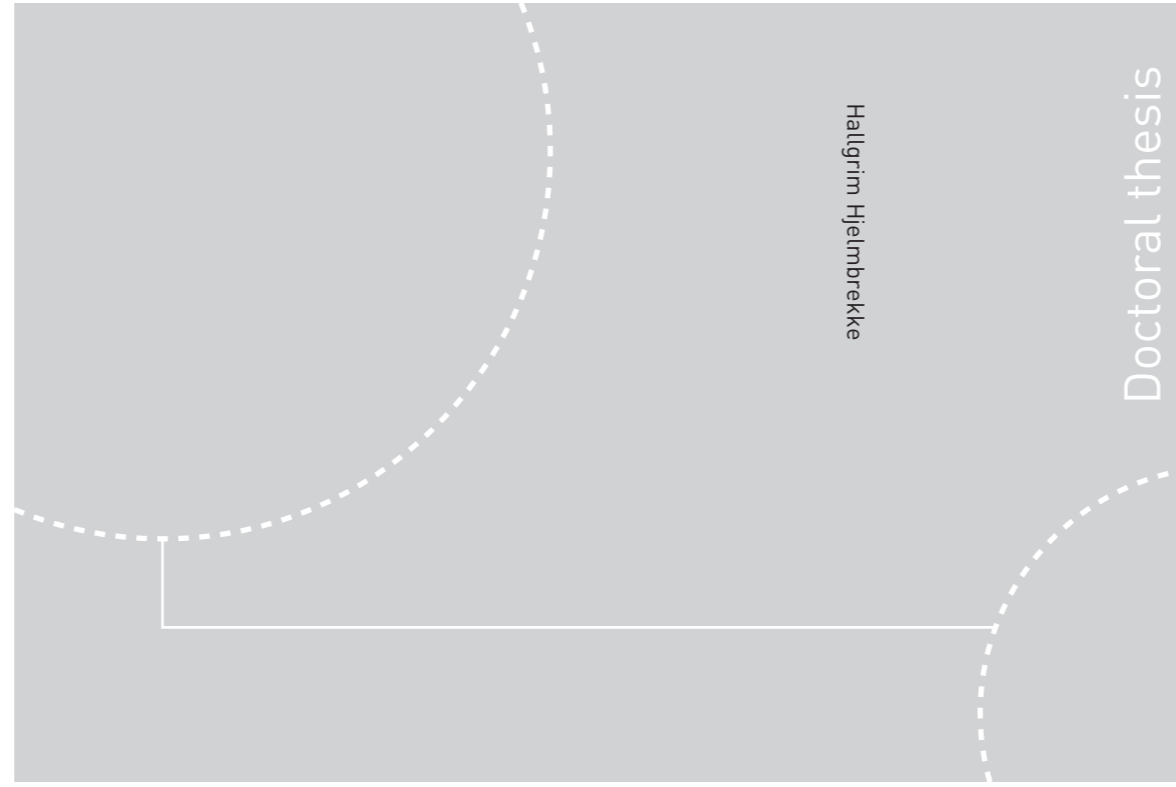


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Hallgrim Hjelmbrække

Aligning AEC Projects with Corporate Strategy

Project Governance as a Mean for Strategic Effect

 **NTNU**
Norwegian University of
Science and Technology

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Norwegian University of Science and Technology
Thesis for the Degree of
Philosophiae Doctor
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Paper 1

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Paper 2

- Arge, K. and Hjelmbrekke, H. (2012) Value Enhancing Processes in Building and Real Estate. CIB W092/W070/TG72 Joint Conference on Procurement Systems, Facilities Management and Maintenance and Public Private Partnership: Delivering Value to the Community

Paper 3

- Hjelmbrekke, H., Lædre, O. and Lohne J. (2013), On the difference between project management success and project success. 7th Nordic Conference on Construction Economics and Organisation

Paper 4

- Hjelmbrekke H. and Klakegg Ole J. (2013) The new common ground: Understanding Value. 7th Nordic Conference on Construction Economics and Organisation

Paper 5

- Hjelmbrekke, H, Lædre, O and Lohne J. (2014) The need for a project governance body. International Journal of Managing Projects in Business Vol7 No 4 pp. 661-677

Paper 6

- Hjelmbrekke, H., Hansen G.K. and Lohne J. (2015) A motherless child? Why construction projects fail. 8th Nordic Conference on Construction Economics and Organisation

Paper 7

- Hjelmbrekke H. and Klakegg Ole J. (2015) A Project Governance Framework Model for Enhanced Value Creation in Construction Projects. Accepted in International Journal of Managing Projects in Business. Paper will appear in Volume 10 in 2017

Paper 8

- Munthe-Kaaas, T.S, Hjelmbrekke, H, Lohne, J. and Lædre, O. (2015) Lean design versus traditional design approach. Proc. 23th Ann. Conference of the Int'l Group for Lean Construction pp.578-588

Contribution to the work presented:

Paper 1: Main contributor to the research design and theoretical framework. Conducted most interviews. Wrote initial drafts. Edited and finalized the paper.

Paper 2: Contributor to the research design and theoretical framework. Conducted most interviews with the main author. Co-wrote initial drafts. Edited and finalized the paper.

Paper 3: Main contributor to the research design and theoretical framework. Participated in most interviews. Wrote initial drafts. Edited and finalized the paper.

Paper 4: Main contributor to the analysis. Wrote initial drafts. Edited and finalized the paper.

Paper 5: Main contributor to the research design and theoretical framework. Participated in most interviews. Wrote initial drafts. Edited and finalized the paper.

Paper 6: Main contributor to the analysis. Wrote initial drafts. Edited and finalized the paper.

Paper 7: Main contributor to the research design and theoretical framework. Conducted most interviews. Wrote initial drafts. Edited and finalized the paper.

Paper 8: Main contributor to the research design and theoretical framework. Supervised first drafts. Contributed to editing and finalizing the paper.

