2016-05-19	Project Coordinator	E
2016-05-20	Head of project management	A
2016-05-25	Head of project management	F
2016-05-30	Vice President	B
2016-05-31	Regional Director	A



### **3.1.3 Empirical analysis**

In the analysis, the findings are interrogated, critically appraised, and extended by bringing them into context with relevant literature (Bryman & Bell, 2011). To enable such an analysis considering the large amount of data, a framework was necessary. This framework consisted of the summaries in section 2.1.5, 2.2.5, 2.3.3, and table 3. The summaries and table 3 describe in theory how organizations successfully work to reach good results in their respective area, as well as highlight what is needed for the organization to control, and ensure a sufficient pace of continuous improvement. With this framework in place, the interview data could be interpreted, and categorized to fit under some of the main areas in section 2.1.5, 2.2.5, 2.3.3.

When the data had been sorted, the next step was to ensure that all data needed for the analysis had been gathered, and that all interview questions had been answered properly. If something was missing, follow up questions were asked with the purpose of minimizing interpretations and assumptions (Bryman & Bell, 2011). The result of this process was an overview, and an understanding of how Akademiska Hus works and perceives the areas of interest. It also contributed with an understanding of where the organization is at its current state regarding continuous learning and improvement. This understanding was vital for the final process, in which an analysis was performed to answer what is needed of the organization to enable, and reach a higher level of continuous learning and improvement.

In this final step, Akademiska Hus was assessed in the area of CI – by using table 3 to identify on which level the organization is at the given time. The analysis was concluded by highlighting areas in where Akademiska Hus performs well, and suggestions on how to reach further in areas where improvements are necessary.

## 4 FINDINGS

This section will further bring about findings based on observations, organizational documents and the 11 interviews held with people of different roles in different geographically positioned regions within the organization. This includes a description of Akademiska Hus's (AH's) business models, strategies, and relevant formal organizational elements and a compilation of data from the interview study. Extensive focus has been given to collect empirical data that helps, and enables to distinguish the organization's level of innovation. To enable such assessment, Bessant and Franci's (1999) framework for classifying organization's level of continuous improvement (CI) capability was applied.

The assessment indicated that the characteristics of AH's CI capability almost exclusively corresponds to level 2, "Structured and systematic continuous improvement" respectively level 3, "Strategic continuous improvement". Therefore the findings from the research will be brought up in context of these levels.

### 4.1 Exploring Akademiska Hus

Akademiska Hus is a state owned company, who describes themselves as a proactive partner with an extensive focus on establishing long-term relationships with the intended customers by strategically putting emphasis on extended close collaboration. What their business actual brings about is further expressed in the mission statement: "The mission of Akademiska Hus is to own, develop and manage properties for universities and colleges, with a primary focus on education and research activities. The company's operations shall be carried out in a business-like manner and yield competitive profits by adapting our rents to the company's business risk. Akademiska Hus shall work to promote a sustainable long-term development of university and college campuses" (Akademiska Hus, 2014).

AH consists of six regions, which report to the head quarters in Gothenburg. With its approximately 400 employees and a net worth of above 60 billion SEK (Akademiska Hus, 2016), it ranks as the second largest real estate company in Sweden (Fastighetsvarlden, 2015). For such large organizations to operate efficiently demands for clear objectives, comprehensive business strategies and proficient communication lines, but also consistency throughout the organization. The latter is an area in which AH aims to improve, and has done so for some time. The first step towards creating consistency within the organization was to merge the regions, which until 2013 performed as individual companies. However, the interview study revealed that there still is a discrepancy in job titles, processes, work procedures and the overall work environment amongst regions. Management has for some time tried to address, and counteract this issue, but without sufficient success. Therefore, it was announced in early 2016 that AH will go through an organizational restructuring.

The following sections will bring about the strategies, related to the thesis subject, that come with this restructuring and which lay the foundation to create an

improved, united Akademiska Hus. These strategy documents will be put into context with the empirical data gathered via the interview study to create an understanding of how well actual practice corresponds to strategic directives.

## 4.2 Innovation in Akademiska Hus

This section will bring about how AH is managing innovation strategically. The newly developed internal innovation strategy will be emphasized, as it is planned to be implemented into the organization's innovation management and work procedures in the near future.

AH can be recognized as highly innovation oriented due to the clearly stated vision and goals they bring about in their official description, which describes their "aim to reinforce Sweden as a nation of knowledge" by "building, developing and managing environments for education, research and innovation" (Akademiska Hus, 2016). They spend a big amount of resources to establish an innovation friendly environment with room for new inventions and implementation of innovations. Although there is such extensive focus on innovation in terms of new inventions and use of pioneering products and technology, tendencies of absence of innovation in terms of continuous improvements and small changes in internal processes and systems have been shown, as we will further bring up and account for later.

Formal guidelines in the form of organizational documents stating how AH is supposed to approach innovation development and innovation management has been produced as late as 2015. With the intended purpose to boost both radical innovation as well as incremental innovation in the organization, in the sense of involving and creating space for new technology in collaboration with universities and research as well as focus on developing and improving internal work procedures, processes and systems. Regarding the latter, AH's innovation strategy brings about the essence of continuous improvements in work procedures and the organizational structure to create a learning organization with an innovation friendly organizational culture. They further refer to continuous improvements in practice to be dealt with and handled in different forums.

According to the innovation strategy "Innovationsstrategi 20150615", AH's innovation process comprises five different phases accordingly;

- (1) Identify challenges and create goals/visions.
- (2) Generate ideas.
- (3) Perform development- and research projects.
- (4) Evaluate the projects.
- (5) Standardize developed solutions.

The first phase simply entails formulation of challenges and setting goals regarding the innovation areas that will be focused in the project. Further the second phase about generating ideas require, as stated, a high level of communication between involved actors. Internally there is already forums where there is room to express and share ideas, however it arguably requires a structured process to make it efficient. The third and fourth phases state the importance of taking part in projects with quality over quantity in mind, and further the demands of following up and documenting the projects in a structured way. After project delivery AH's strategy

also entails always spreading achieved experiences within the organization, and also externally if suitable. The final phase brings about standardization of developed technology and solutions.

#### **4.2.1 AH's perception of partnering**

As this thesis enlightens close collaboration forms and partnering as contract strategy, since AH is adapting majority of their projects in most regions to go under a partnering approach, it is of essence to clarify what close collaboration brings about in AH's organization and projects. Due to the concept of partnering lacks a mutual consensus as brought up earlier. Derived from interviews with several project managers in coherence with reviewed documentation it can be concluded that partnering has propagated in the organizational structure in AH, and might be regarded as a standardized approach in some regions that necessitates partnering. But why is it so, why has partnering developed into something considered fundamental for AH's organization?

The majority of interviewees refer partnering as a successful strategy, however there has not been performed any measuring in partnering projects in terms of comparing the results and success criteria to more traditional contracting. Hence the interviewees' perception of partnering bringing good results is based on the general feeling and perceived comfort working in such project organizations, rather than results in terms of tangible evidence. From the employees' point of view partnering is considered to contribute with a healthy organizational culture and positive attitudes in projects between involved actors regarding responsibilities and delivering results that cope with the common set vision and goals initially agreed upon.

Partnering is further argued as crucial for the organization to stay competitive since the external demand from mainly contractors is at a high level, in some regions more than others. It is however, based on project managers' experiences from previous projects much easier to make changes in agreements and solve conflicts when partnering is involved in the contract strategy. The shared responsibilities and the availability of expertise in the designing phases are perceived to benefit in terms of both cost and time in actual projects, thus this might be the case in majority of the performed projects, there is as we stated lack of tangible evidence recorded in the form of any empirical data. Hence it is hard to conclude what aspects partnering brings good results to. One project manager acknowledged this issue and provided an idea on how to measure some factors in partnering and compare the cost savings to more traditional contract strategies, whereas the idea entails comparing variation costs in comparison to costs for including the contractor in the early phases of the project, hence a comparative study may be established where actual costs are compared and resulting in tangible evidence for the success of partnering in projects from one perspective. Furthermore several project managers like to see partnering as a comfortable approach and are in general positive towards the concept, while top management do not necessarily share the feeling about partnering collaborations, since it is also a question about being as cost effective as possible,

and as the vice president mentioned, the only measurable numbers that are available currently is the profit margins from partnering some contractors share officially, which tend to indicate that contractors benefit a great deal from partnering contracts. Without any structured measurements from AH's perspective, it is difficult to know if this approach is the most cost efficient way of procuring, or if partnering is an expensive approach for AH as a client.

#### **4.2.1.1 Incremental and system innovation**

There seems to be an extensive focus on radical innovation and much less focus on incremental innovation that permeates the organization, where the employees tend to put emphasis on new technology and big changes in products or delivery methods when innovation is discussed. However we suggest that incremental innovation is extensively taking place continuously within AH, we further believe there is issues regarding awareness and acknowledging the essence of small improvements and continuous development of incremental innovation. It emerges from the interviews that some incremental innovation is not considered as value-adding, a source of knowledge or used in the context of experience feedback. Some of the interviewed project managers argue that due to the unique characteristics in projects, there is little to no use of focusing on solutions and development of processes in prior performed projects, since they would not be applicable in a new project with different characteristics. Further this can be related to system innovation brought up in chapter 2.1.3.2, whereas this innovation form is considered as quite usual in construction due to the unique characteristics and the need for adapting improvement works and solutions from one project to another project in a complex environment. Hence a conflict can be identified between AH's method towards experience feedback and incremental innovation between projects and suggested line of attack presented in literature. This is also true for the general feeling amongst the interviewees' as they mention experience feedback and knowledge transfer as a weak point in the organization with need of improvements for sufficient feedback and learning to exist.

AH is considered by the interviewees to be open-minded and has a positive attitude towards improvement works and encourage it to a high level. There are several pilot projects where employees of various job titles and roles within the company have been suggesting changes in processes or goals in projects which in these cases have been approved and tried out. E.g. one of the interviewee mentioned implementation of social responsibility for sustainable future in an on-going project, which would mean involvement of e.g. promoting refugees to be employed and work in the projects for instance. This is one example that points out to what extent resources are invested on developing the internal business. It is clear that this has emerged recently, and the innovation thinking in terms of improving internal processes and approaches is under development, whereas there are an upcoming innovation group with people from top management engaged in the group and processes.

It can be concluded that improvements of internal processes and systems goes with the restructuring of the organization and are currently in focus with a lot of

resources invested in these improvements, making it an innovation friendly environment. However as this area is greatly pacing up, there is arguably important parameters that may be missed out or even neglected to keep the pace up. We believe that the most significant issue is the lack of focus on the organizational culture, and underlying resistance with the workforce.