Foreword

There lies a personal story behind the development of this thesis. The author has, over several decades, been active in various roles in the Norwegian AEC (architecture, engineering and construction) industry, as a consultant, project manager, contractor, manager of a property business, owner of a property business and as a university lecturer. Presently, I am venturing an academic approach to the field. This venture is driven by a strong conviction, developed over the years, that the AEC industry, as well as its customers, frequently fail in achieving their common goals. Of particular interest to the author is the lack of success in construction projects from an owner's perspective. The problem appears to be rooted in the owners' lack of internal procedures for assuring that the projects they commission are successful in a business strategy perspective. Here, a multifaceted approach, as presented in the papers included, has been chosen to illuminate this general enquiry. The present thesis constitutes my analysis of the subject matter described above.

On a purely intellectual level, the input from Kirsten Arge, Ole Jonny Klakegg and Jardar Lohne has enhanced the process towards the completion of this thesis. My hope is that the presented results will not disappoint them.

The Concept research programme has constituted a main framework for the research conducted. The participation in the research group of the programme has proven invaluable for the intellectual effort going into this work.

The Norwegian Research council has generously contributed funding to major parts of the research within the framework of the Industrial PhD programme. My sincere hope is that the present work can contribute to similar projects being initiated within the same programme, which in my opinion surpasses most funding schemes worldwide.

Rambøll, my former employer, and Multiconsult, my present employer, have both contributed by liberating work hours and making this time-consuming research possible. The extent to which they will incorporate the insights presented here in their business practice will be interesting to observe, indeed!

Finally, I want to thank my supervisors from NTNU Geir Karstein Hansen and Ola Lædre. It has been a hard battle to finalize this!

Summary

In general, any investment in a new project is made in order to solve a problem, to change something into a more preferable situation and, in the end, to harvest the benefits. The research literature asserts that the logical path in the process of investing in a project is to pass from an insight of a need to a definition of a problem that is to be solved, and then to solve it. In reality, such processes vary according to organisational contexts, it can therefore be understood in several ways, and – in the specific context of this thesis – is influenced by the particularities of the AEC-industry. Judging by the research conclusions presented here, there seems to be little understanding of this logic within the Norwegian AEC-industry.

Consequently, the overall picture of the Norwegian AEC-industry that emerges here gives an impression of a lack of productivity, budget overruns, defects on the final products and dissatisfied users generating a tail of legal proceedings. Together, these factors indicate that the projects' intended value for users and benefits for the owner frequently gets lost along the way in construction project processes.

The intuitive understanding of these challenges, guiding the research presented, has been that all of those involved, including owners/clients, project suppliers and users, appear to lack what the author denominates as a holistic approach to their business activities. Diverging goals and an overemphasis on easily measurable output, such as time, cost and quality, seem to hinder the fulfilment of strategic goals. Early in the research process, the author became convinced that such factors severely limited the achievement of the strategic goals of these businesses – both in monetary terms and according to broader (societal) success criteria.

An aspiration to go beyond this intuition (intuitive hypothesis) and translate it into fact constituted the prime motivation for this thesis.

The main question governing this work has been how AEC-projects can be better aligned to business strategies from an owner perspective. This overall question has been broken down into three research questions, notably:

- What does the discrepancy between the general needs of the organization and the projects carried out to improve performance consist in?
- What fundamental reasons underlie the existence of such challenges?
- What measures can be envisaged to improve owners' project governance?

In the following, we examine to what extent the completed research has actually been able to address regarding these questions within the governance framework described below. Most notably, how the findings expand on insights from the general business theory explored, and thus proves the relevance of such theory to the Norwegian AEC-industry.

As outlined above, the overall goal of the thesis is to enhance the understanding of how to align projects with the overall business strategies for value creation and how such alignment requires an understanding of

- the notion of value,
- business strategies,
- understanding the role of corporate and project governance within this picture,
- the necessity of defining proper success factors and success criteria to achieve competitiveness, and
- the role of projects as strategic vehicles within the context of the AEC-industry.

The theoretical framework sections of the published papers further elaborate on several of these points.

The research presented in this thesis takes the form of a combination of case studies of Norwegian construction projects and conceptual papers. Studying the same phenomenon from multiple angles and using different sets of data and information, while employing different methods, increases the validity and reliability of the research results. The approach chosen was entirely qualitative in nature, and mostly explorative. The reason for choosing this approach was that the quantity of existent research within this field – namely, the alignment of projects with corporate strategy within the AEC-industry – proved rather meager, particularly at the outset of the process.

In the main conclusion of this thesis, we present a Governance Framework Model. The proposed model (papers 2 (preliminary) and 7 (final)) is characterized by being normative in nature. Thus, it is based on the cases explored, which followed the model to a certain degree. We maintain that utilizing this model increases the chance of obtaining project success from a strategic perspective.

According to the research outlined in this thesis, the discrepancy between the general needs of the organization and the projects carried out to improve performance consists mainly of the following four factors:

- a lack of project objectives grounded in general strategy,
- a lack of alignment between clients and suppliers,
- a lack of understanding of success (project management success vs. project success)
- a lack of project strategy definition.

The fundamental reasons underlying these challenges are a lack of competence on the owner side, a lack of competence on the supplier side, and a lack of competence on measuring probability for project success. In order to address these challenges, then, it is proposed to appoint a project governance body. It is further essential that the project governance body defines an (internal) value proposition (business case). Equally, the project governance body needs to choose suppliers that can meet the requirements of the (internal) value proposition. Finally, the project governance body needs to monitor the process. The proposed model utilizes the concept of value proposition to secure alignment of a unified project strategy with owner needs. The supplier's value proposition, as an important part of their project business model, is an explicit statement of how the supplier (e.g. a design team) will meet the owner's value proposition. The project business model should be developed through dialogue between client and supplier(s) to secure its consistency with strategic objectives, understanding of values, and priorities.

The key components of the Governance Framework Model are:

Strategic Need: Why-questions: The need for change and the specific user needs that are to be satisfied, which problems should be solved, as well as why a specific value creation should benefit the client.

Strategic Effect: What-questions: Business perspective, what are the final benefits to be achieved.

Project Success Criteria: What-questions: Intended outcome – user effectiveness and project efficiency.

Suppliers Project Business Model: How-questions: The organizational structure of the design team, their capabilities and the distinct plan for how to align the outcome with the owner's needs (The design team).