There have been several frameworks and guidelines both in terms of informal as well as formal documents to steer the organization to work in a more common fashion and to manage innovation and changes properly, however the implementation and effort to adapt these guidelines in the everyday-work have arguably failed according to top management. It is difficult to address this as either unawareness or lack of knowledge regarding innovation management, or if it is more a question of neglecting some parts in an effort to streamline and take shortcuts on a project management level. In addition, one contributing factor could also be lack of personnel training in internal systems and tools since there is a lack of consensus regarding the use and purpose of different tools. E.g. "Teknikplattformen" is mentioned by several interviewees as a platform that could be utilized to spread incremental innovation as continuous improvements, while some regard its purpose to treat more technical aspects, as it also states in the organizational documents. According to strategies and guidelines in written, another instance is available to handle internal continuous improvements called "Aka Ärende", where anyone can express their personal ideas and share experiences. This forum is mentioned by some interviewees but it seems like it has not been utilized to its full potential, with only some people using it and not on a continuous basis.

Another issue concluded from the interviews is the lack of communication between the departments. It is reasonable to assume that the organizational structure and line management is a contributing factor to this, since all regions still act as individual companies to some extent, due to each and every region have their own line management. This is as the vice president states about to change with the restructuring of the organization. The main issue with absence of communication across departments in terms of continuous improvements is the lack of knowledge transfer and experience exchange, there are however meetings once or twice a year with all project managers from the different regions with purpose to enable knowledge transfer, however it is considered too few meetings and too little time to efficiently establish a sufficient exchange of knowledge and experiences according to the interviewed project managers. Hence the forum and systems available would act as a compliment to these meetings, but as we mentioned, are not utilized too its full potential, why there is a perceived absence of collaboration between departments.

#### **4.2.1.2 Innovation drivers and capacity**

There is a mutual perceived understanding of the main sources AH have as basis for continuously improving, based on the interviewees in the organization. They mention both external pressure in appearance of customer demands and market related pressure as one innovation driver. Further, there seems to exist an extensive internal focus on being an innovative organization since there is much emphasis on

developing frameworks, guidelines and streamlining the project approaches to be able to achieve the organizational goals. An example brought up in several interviews is the sustainable building and environment goals AH strive to achieve. Such an internal driver can be related to what Bossink (2004) refers to as technological capability, whereas technological capability entails an organization's ability to develop and implement new technology or small changes in e.g. processes. Furthermore the external pressure and technological capability clearly exists in AH. However, Bossink suggest two more major categories of innovation drivers in construction to be considered, the knowledge flow and learning capabilities and boundary spanning which to some extent seems absent in AH. The knowledge flow and learning capabilities is touched upon in a couple of the interviews, whereas in these cases the interviewees agree on an absence of a function treating research and development systems, and gathering information regarding improvements and small changes made. There is however implemented systems for communication, but according to one of the interviewed project managers, these systems are not used to its full potential, and thus not engaging all personnel in the innovation process, resulting in a loss of potential ideas. Again, there is a conflict from literature and the interviewees' perception of using previous knowledge and experiences from prior projects and apply it to new projects. In contrast to Bossink (2004), who stresses the importance of utilizing achieved ideas and experiences to learn from, the interviewees' general perception is that information from prior projects that can be applied to future projects is difficult to acquire due to the unique nature of their projects, and thus derive difficulties to properly manage experience transfer.

In terms of creating space and motivation to develop work processes and strategies there is a pervading perception of AH holding this capacity. All employees interviewed have a mutual feeling of individually being able to express and share new ideas amongst each other. However, although they perceive that there is room for new thinking and development, AH seems to lack consensus regarding how to manage incremental innovation, as mentioned earlier, there are guidelines and frameworks to steer this process, but the implementation and actual use of such systems is not integrated in the processes.



### **4.3 Performance measurement in Akademiska Hus**

The document “AH Strategi 2013-2025” describes how Akademiska Hus will address their issues with inconsistencies within the organization. Included in this document is a plan for how performance measurement could be used to enable an internal benchmarking, and thus identify best practices within the organization. This is a key for the organization to increase their level of continuous improvement. In this document, it is stated that such a performance measurement system was to be implemented in the summer of 2014. However, one interviewee revealed that only one in nine projects has sufficient documentation in key areas to perform an internal benchmarking. The system sounds promising as it addresses many of the challenges identified in the literature review. But just as is mentioned in the document, generating a strategy on a managerial level is not the most difficult part; the key challenge to overcome is achieving a prevailing acceptance for the system throughout the whole organization. In the following section, the intended system design, implementation strategy and how to manage and refresh the system will be described. The intended practices will be put into context with how the system is used at an operational level, based on the information gathered via the interview study and accessed IT-tools.

#### **4.3.1 System design**

The main intention with the measurement system is to enhance internal processes by enabling an internal benchmarking process. This requires frameworks for documentation, but also ownership and accountability for each key area. The strategy document, just as the literature review reveals that relevant performance metrics, representative for each key area must be established. Although strategically important areas have been identified, the needed metrics to follow up on seem to be absent in some areas. This could be due to the common confusion highlighted by Parmenter (2015) – where result indicators are mistakenly perceived as performance indicators. The interview study further revealed that much focus is given to results, which cannot affect future events, but rather confirms, or indicates the compiled result of a set of actions. When sharing this impression with the vice president, he agreed that AH could benefit from breaking down their key areas even further, and thus perform a more thorough analysis of how to improve. For example, the compiled costs related to reworks could be divided into costs due to faulty, or improper information in drawings, or simply be a consequence of poor execution by the contractor. By identifying which one of these two corresponds to the largest part of the cost, an analysis of underlying reasons could be performed, and thus avoid similar errors to occur in future projects. So, in this example the compiled cost is a result indicator, while the cost related to the design phase respectively the construction phase are performance metrics.

As mentioned in the introductory part of this section, Akademiska Hus strives to create coherent work procedures and mutually agreed, and understood goals. According to one interviewee, the process towards achieving such a homogeneous culture has progressed to the state where employees have individual targets in key

areas, and work descriptions of how to perform their daily work to reach these objectives. This way of involving individual employees to strategically contribute to reaching the organizational goals is identical to what Kaplan and Norton (2007) define as working with “personal scorecards”. However, it should be noted that this systematic process of involving operative staff solely was brought up to context by one interviewee. According to vice president, this sophisticated way of working is not something that pervades within the organization at the given time, even though he agreed on the benefits it could contribute with to the organization. If personal scorecards were to be embraced within the organization, management must first ensure to clearly state individual targets in strategically important areas, as well as defining what good performance entails.

#### **4.3.2 Implementation – how is the system used?**

The need for performance measurement is repeatedly mentioned as one of the key components to reach the targets defined in “AH Strategi 2013-2025”. The document states that Akademiska Hus must improve their overall performance drastically before 2017.

The interview study, in combination with access to key figures through Aka Campus indicates that AH have well-established tools to track and monitor costs, energy consumption and environmental factors. Although, regarding measurement of other factors, such as quality or continuous improvement there seems to be an absence of proper documentation, and inadequate measurement routines. But why is it so? The interview study indicates that the clearly communicated energy consumption targets have been accepted throughout the organization, and to measure and monitor factors related to this area seems to go unopposed. Although, when discussing measurement of e.g. quality, the interviewees generally perceive this as excessive, and thus not contributing enough compared to the extra documentation that derives with the process. There also is a general perception amongst the interviewees that construction projects are too unique to compare with each other. So, to conclude this topic – when understanding the intention of the KPI, employees seem to align with the imposed process, regardless of the extra documentation, just as is described in the work of Kaplan and Norton (2007) mentioned earlier in this thesis. However, interviewees higher in the hierarchy seem to perceive the organizational culture as a hindrance to measurement related procedures. This claim is somehow supported in “AH Strategi 2013-2025”, in which cultural change is presented as a key for improvement. We will not analyse this dilemma any further, but it is important to address this issue in order to create a value-adding system that is accepted and used throughout the organization.

#### **4.3.3 Managing and refreshing the system**

When it comes to managing the measurement system, a key is to easily access data from projects (Kaplan & Norton, 2007; Parmenter, 2015; Powell, 2004). However, several interviewees claim that there are no clear directives or routines of how to document project data. This is a contributing factor to why internal benchmarking cannot be performed at the given time. Aka Projekt has been developed recent years

as a counter measure to these inconsistent documentation procedures. This is an IT-tool where project data is supposed to be stored in a predetermined manner, but the acceptance and implementation seem to have progressed to various extents between regions, but also between individual employees. There are however intentions to make documentation procedures clearer, with the hope of creating consistency. One step towards this is to reduce the amount of frameworks, standards and routines for how to perform various tasks within the organization. The vice president stated that such documents compile into an equivalent of 30(!) binders, which is too much for employees to take in and apply to their work.

One of the success factors highlighted in the literature review is to educate employees in the system (Aka Project). This includes enabling employees to see the intentions with the system, as well as creating an understanding for how consistent routines throughout the organization relief management. To gain further acceptance of the system, communication of the intentions with the system should be emphasised.

To eliminate obsolete routines and documents, as is currently being performed is of great importance in terms of refreshing the system (Powell, 2004). Although, in the "AH Strategi 2013-2025", it is stated that employees should decide on new KPIs together with the customers. To reduce the number of routines, but to increase the amount of KPIs seem to be in conflict with each other. Measurement of KPIs should be decided on at a managerial level, where one intention is to send a message, and clarify to employees which areas are of strategic importance (Kaplan & Norton, 2007; Parmenter, 2015). The literature further states that for a performance metric to be considered as key, it must be important enough for management to monitor frequently. From introducing new "KPIs" arises the risk of not being able to measure and monitor consistently throughout the organization.

#### **4.3.4 Idea management**

As already touched upon, to enhance AH's capability to continuously develop, learn and improve is of particular interest. The willingness to improve is an attitude permeating the organization on multiple levels. Several interviewees working at a project level seem to be of the impression that sharing knowledge and ideas is best left for those actively working in projects, and management should not try to dictate how ideas are managed in detail. However, they do believe that the forums used for knowledge sharing are good complements to the more informal meetings and discussions carried out on a regular basis within each region, and seem to have a uniform opinion that these formal forums should meet more frequent than what they currently do. In these forums, employees with similar titles from all regions get together and discuss current issues, and potential solutions, which later are documented. A lot of ideas are generated within the organization, but there seems to be an ambiguity of how to spread them. Several interviewees bring up Teknikplattformen as a tool for spreading various ideas. But according to the person responsible for the platform, this interpretation of how it is, and should be used is not supported. Teknikplattformen is rather a tool to gather and spread technical,

construction specific solutions, and not at all about ideas of how to improve e.g. internal processes. For ideas connected to the latter there is another IT-tool called Aka Ärende. In this system employees can bring forth ideas of how to improve in certain areas. However, only one interviewee brought Aka Ärende into context during the interview study.