Project Business Model: How-questions: What metrics (KPIs) are being used to align the design with the owner's strategy throughout the design phase.

The discrepancy between the general needs of the organization and the projects carried out to improve performance consists mainly of a lack of project objectives grounded in general strategy, a lack of

alignment between clients and suppliers, a lack of understanding of success (project management success vs. project success), and a lack of project strategy definition.

The fundamental reasons underlying these challenges are a lack of competence on the owner side, a lack of competence on the supplier side, and a lack of competence on measuring probability for project success.

In order to address these challenges, then, it is proposed to appoint a project governance body. It is further essential that the project governance body defines an (internal) value proposition (business case).

Equally, the project governance body needs to choose suppliers that can meet the requirements of the (internal) value proposition. Finally, the project governance body needs to monitor the process.

The research reveals a poor comprehension of the business context of projects within architectural and engineering companies. Implications for improved practice: Architecture and engineering companies need to create and deliver value, and a good starting point is to work more intensively with the client's business objectives and to understand the causal relationship between design and the client's benefits. More research should focus on the preparatory project management practices – e.g. the strategic approach to project success.

1. Introduction

In general, any investment in a new project is carried out to solve a problem, to change something into a more preferable situation and, in the end, to harvest the benefits. The logical path in the process of investing in a project is to pass from an insight into what problem is to be solved – and then to solve it. This immediate logic can be understood in several ways, and is influenced by the particularities of the AEC-industry. According to the research presented here, there seems to be little understanding of this logic within this context.

According to international research, a significant share of projects fail with respect to both producing the intended effect and achieving the expected business results (Shenhar, 2007; The Standish Group, 2001). The prevailing explanation seems to be the assumption that available and traditional project management tools are not adequate to assure project success. Equally disturbing, the contemporary understanding of project success is predominantly in the eyes of the beholder (Müller and Judgev, 2010). According to the conclusions of a series of papers, this seems equally to be a valid claim in the context of the Norwegian construction industry (Hjelmbrekke et al., 2013). The problem and the reason for this performance bottleneck are frequently invisible to top management and are found in poor planning, poor execution or both, which also can indicate poor project governance. Since projects in general are expected to have a strategic goal, e.g. increased corporate performance, it is expected that the project outcome in this perspective should cover the expenditure. Closing the strategy-to- performance gap will assure an increase in performance from 60-100 % according to Mankins and Steel (2005).

The main participants in any construction project are the investor/owner, the users and the suppliers represented by architects, consultant engineers and contractor(s). What they likely have in common is a strategy focusing on delivering a product or service to someone willing to pay for it and to make a sustainable profit out of this transaction. This is a generic condition in any delivery chain, where different solutions and components from a number of manufacturers are assembled in order to fit together and create a product valuable for the user and clients' business. In such a case, it is not only the components that fit together, but also the different sub-suppliers' strategic goals. The latter consist in realizing benefits from supporting the clients' strategy to create a viable product that the users are willing to pay for.

Looking into the Norwegian AEC-industry, this general picture of the value stream is a bit blurred. The overall picture gives an impression of lack of productivity, budget overruns, defects on the final products and dissatisfied users generating a tail of legal proceedings (Welde and Odeck, 2016; Hjelmbrekke et al., 2014; Olsson, 2015; Olsson, 2004). Together, these factors may indicate that the intended value for users and benefits for the owner disappear in the process.

The intuitive understanding of these challenges – guiding the research presented – has been that all participants (owners/clients, project suppliers and users) lack what the author denominates as a holistic approach to their business activities. Diverging goals and an overemphasis on easily measurable output – typically concerned with time, cost and quality – hinders the fulfilment of strategic goals. Early in the process, we became convinced that this severely limited the achievement of the strategic goals of these businesses – both understood in monetary terms and according to broader (societal) success criteria. An aspiration to go beyond this intuition and translate it into facts constituted the prime motivation for this thesis.

To a certain degree, the challenge of rendering projects into successful strategic vehicles is equally reflected in literature addressing the construction industry more specifically. The performance of the industry itself, however, shows a lack of fundamental insight concerning the role of projects in value creation (Hjelmbrekke et al., 2014, Olsson, 2004, Pinto and Prescott, 1988).

Several explanations can be given for the latter observation. According to the experience of the author of this thesis, the construction industry in general tends to be conservative and to have a lack of interest

in incorporating new management insights from research literature into their practice. Perhaps a more interesting *angle d'attaque* – at least in that it provides food for thought enabling actual change – is that certain key features of the construction industry actually impede the direct transfer of analytic frameworks from management literature into its practical operations. Understanding the main challenges of the construction industry can help reveal these key features.

1.1 Research questions and the aim of the research

More concretely, the ambition of this thesis has been to investigate the relationship between general business theories concerning the alignment of projects with the general strategy of the company – with a focus on the Norwegian construction industry. The main approach has been to analyse common practice within this industry with the recommendations and frameworks presented in the general management literature.

Particular attention has been given to the subject of project management and its relationship to the overall strategy, notably how to assure the fulfilment of strategic goals by carrying out projects. Going from a theoretical to a practical approach, the papers included an analysis of how project management within the Norwegian construction industry acts in comparison to such frameworks. The main research question governing this work can be formulated as follows:

How can AEC-projects better align to business strategies from an owner perspective?

Based on the experience of the author and on the extensive literature study leading up to the work presented in this thesis, there seems, in fact, to exist a discrepancy between the general business needs of the organizations and the projects carried out to improve business performance. The knowledge gap also seems to be considerable. Several factors support this view, such as that value creation seems to be poorly identified and used as a success criterion for project governance, and that general management theories of project success align with practices identified in the construction industry. In order to pursue this general inquiry, the following main research questions are addressed:

1. **What does the discrepancy between the general needs of the organization and the projects carried out to improve performance consist of?**

The first question is addressed through a literature study and extensive empirical research within the Norwegian context, carried out in order to map out the extent and nature of the problem. This research is documented in papers 1, 2, 3, 6 and 7.

2. **What fundamental reasons underlie the existence of such challenges?**

The second question is addressed through an analysis of general business literature on management theory and project governance, in particular, concerning themes such as success factors, value creation/value capture, measurements and metrics. The emphasis has been placed on identifying specific elements hampering owners' project governance, buttressed with empirical examples from the Norwegian context. This research is documented in papers 2, 3, 4, 5, 6 and 7.

3. **What measures can be envisaged to improve owners' project governance?**

The third question is addressed through the development of a governance frameworks model based on insights from the literature and the empirical research. This research is mainly documented in papers 5 and 7, whilst a Lean Construction-approach pertaining to this has been documented in paper 8.

Some limitations to the present analysis need to be mentioned. The analyses presented in this thesis have been carried out on the basis of empirical data from the Norwegian AEC-industry. Their validity for the international public can thus to a certain extent be limited. Further, solely qualitative methods have been

employed. This choice was taken on the basis of 1) the complexity of the subject matter investigated and 2) the lack of real data permitting a quantitative analysis. Finally, the challenges addressed have been examined from an owner perspective.

1.2 Plan of the thesis work – general framework of the research

The series of papers included provide a non-conclusive thoroughgoing analysis of different aspects of this general inquiry. In the following, we present short summaries of the individual papers in order to place them within the framework of the general research. The papers will be more fully presented in chapter 4. Note that the figure below comes as an end product of the research presented here, most fully presented in paper 7.

As shown in the following figure, the papers mainly cover the activities in the projects' pre-implementation phase. The main focus has been on three areas, namely, identifying and communicating the initial problem, the subsequent process of translating the need into design and, finally, project governance.

Paper 8 investigates value creation in the design phase, but is not aimed to give anything other than a brief understanding of process within implementation.

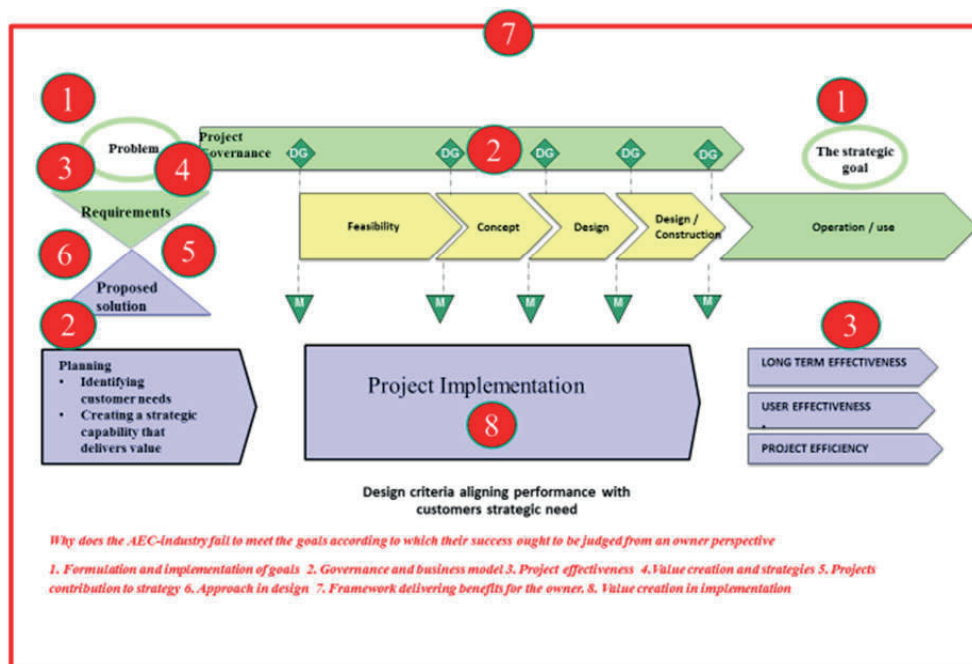


Figure 1 Map of papers – the details of the figure are fully explained in paper 7.

The figure presents an illustrative, schematic overview of the papers presented in this thesis. Their subject matter overlap to a certain extent, so that the differentiation between their topic areas is not quite as discrete as presented here. The interrelations and interdependencies of the different papers will be further explained in chapter 4.

The papers in brief:

Paper 1

- Hjelmbrekke, H. and Lædre, O. (2009). Project goals in construction projects. 5th Nordic Conference on Construction Economics and Organisation

Case studies concerning the formulation and implementation of goals.

As a starting point, a goal is needed to know where you should go and draw a map to make it easier for others to follow you there. In a project context, it is of importance that this map should not only include the “half way inn” but also the next day trip to the favourable place to be. The initial questions for the research would then be whether project owners:

- Formulate project goals in the front-end phase?
- Communicate their goals to contractors?
- Use their goals actively during planning and construction?

The objective of this investigation is to map out the extent to which objectives are formally included in a project's goal-setting processes, and to determine whether a logical structure for the goals of a construction process exists. This may support a project's long-term profitability, from its initiation, through development and execution, and ultimately to completion.

Paper 2

- Arge, K. and Hjelmbrekke, H. (2012) Value Enhancing Processes in Building and Real Estate. CIB W092/W070/TG72 Joint Conference on Procurement Systems, Facilities Management and Maintenance and Public Private Partnership: Delivering Value to the Community

Conceptual approaches to exploring governance and business models.

This is an early version of paper 8. In this paper, we address the question of understanding what kind of tool would be appropriate to follow up the initiating goals. The paper analyses the use of project governance and the understanding of a project as an enterprise with a business model focusing on delivering value in accordance with the client's business needs. To ensure that the project owners will succeed in reaching the goals and thus achieving a result in business value, a continuous assessment within a governance framework should be established to secure the development and implementation of the project. The project owner's requirements must be reflected in the delivery organization's business model.

Paper 3

- Hjelmbrekke, H., Lædre, O. and Lohne J. (2013), On the difference between project management success and project success. 7th Nordic Conference on Construction Economics and Organisation

Case study focusing on project owners' governance of project efficiency and project effectiveness throughout the project process and an assessment of success in the two perspectives. In order to analyse how clients follow up efficiency and effectiveness in the front-end and during execution, the intention of this paper was to examine:

- Do clients focus on project efficiency before and after decision of project execution?
- Do clients focus on project effectiveness before and after decision of project execution?
- To what degree does project management success correspond to project success?