How to manage ideas in detail is not found in any strategy document examined. This could be one of the reasons for why the intentions of various tools are interpreted – there are no clear guidelines. Even though business planning is in place, including identifying strategically important areas, we, just as Bessant and Francis (1999) believe that there is a risk of not capitalizing on employees' ideas and full potential without a systematic approach for managing ideas. A reintroduction and further development of Aka Ärende is a potential contributor to improve in the area of idea management.

As already mentioned, engaging employees in strategic goals can serve as a great contributor to increase the pace of CI. What was noted in the literature review as an important system for this was the one related to reward and recognition – how are good ideas rewarded, and how is the employee recognized? From the interview study it is concluded that there are not formal, structured system for this. It is more or less up to the employee's manager to notice initiatives.

It is apparent that AH has performed countless efforts in bringing the organization forward. Many of these efforts have been brought up and discussed in previous sections. However, what is brought into context in this section gives to show that there still is work to be done to include a higher proportion of the organization into the process to improve and develop. The necessary strategies, IT-tools, competences and knowledge amongst personnel are in place to do so, but they need to get synchronized.

## 5 DISCUSSION

In this chapter the two research questions will be answered through an analysis of the findings from the literature review and the empirical data.

*How can Akademiska Hus work strategically on an organizational level to increase their capability to continuously improve?*

*What effects do collaborative projects have on continuous improvements and innovation?*

### 5.1 How to increase continuous improvement at Akademiska Hus

In this section, the findings are interrogated, critically appraised, and extended by bringing them into context with relevant literature, as suggested by Bryman and Bell (2011).

Concluded from the findings in the interview study and observations made in the company, we suggest that Akademiska Hus clearly is an organization going under development and learning when it comes to innovation management and continuous improvement. This is also true for the model presented by Bessant and Francis (1999), since the organization has an obvious focus on continuous improvements and the benefits structured and systems of continuous improvements might bring about. There are however several issues identified in the transition from level 2 to level 3 and even more so to higher levels of continuous improvements. There is a lot of potential within the organization, but it seems like some aspects that are of essence in achieving higher levels of CI are neglected.

To assess Akademiska Hus in the terms of continuous improvement, table 3, adapted from Bessant and Francis (1999) was used. The analysis is concluded by highlighting areas in where Akademiska Hus performs well, and suggestions on how to reach further in areas where improvements are necessary.

#### 5.1.1 Structured and systematic CI – level 2

From the findings it can be concluded that Akademiska Hus exceeds the prerequisites for both level 0 and level 1. However, there are some missing characteristics of level 2 behaviour (see table 6) to improve in before meeting the requirements.

The prerequisites that are basis for our reasoning of placing AH in the transition between level 2 and 3 in the model is based on findings in interviews, formal documents and informal observations. We have been able to conclude that there are attempts in the organization to steer processes and work approaches to create and enhance continuous improvements. There have been developed and established frameworks and guidelines that arguably would support improvements in theory. The major issue to be addressed in this sense seems to be the implementation and

the occurring disparity between departments as well as internally within departments on an individual level.

Table 6: Characteristics of level 2 CI behaviour. Adapted from Bessant and Francis (1999).

Level	Performance	Practice
2 = Structured and systematic CI	Local level effects  Measurable CI activity - e.g. number of participants, ideas produced, etc.  Measurable performance effects confined to projects  Little or no ``bottom line" impact	Formal attempts to create and sustain CI  Use of a formal problem-solving process  Use of participation  Training in basic CI tools  Structured idea management system  Recognition system

Local level effects, and to create as well as to sustain continuous improvement through formal attempts are in place. These can be identified in the form of e.g. regular office meetings as performed each Friday in Region Norr, where project managers discuss current projects, or in the form of various forums that discuss current issues in their respective field. These processes can be considered as formal problem-solving processes, and thus fulfilling further one prerequisite required at level 2 behaviour.

There are however difficulties, and a perceived reluctance to share and take part of others knowledge and experiences, mostly between different departments across regions, but also on an individual level according to our observations. This could be due to the fact that each and every regional department was acting as individual companies till just recent years when they were merged into one organization, but it could also be due to the organizational culture, as there has been some reluctance to establish proper documentation identified in some cases for instance. It is reasonable to assume that the old use of working individually in the fashion AH have been doing during many years has set footprints in the organization where the competitive mindset for instance will require time and effort to change (Kaplan & Norton, 2007). In addition, the competitive mindset and maybe even pride in their work and departments results have prolonged and permeates some of the regions, and further hampers the learning and knowledge transfer. With this said, AH has some issues to address in order to reach further than solely local effects of CI. The cultural obstacles observed, which also are brought to attention in the document "AH Strategi 2013-2025" hampers, or limits the possibility of gaining bottom line impact to a larger degree.