Finally, assessing the correlations between the two success perspectives.

In construction projects, the perspective of the supply side (as represented by the design team) should converge with the business logics directing the demand side. Project management success is measured against traditional efficiency factors such as cost, time and scope. Project success from the demand side is, on the other hand, measured as effectiveness according to a strategic perspective. It is acknowledged that project management success is important during project execution, and that professional clients will evaluate the probability of project success before they start execution. We have examined four cases, and analysed how the clients followed up efficiency and effectiveness in the front-end and during execution.

Paper 4

- Hjelmbrekke H. and Klakegg Ole J. (2013) The new common ground: Understanding Value. 7th Nordic Conference on Construction Economics and Organisation

Conceptual paper on value, value creation and business strategies.

The paper explores the well-known terrains of value creation theories and business strategies to look for concepts that when combined, may help building projects become more successful. Further, it focuses on background theory to establish a language to discuss value creation in projects. The main question addressed is:

- Would it be possible to implement theories from management science regarding strategy and competitive advantage into the perspective of the AEC-industry?

After the theory is established, we present our suggestion for a new common ground: the basis for delivering more successful building projects. Finally, we discuss some practical consequences and conclude with our new basis for value creation.

Paper 5

- Hjelmbrekke, H, Lædre, O and Lohne J. (2014) The need for a project governance body. International Journal of Managing Projects in Business Vol7 No 4 pp. 661-677

The projects' contribution to the strategic goals of the owner – case study.

A widely recognized phenomenon in the management literature is the lack of correspondence between the strategic objectives of organizations and their project execution at an operational level.

The questions governing this paper are:

- What *can* project owners do to assure value creation in their projects?
- How to shape and define a physical product that is meant to support the organizations' strategy?

The main finding of the paper is that communication between the owner organizations, executives, the project sponsor and finally the project organization is deficient. The case study assesses what project owners actually do to assure value creation in their projects and what the result of their choice is. Finally, the paper outlines some recommendations of a theoretical nature, mainly based on the function of the so-called project governance body and its interaction with the project sponsor and the project organization.

Paper 6

- Hjelmbrekke, H., Hansen G.K. and Lohne J. (2015) A motherless child? Why construction projects fail. 8th Nordic Conference on Construction Economics and Organisation

Conceptual paper. What approach is needed in design processes to make a change from delivering output to create benefits for the client?

The purpose of this paper is to take a conceptual approach to design processes in construction, focusing at front-end efforts to maximize project effectiveness and strategic success.

A project is a temporary organization delivering an output to an organization focusing on the outcome. The question we intend to address in the paper is: What approach is needed in design processes to make a change from delivering output to enable benefits for the client?

This study is focused on initial activities in design processes in the construction industry. Here, we apply relevant management theories to compare the general theoretical challenges in aligning projects with strategy with the particularities of design processes in the construction industry. In accordance with this, our research question can be reformulated as follows: What is the missing link between the strategy and the project outcome, notably the formulation and use of the project strategy, and what does this mean for the construction industry?

Paper 7

- Hjelmbrække H. and Klakegg Ole J. (2015) A Project Governance Framework Model for Enhanced Value Creation in Construction Projects. Accepted in International Journal of Managing Projects in Business. This paper will appear in Volume 10 in 2017.

Case studies – Constructing a framework for ensuring that projects function as strategic vehicles.

A follow up from papers 1- 6 and 8, suggesting a conceptual framework adapted to the particularities of the construction industry. The understanding of projects in the general research literature has shifted from being an implementation task to a judgement of it as a strategic endeavour. The AEC-industry, however, seems not to realize the consequences of this change. We will address this general concern according to the following research questions:

- Does the lack of project governance impact or influence current project performance and the potential for future success?
- Does the project owner establish a business case corresponding with the strategic objectives and in accordance with the internal stakeholders' requirements?
- What methodology does the design team use in order to align the project performance with the owner's strategic goals?

To approach these questions, we outline and test a conceptual framework for project approach and execution that identifies success factors and establishes success criteria for the construction project as a strategic vehicle. The framework is created by combining theories of strategy, value creation, governance and business models, specifically by combining the approaches of Shenhar (2012) and Pinto and Slevin (1988), which focus on prioritising decisions that affect the achievement of the client's long term strategic goals. This conceptual framework will be described in the theory section of this paper. The main objective of the framework is to establish a robust approach to aligning the client's strategic objectives and efforts to achieve success with a value creation focused business model for the project execution team.

Secondly, in the empirical section, we use the framework to analyse two major construction projects in order to test the framework, and present the results of three workshops that assess the relevance of the framework for practical purposes.

Paper 8

- Munthe-Kaas, T.S, Hjelmbrække, H, Lohne, J. and Lædre, O. (2015) Lean design versus traditional design approach. Proc. 23th Ann. Conference of the Int'l Group for Lean Construction pp.578-588

Value enhancement in the design phase

The ambition of this paper is to assess the extent to which lean design can enhance value for the customer in the construction industry, based on an examination of the design phase. It is examined how the

distinctive stakeholders deal with the value specification as an outcome of the architectural competition. The study was based on the following research questions:

- What are the characteristics of the two different design approaches?
- What are the advantages of the different approaches regarding productivity?

In the paper, we, firstly, outline the general theoretical horizon that has governed the work presented in this paper. Secondly, we discuss methodological choices and corresponding restraints to the research. Thirdly, we summarize how the different papers address the challenges created from the theoretical framework. Fourthly, the implications of the findings from the papers are outlined.

2. Theoretical background

In the following, the underlying theoretical background for this work is presented. As the overall theme of the thesis is aligning projects with the overall business strategies for value creation, a need arises for an understanding of:

- 1) the notion of value,
- 2) business strategies,
- 3) understanding the role of corporate and project governance within this picture,
- 4) the necessity for proper success factors and success criteria to achieve competitiveness, and
- 5) of projects as strategic vehicles within the context of the AEC-industry.

The theoretical framework sections of the published papers will elucidate some of the following points in more detail; the main ambition of the following pages is, on the other hand, to outline the argument in its totality, and to illustrate how the different theoretical considerations are related to one another.

2.1 Value

The word value can have various meanings and is used for many different purposes. It is a challenge that value means different things to different people (for a contemporary analysis, see for instance Bowman and Ambrosini, 2010). The context in this thesis is the building project and the relationship between the project owner, the asset user and the executing party. We need to establish an understanding of the concept of value in this context. The concept of value has been discussed by many contributors in general settings and other industries.

Adam Smith, in *The Wealth of Nations* (1766), introduces two definitions of the word value, as it may express the utility of a commodity and the power of purchasing other commodities for which the possession of that commodity conveys. The first one is value in use – the second is the value in exchange. The real price of everything is the toil and trouble of acquiring it. On the other hand, the worth to the man who has acquired it and wants to dispose of it or exchange it for something else, is the toil and trouble which it can save him, and which it can impose upon other people.

Bowman and Ambrosini (2000) point back to resource based theory (RBT) of the firm, which in the 80's and 90's looked upon value as a function of the resources available to the firm. RBT argues that resources are valuable in relation to a specific market environment. They are valuable if they exploit opportunities, neutralize threats, or enable customer needs to be better satisfied. Rare resources and resources that are hard to copy, imitate, or replace give sustainable competitive advantage (Porter 1991). However, Bowman and Ambrosini (2000, 2010) realized the need to delve more deeply into this to understand why these resources are valuable. This led them to develop a theory of value, based on the following logic:

- A distinction has to be made between value creation and value capture.
- Value is only created by individual members of the organization as a combination of labour and use of other resources.
- Value capture is determined by perceived power relationships between economic actors.

A resource is not valuable in itself; it is only valuable through what you can use it for. As early as in 1959, Penrose argued that it is never the resources that are the input to the production, only the services that the resources can render (Penrose, 1959, referred in Bowman and Ambrosini, 2010). Value creation is the result of human activity – this is the only source of new value. Not all value that is created is actually captured, and not necessarily by the same participants that create the value. This is very relevant to the construction context. One has to evaluate the extent to which customers (users) judge the product (solution) to meet their needs – how they consider the value to them. This points to value as being subjective and specifically points to **use value**. Use value is primarily perceived by the asset user. It may be translated into monetary terms as the price the user is prepared to pay for the product, given alternative use of the money and alternative solutions. Customer surplus is what the consumer refers to as “value for

money” (Bach et al, 1987). This expresses the difference between value as the customer perceives it and the actual price. The actual price on the other hand is also an expression of value in itself: exchange value. Exchange value is perceived by both the client and the supplier and refers to a single point in time when the exchange of goods takes place. These aspects of value are relevant to all interfaces in the value chain.

2.1.1 Value Capture

The concept of value capture is necessary because exchange value does not necessarily reflect the use value and there is no guarantee that the exchange value ends up as profit to the one party that creates the value. Bowman and Ambrosini (2000) remind us that although most RBT contributors focus on value capture from the customer, one also needs to look at the problem of retaining value within the firm. Peteraf (1994) points out that there is no benefit for the firm if the value captured from customers is lost through resource suppliers bidding up the price of their resources and thus capture the differential value.

No party has a perfect view of the value creation and the use value. Thus, there are limitations to the possibilities for an objective price setting. Bowman and Ambrosini (2000) point out that there is no relationship between the nature of the use value supplied by the resource supplier, the role of this use value in the production process and the amount of exchange value that the resource supplier captures.

Profit is value captured by the firm. Bowman and Ambrosini argue that value capture, the realization of exchange value, is determined by the bargaining relationships between buyers and sellers. The firm is in a position to bargain with resource suppliers (e.g. employees and material suppliers) on one side and the customer on the other. Customers can only reward what they perceive. They often only perceive the final product, and if so, they are not in a position to consciously reward the resources (labour, machines, capital etc.).

These basic concepts of value are easily recognized in construction projects and between the roles of project owner, asset user and executing party. Use value, exchange value and value capture can help us better understand the process and results of a building project and the shortcomings of our contract arrangements and organization models. For instance, the owner acts as an investor and does not contribute to the use value as such. Money is a store of value and a medium of exchange. It does not contribute to the value creation process. The owner exchanges money for the property rights and thereby the rights to capture a portion of the exchange value. The executing party obviously contributes resources to the process that creates value in developing the asset, assumed to meet the needs of the users. The users themselves create new value in using the asset for its intended purpose. There are also activities that destroy value in every firm. They do not contribute to creating the use value or capturing use- or exchange value; they do not add revenue or reduce costs (Bowman and Ambrosini, 2010). The construction industry, famous for its low rate of productivity, may be suspected of harboring more than its share of these value-destroying activities. Poor management is indicated as a likely cause (ibid p 489).

Bowman and Ambrosini (2010) argue that as a firm, both the executing party (the supplier, e.g. a design firm or construction company) and the asset users (e.g. a company occupying an office building, a museum accommodated in a special function building) perform in the roles of customer and supplier for the ultimate purpose of returning an expanding stream of exchange value to investors (their own company owners - shareholders). This will implicitly give reason for conflict in the construction project. The one party that is best able to capture (exchange-) value will succeed in supporting their owners and sustainable uphold of the firm. Bowman and Ambrosini (2010) state that value to the supplier is the inverse of value to the customer: The supplier provides use value for exchange value in return. Directly translated to the building project this means that there is a fundamental conflict between the suppliers and users. Not only do they have very different perceptions of value, they will also try to optimize the ratio between exchange value paid for the use value delivered. In other words – when one party wins, the other loses. These perspectives will determine the positions and motivation of the parties. If these fundamental conflicts cannot be avoided – how can they best be handled? The answer to this could change the game. It will construct a new basis for the project where the supplier (executing party) and customer (project owner) can better handle their relations to the asset users (tenant) and thus achieve more successful projects.

2.2 Business strategy

In general, management literature, the concept of projects as strategic vehicles for improving overall competitiveness by enabling the core activities to improve their performance is widespread.