Ideas are something that flourishes in AH according to majority of the interviewees, and there are indeed individual thoughts and ideas within the company. The big challenge is to create a structured approach to efficiently gather and sort all ideas. As brought up in the literature, Bessant and Francis (1999) suggest the need for an adequate system to efficiently manage and benefit from ideas. Further AH's innovation strategy presented in the findings touched upon the importance of such a systematic approach to benefit from ideas and utilize idea management. However, there is no formal system that is consistently used in the daily work. Previous mentioned tools such as Teknikplattformen and Aka-Ärende are intended to function as idea generating and idea spreading tools. But due to information and training on how to properly manage ideas within the organization, they are not used consistently, which rather cause confusing amongst employees. Further parallels could also arguably be drawn between the organizational culture and reluctance to share and learn from each other as mentioned before. It is difficult to distinguish which cause that is the underlying reason for the inconsistent use of the idea management tools available, lack of information and training reaching out to personnel, reluctance to share and learn due to the pervading competitive mindset that might prolong, or a combination. However we think that a clear structure for idea management is necessary for the organization to further improve efficiently, including to decide upon how ideas might be categorized, in e.g. the fashion Bessant and Francis suggest:

- Acknowledged ideas that are not directly implementable
- Those that can be implemented directly by the suggesting individual or group
- Ideas that require additional support from specialists
- Ideas that represent major projects that might be taken forward by a larger and more specialized group

The persisting underlying will of performing individually, disconnected from other departments might either be considered as failing in use of participation or lack of training in continuous improvement tools. Tendencies in interviews rather point on majority of the workforce having a positive attitude to strive for a mutual way of working, which would mean that lack of training or lack of sufficient tools and steering systems/guidelines are the main challenge regarding the organizational culture, as employees do not have the proper information or knowledge about tools and systems for managing continuous improvements, although they have a basic training in how to use e.g. Teknikplattformen as brought up in the previous findings. There is however two sides of a coin, not everyone sees the strive for a shared project process and adapting to work in a mutual fashion as something positive, as a couple of managers and also parts of the top management expresses, which would mean that there are reluctance to changes within parts of the workforce in AH. A potential countermeasure to rid ambiguity, and to aid striving towards a learning organization is to implement a reward and recognition system. To encourage and recognize employees' efforts to contribute to improvement is currently under the responsibility of each respective manager. If there were to be a clear correlation between contribution and reward, employees might be more eager to bring forth new ideas. But, for this to function properly, ideas must be targeted to strategically

important areas (Bessant & Francis, 1999; Kaplan and Norton, 2007). One way of clarifying which areas are of particular interest is to implement personal scorecards, where individual targets are specified.

Even though several aspects to improve in are brought up to context, the reality is that AH has the needed tools, strategies and competent personnel to improve the organization. The most important step towards passing level 2 behaviour is to make use of all these available resources, and to strategically synchronize them into a consistent, mutually agreed and understood approach to take on the task. To enable this, management has a big responsibility to communicate what is needed of each employee, but employees must also take accountability for the organization's overall goals.

Table 7 concludes and summarizes what requirements of level 2 AH currently possesses, and where improvements are necessary.

Table 7: Akademiska Hus' progress to level 2. Adapted from Bessant and Francis (1999).

Level	Performance		Practice	
2 = Structured and systematic CI	Local level effects	✓	Formal attempts to create and sustain CI	✓
	Measurable CI activity - e.g. number of participants, ideas produced, etc.	✓/x	Use of a formal problem-solving process	✓
			Use of participation	✓/x
	Measurable performance effects confined to projects	✓/x	Training in basic CI tools	✓
	Little or no "bottom line" impact	✓	Structured idea management system	x
			Recognition system	x

✓=fulfilled, ✓/x = in progress, x = not fulfilled



### 5.1.2 Strategic CI – level 3

In the level 3, the organization has taken a step forward and aligned their efforts of CI with their business strategies. A key in fulfilling the requirements of level 3, or strategic CI is to measure and monitor the progress.

Table 8: Characteristics of level 3 CI behaviour. Adapted from Bessant and Francis (1999).

Level	Performance	Practice
3 = <i>Strategic CI</i>	Policy deployment links local and project level activity to broader strategic goals  Monitoring and measurement drives improvement on these issues which can be measured in terms of impact on ``bottom line" - for example, cost reductions, quality improvements, time saving, etc.	All of the above  Formal deployment of strategic goals  Monitoring and measurement of CI against these goals

Ambitions are at a high level in context of CI and there are developed goals supporting AH's high ambitions. Between years 2013-2015 AH had goals to develop and implement necessary systems and processes, which in AH's case would be Aka-Projekt with complimentary tools as Teknikplattformen and Aka-Ärende with the purpose to enhance the work procedures and enable sufficient project documentation. The systems have both been developed and implemented in recent years according to the set goals, but there are however still disparities in the actual practice amongst the employees. And although implementation of the systems has been performed, absence of measurement and monitoring the goals cause issues vital for the benefit of the organization. We suggest that there are strategic goals set and fulfilled to some extent, but there is an extensive lack of controlling and monitoring these goals in the work process. The goals need to be implemented, measured and monitored in the actual work within the organization, which clearly is not the case as now. As we been discussing earlier, there is a perceived disparity emerged from the interviews in how the individual employees are supposed to work. There seems to be a lack of formally stated expectations on an individual level, hence no control of how actual work is performed, which will further be necessary to achieve strategic continuous improvement.

Table 9 concludes and summarizes what requirements of level 3 AH currently possesses, and where improvements are necessary.

Table 9: Akademiska Hus' progress to level 2 Adapted from Bessant and Francis (1999).

Level	Performance		Practice	
3 = <i>Strategic CI</i>	Policy deployment links local and project level activity to broader strategic goals	✓/x	All of the above	x
	Monitoring and measurement drives improvement on these issues which can be measured in terms of impact on "bottom line" - for example, cost reductions, quality improvements, time saving, etc.	x	Formal deployment of strategic goals	✓/x
			Monitoring and measurement of CI against these goals	x

✓=fulfilled, ✓/x = in progress, x = not fulfilled

### 5.1.3 Autonomous innovation – level 4

Table 10 indicates what is needed of an organization to fulfil what Bessant and Francis (1999) classify as autonomous innovation.