Mankins and Steele (2005) found that most strategic activities deliver only 63 % of their potential financial performance. This strategy-to-performance gap was in high performing companies closed by not only raising the standards of both planning and execution simultaneously, but also by creating clear links between them. Shenhar and Dvir (2007) express the success of such measures according to four dimensions; project efficiency, impact on customers, business success and strategic value. This multidimensional approach with longer-term objectives is, according to Shenhar (2012), fundamental to achieve customer satisfaction. As a side effect, it helps the project manager to make decisions on an operational level in accordance with these objectives.

In a survey investigating the challenges in the front-end of major public investments (Klakegg, 2009), international experts consider the following the most significant challenges:

- User needs unknown, misunderstood or ignored
- Project goals unknown or misunderstood
- Inadequate commitment of key stakeholders
- Conflicts between goals and/or strategies in the project
- Low economic/financial benefit relative to investment and cost in use and operation
- Business perspective changes between initial phase and delivery phases.

Nearly all firms and organizations have established a strategy with the purpose of explaining how their vision is going to be fulfilled. This envisioned future is, according to Collins and Porras (1996), what a firm aspires to become, to achieve, to create – something that will require significant change and progress to attain. In a changing world, the strategy is the change formula that at any time has to adapt to the competitive battlefield.

According to Porter (1996), the changing competitive environment has led companies from a static positioning strategy into a quest for productivity, quality and speed. The result is that management tools such as total-quality management, benchmarking, time based competition and outsourcing have taken the place of strategy. In a competitive context, this may give immediate operational and financial improvements. The effect of increased productivity on viable competitive positions, however, is minor and the gained competitive advantage is temporary. Porter points out that the root of the problem is the failure to distinguish between operational effectiveness and strategy. Operational effectiveness is essential for superior performance, but will not be viable unless followed by a strategy based on achievement of sustainable competitive advantages. The only way to outperform rivals is, according to Porter, to deliver greater value to the customer or create comparable value at a lower cost, or both, and to establish a difference from competitors that the company can preserve.

While the vision stands unchanged, the strategy is focusing on changes to improve the competitive advantages. The most visible changes in organizations are set up as projects; this may be new IT solutions, re-organizations or new and suitable premises expected to deliver new capabilities. In short, projects are set up to create opportunities for the future. In the article, “Project Success: A Multidimensional Strategic Concept”, Shenhar et al. (2001) discusses the projects as powerful strategic weapons and describes them as the engine that drives strategy into new directions. The projects are initiated to create value and competitive advantage. Defining and assessing project success is therefore a strategic management concept, the criteria against which projects should be assessed. It covers the project execution itself, the benefits for users, the financial outcome, as well as the future competitive benefits. Shenhar (2012) thus suggests that project success should be assessed in five dimensions, ranging from short time project efficiency to future strategic impact.

According to Shenhar et al. (2001), most projects are conceived with a business perspective in mind and with goals reaching beyond efficiency in project execution. When project managers and a project team are engaged to set up a project organization, they typically do not concentrate on the business aspect, but the immediate task. Suppliers bring in their own strategy focusing on delivering efficient execution. Success is regarded as achieved when the project is delivered within time and cost and at a quality level that pleases the client. The project may, in this perspective, be understood as an independent organization according to Mutka and Aaltonen (2012), with a lack of consciousness of the project owners' business and strategy.

This contradiction in behaviour between the parties, the user and owner on one side and the design team and other suppliers on the other, may have its origin in the respective managements' interpretation of which measures count regarding customer satisfaction and achieving strategic goals. In the article "Coming Up Short on Nonfinancial Performance Measurements", Ittner and Larcker (2003) argue that successful companies have attacked the problem of not linking measures to strategy by choosing their performance measures on the basis of causal models, also called value driver maps. In this perspective, the project success, as defined by Shenhar (2012), ranks on top and all activities must have causality to a strategic goal of the project. "*Any strategy statement must begin with a definition of the ends that strategy is designed to achieve.*" If the end is achieving uniqueness and competitive advantages, project efficiency, as the only solution, is not enough according to Porter (1996).

We need to understand the meaning of operational effectiveness (Porter 1996), which **value drivers** matter (Ittner and Larcker 2003) and where client-, user- and supplier strategy converge in a project context (how separate strategies can work towards a common goal). Operational effectiveness is dealing with how a company utilizes its input to perform activities better than its competitors. It is evident that focusing on efficiency alone will not be the differentiator to superior operational effectiveness, just as Porter (1996) stated. Suppliers need to meet customer needs and have a strategic approach that focuses on performing different activities in manner that varies from rivals; this is the key to competitive advantage. Performing similar activities better is good, but easily copied by competitors.

2.3 Business models

2.3.1 Business models – making veiled connections obvious

Business activities (projects or business-as-usual activities) do not automatically align with general strategies. Driver (2014), for instance, maintains that 90 % of all strategies have very little impact. He explains this by pointing out that strategies need to be understood and implemented by many diverse stakeholders with wide-ranging skills and experience. Driver maintains that strategic initiatives suffer from a lack of cause-and-effect evidence that a project really will create the intended result, that this result will be used as intended and that the use really will create the desired benefit. This is especially true in projects involving external suppliers. This implies a need to develop a structure and description of how the project supports strategic objectives. The use of business models is identified as a key to achieving these results (Teece, 2010).

No generally accepted definition of the term business model has emerged till now, and there appears to be confusion about the definition (Morris et al., 2005; Shafer et al., 2005; Zott et al., 2010; Baden-Fuller and Morgan, 2010). Baden-Fuller and Morgan (2010) discuss the use of business models as a technique "*to demonstrate a technology. The notion of the business model as a recipe, building on tacit managerial skills to demonstrate or advice the "chefs" about the best way to organise and integrate techniques so that the result will come out right*". This definition is also adhered to by Watson (2005), who states that the business model describes a company's operations, including all its components, functions and processes, which result in costs for itself and value for the customer. Correspondingly, when working on a business model, the ambition is to achieve low cost and high value while distinguishing oneself from the competition. Teece (2010) underlines that the business model thereby makes implicit assumptions about customers, the behaviour of revenues and costs, the changing nature of user needs and the competitors' responses. Casadesus-Masanell and Ricart (2010) notice that choosing a particular business

model means choosing a particular approach for a firm to achieve an objective and a particular method to operate and create value for a firm's stakeholders.