Table 10: Characteristics of level 4 CI behaviour. Adapted from Bessant and Francis (1999).

Level	Performance	Practice
4 = <i>Autonomous innovation</i>	Strategic benefits from:	Responsibility for mechanisms, timing, etc., devolved to problem-solving unit
	radical innovations	
	incremental problem-solving	High levels of experimentation

To take it one step further, AH arguably got some potential that according to the model would fit in the higher levels of continuous improvement. There are a lot of resources available to promote a high level of experimentation, whereas AH is applying different innovation groups to work with developing and implementing new inventions in upcoming projects. The focus is almost solely towards radical innovation in this context, but with implementation of these groups and new inventions, it is likely to bring about incremental innovation as work procedures and processes would have to adapt accordingly.

AH has just recently deployed an innovation group, responsible for the overall radical innovation in the organization. With the deployment of this group derives possibilities to strategically benefit from new radical innovations, as well as existing innovations already implemented in buildings. The interviewee responsible for this group gave the example of how breathers in ceilings which are open or closed depending on heat and air quality can be used to measure the activity in e.g. classrooms. This could aid when mapping how existing buildings are used in practice, with the purpose of gaining insights in how to add value to customers by adapting to their routines. This idea corresponds to what we have been searching for; monitoring and measuring factors which can be strategically exploited. This type of

thinking should be shared throughout the organization to make people realize the benefits measurement of strategically exploitable metrics can contribute with. However, a similar group responsible for incremental innovation has not been identified.

Table 11 concludes and summarizes what requirements of level 4 AH currently possesses, and where improvements are necessary.

Table 11: Akademiska Hus' progress towards level 4 Adapted from Bessant and Francis (1999).

Level	Performance		Practice	
4 = <i>Autonomous innovation</i>	Strategic benefits from: radical innovations	✓	Responsibility for mechanisms, timing, etc., devolved to problem-solving unit	x
	incremental problem-solving	x	High levels of experimentation	✓

✓=fulfilled, ✓/x = in progress, x = not fulfilled

#### 5.1.4 The learning organization – level 5

Table 12 indicates what is needed of an organization to fulfil what Bessant and Francis (1999) suggest is a learning organization, as is the highest defined level in terms of continuous improvements. Whereas continuous improvement works is integrated in the business to the level where everything is well defined and occurs automatically without any extensive effort.

Table 12: Characteristics of level 5 CI behaviour. Adapted from Bessant and Francis (1999).

Level	Performance	Practice
5 = <i>The learning organization</i>	Strategic innovation	Automatic capture and sharing of learning
	Ability to deploy competence base to competitive advantage	Everyone actively involved in innovation process

As we mentioned earlier, AH fulfils some parts in the higher levels of continuous improvements even though they lack some vital aspects in the lower levels. Regarding level 5 and the learning organization, AH got somewhat of a foundation for this level. There is partially developed strategic innovation if we refer to the strategy documents brought up in the findings. These are however currently most present in theory, and not integrated in the practice and everyday-work. Furthermore it is hard to achieve the other aspects in this level due to missing out factors of essence in previous levels, as can be seen in table 13 below, but there is however as we mentioned, a foundation to consider for the future even in this level of continuous improvements.

Table 13: Akademiska Hus' progress towards level 5. Adapted from Bessant and Francis (1999).

Level	Performance		Practice	
5 = <i>The learning organization</i>	Strategic innovation	✓/x	Automatic capture and sharing of learning	x
	Ability to deploy competence base to competitive advantage	x	Everyone actively involved in innovation process	x

✓=fulfilled, ✓/x = in progress, x = not fulfilled

## **5.2 Partnering and its impact on continuous improvements and innovation**

Both literature as well as perceptions amongst the employees in AH is considering close collaboration forms to provide several advantages in various shapes. Continuous improvements are one area that is argued to benefit from close collaboration forms as we have brought up in the literature study. This is also true for the case study, as the common perception in AH is that their partnering contract strategies is fundamental for being able to experiment and develop new solutions and improvements. There is however an issue regarding the latter that have emerged as the research has progressed. We believe that the absence of measuring and monitoring indeed is an issue to consider and establish countermeasures for. There are tendencies pointing towards contractors making huge profit from partnering contracts according to AH's vice president. This does not necessarily result in drawbacks and extra costs for the client, since the goal is to minimize cost and boost overall performance for all actors involved when procuring a close collaboration strategy. But it is notable that the extensive lack of measurements and evaluation in combination with other actors benefiting above the usual on agreed contracts is rather sketchy and should be alarming. Thus we suggest that the close collaboration contract strategies in AH is in need of sufficiently developed and implemented documentation system monitoring and measuring vital factors that are comparable for further analysis whether other contract strategies is to prefer or not. This is although mostly a question of cost efficiency, and not so much about continuously improves internal processes and work procedures as we like to refer as incremental innovation. But it is evident that there is a common denominator that also has impact in terms of continuously improving, the lack of properly implemented or utilized measurement and monitor systems makes it hard to evaluate innovation that is taking place.

There is an internal perception of AH being innovation oriented, this is however also as we like to stress, mostly about radical innovation and much less on incremental innovation. There is an extensive focus on radical innovation in the mentioned forums and establish groups working to integrate research in their projects, and their partnering approach seems indeed to make the entire process easier to manage since as the interviewees typically mention, it is easier to share resources and agree on mutual goals in a partnering project, which is vital for the various development projects AH is working in. This is also true according to literature, as it states close collaboration typically enables a greater extent of sharing resources amongst actors and working for common set goals is more common and easier to manage in close collaborations.

We would further like to highlight the importance of utilizing the close collaboration forms in terms of incremental innovation, since continuous improvements in internal work procedures and processes is possible in need of attention. Except for a need of sufficient implemented measuring systems, it is also of essence to consider adapting the close collaboration trade-offs within the organization as well, and not only in terms of establishing close collaboration with contractors for instance. The suggested lack of communication and knowledge exchange between departments,

and also on an individual level in some cases, within AH could also benefit from adapting factors considered important in close collaboration contract strategies into their own organization. E.g. define and share internal goals, communicating strategies and solutions to work in a common fashion with the same visions to achieve consistency throughout the organization. This is also what they trying to achieve currently, and with clarified and structured directives that is argued to come with the upcoming restructuring, these preconditions is likely to benefit the organizations efforts to reach consistency in our opinion.

## CONCLUSION

AH's current efforts to go through change and streamline their business in general by performing a restructuring of the organization is likely to also bring changes to the continuous improvement works. If managed according to the strategy documents examined, AH have good prerequisites to capitalize on the changes and transition into higher levels of continuous improvements. First of all we suggest that implementation of measurement systems is vital for AH to be able to monitor and control the outcome of their innovation works. Further there is a need of enlightening the value of incremental innovation, the benefits for developing internal processes and having an internal close collaboration is key to share knowledge and further develop. This might be done by utilizing already existing tools, as Aka-Ärende for instance as in a way of communicating between individuals and also departments, there is however a need of formal guidelines and demands on what tools are supposed to be used and how. When this is acknowledged by everyone in the organization, formal guidelines and expectations are integrated into the business and everyday-work, and sufficient measurements are established, AH have arguably picked up the pieces they are currently missing to transition into the third level of continuous improvement.

Further, when the foundation is set, there is great potential for AH to transition into the higher levels of continuous improvements, since they already possess vital elements in the higher levels. However, there is a need to establish an innovation friendly culture. To do so, we believe in encouraging and engaging employees further in the process. Therefore, a reward and recognition system should be implemented. As to achieve autonomous innovation requires awareness and focus on radical innovations in combination with high levels of experimentation. This is already in place, whereas we brought up in the findings and discussion regarding the large amount of resources allocated to create space in terms of experimenting with development and implementation of radical innovation. Lastly the step towards the fifth level requires time and routine to reach, which is a question for future development.

Close collaboration have been highlighted since it tends to be used more and more in the industry overall, which is also true for AH, as they procure with a partnering contract strategy more often as time goes. There are several benefits in terms of close collaboration forms on continuous improvements. The ability to easier communicate and focus on common set goals and visions as close collaboration usually brings about is of essence to continuously improve. The trade-offs and ability to share resources and solutions is something we think will greatly help AH to continuously improve, and certainly if there are sufficient measurement systems and feedback systems implemented in the near future.

In table 14 below, we have provided a complete picture of AH in context of a model on their level of continuous improvements, adapted from Bessant and Francis

(1999). As follows it is quite clear what AH fulfills and where they are short on different aspects to achieve the factors included in the model.

Table 14: Akademiska Hus' progress towards level 5. Adapted from Bessant and Francis (1999).

Level	Performance		Practice	
2 = <i>Structured and systematic CI</i>	Local level effects	✓	Formal attempts to create and sustain CI	✓
	Measurable CI activity - e.g. number of participants, ideas produced, etc.	✓/x	Use of a formal problem-solving process	✓
	Measurable performance effects confined to projects	✓/x	Use of participation	✓/x
	Little or no "bottom line" impact	✓	Training in basic CI tools	✓
			Structured idea management system	x
3 = <i>Strategic CI</i>	Policy deployment links local and project level activity to broader strategic goals	✓/x	All of the above	x
			Formal deployment of strategic goals	✓/x
	Monitoring and measurement drives improvement on these issues which can be measured in terms of impact on "bottom line" - for example, cost reductions, quality improvements, time saving, etc.	x	Monitoring and measurement of CI against these goals	x
4 = <i>Autonomous innovation</i>	Strategic benefits from:	✓  x	Responsibility for mechanisms, timing, etc., devolved to problem-solving unit	x
	radical innovations		High levels of experimentation	✓
	incremental problem-solving			
5 = <i>The learning organization</i>	Strategic innovation	✓/x	Automatic capture and sharing of learning	x
	Ability to deploy competence base to competitive advantage	x	Everyone actively involved in innovation process	x

✓=fulfilled, ✓/x = in progress, x = not fulfilled



## **6.1 Limitations of the study**

This thesis has been conducted in collaboration with Akademiska Hus during a limited timeframe stretching over the second term of 2016, with an interview study including 11 interviews. The limited number of people interviewed causes the results to be more general, which might impact the holistic view and perspectives on the organization. This makes it somewhat difficult to analyse the organizational culture in AH with relevant conclusions, as the consequences might be that people perceive it differently.

Since this thesis focus on investigating continuous improvements at the time being while Akademiska Hus currently is going through comprehensive changes, we recommend further studies on the changes this brings about in terms of organizational culture, and if consistency in the organization is reached, and thus enhancing the ability to continuous improve. There is further need of research with a wider range of interviewees in the organization to provide an accurate picture with more perspectives included from all levels in the organization.

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