In the following, we understand the term business model as defined by Casadesus-Masanell and Ricart (2010) as *a reflection of the firm's realised strategy*.

In this light, business models can be understood as strategy-based performance recipes on how to create value for the client and benefits for the owner. As Baden-Fuller and Morgan (2010) conclude, *"from the practitioners' perspective, it is our hope that having an integrative framework that clearly separates the realm of strategy, business models and tactics – and illustrate how they interconnect and affect each other – can help guide the search for novel, interesting and profitable new ways to compete"*. In the following, we adopt this approach by understanding the model used as an integrative framework whose only intention is to coordinate all activities and resources within a company in order to deliver the business benefits according to the strategic goals.

2.3.2 Project Business Model

Since projects are regarded as the basic tool to achieve a better competitive position, consequently, such an integrative framework should be given attention when discussing how to manage and execute a problem-solving project. This is also recognized by Kujala et al. (2010), who discuss the business models in project based firms. They maintain that *"the most successful solution deliveries seem to focus on enhancing the solutions' performance in the customers' own value creation process"*. This successful value creation depends on what Reading (2002) defines as the distinctive capabilities of a company, the *"set of unique capabilities or competencies that have a special value to the customer base"*. The combination of enabling delivery-enhancing solutions and utilizing the distinctive capability of a company may then be regarded as Baden-Fuller and Morgan's performance recipe. It fits into the general comprehension of what is the main purpose of a project; namely, this model enables users to create value and deliver benefits for the owner. The key to developing the distinctive capability and successful solutions is to understand and develop a clear project business model – that is, identify what capability is required to meet the customer needs and how this should be organized. The first step is then to communicate the intended strategic outcome with the supplier's delivery team. This is achieved through the supplier's value proposition in the acquisition phase.

2.3.3 The owner's value proposition vs. the supplier value proposition

Based on the concept of value creation, an idealised representation of value creation in projects emerges. Prior to project execution, the project owner states what use-value is expected to be delivered (owner value proposition). The response as expressed in the supplier's tender is a description of how the output will align with the owner's priorities and requirements (this is often referred to in the literature as the customer value proposition). The owner value proposition is in most aspects equivalent to the reasoning behind the project initiation, the business case. To simplify and to clarify the relationship with the supplier value proposition, we have replaced the term "business case" with "owner value proposition" in this discussion.

Ideally, the supplier states how the project output will align with the project owner's need for value creation. Establishing a viable business model (Morris et al., 2005) is not possible until the firm knows what is needed and what the customer values are. Thus, the business model of the supplier (the project design team) is incomplete until the moment a customer is identified.

In this perspective, the maturity of the business model in project-based design firms depends on the extent to which it has the ability to translate the customer's need into functional design. The resources, capabilities and the value proposition must be visualised in the actual project to be meaningful to the customer (Morris et al., 2005; Zott and Amit, 2010; Demil and Lecocq, 2010; McGrath, 2010).

2.4 Success factors and success criteria to achieve competitiveness

Several scholars have been dealing with the term project success, among them Pinto and Slevin (1987), Shenhar (2001) and Turner (2014). The latter includes the most common definitions in the 4th edition of

“Handbook of Project-based management” where he states that the two components of project success are:

- *Success criteria*, the dependent variables by which we will judge the successful outcome of the project
- *Success factors*, the independent variables that will influence the successful achievement of the success criteria.

Pinto and Prescott were in 1988 distinct about the success factors: “*it is likely, that the relative impact of the various critical factors of project success are subject to change at different points in the project*”. This was tested in a survey connected to the project life cycle. An important finding was that throughout the four stages of the project, the project mission and client consultation were regarded as critical success factors. Client Acceptance was present in the planning and termination phase. The client acceptance in the termination phase will then most likely be synonymous with achieving the success criteria. Technical Tasks, not surprisingly, were only critical in the execution phase. Pinto and Prescott concluded that “*the practicing project manager would be in a better position to assist in the implementation of a project, given an increased awareness of the factors most critical to success at specific life cycle stages*”. In other words, the project manager and the design team would be better off if the planning process also emphasized additional factors other than technical tasks.

Pinto and Slevin (1988) mapped out the challenges of the project manager. The project manager is called upon to implement changes rooted in the corporate strategies with a demand for a successful outcome, without sufficient power, budget, or people to handle all of the elements essential for project success. Projects are, according to Pinto and Slevin, developed by a team of individuals with special expertise concerned with solving complex technical tasks. This led to a conclusion that the ability to transition successfully between early strategy (success factors) and later tactics (criteria) is an important skill for project managers to possess.

Most organizations typically establish some kind of success criteria at the initial phase. The most important action would be to identify the desired output meant to solve the problem and enabling a performance improvement as project outcome. Shenhar et al. (2001) point out that the traditional success criteria based on financial indicators are insufficient to measure organizational success in a dynamic market. Projects must be regarded as engines that drive strategy into new directions – and thus must deliver outcome for future benefits and competitive advantage in addition to immediate business results.

The problem is the absence of bringing the success factors to market. According to Shenhar et al. (2001), the project team, engaged in daily day-to day project execution, is typically not focusing on the business aspects. Their attention is operational and on the “getting-the-job-done” level; delivering successfully within the required technical requirements, successfully completing on time, budget and to specifications, but not necessarily to the satisfaction of the customer.

In short, even if projects are regarded as the central activity for improving effectiveness in most organisations, project managers do not recognise what constitute critical success factors.

Müller and Jugdev (2012) maintain the importance of the fact that “*a clear connection must be made between how efficiently and effectively a project is done and how the project’s products and services provides business value; otherwise, project management is perceived as providing tactical/operational value only*”. In other words, whilst not neglecting control over operational processes and outputs, the project management should concentrate on the strategic value.

Major studies (Shenhar, 2012; Williams, 2001; Pinto and Prescott, 1988; Pinto and Slevin, 1988), have pointed out that the definition of project success has changed from being an issue limited to the implementation phase, to reflecting an appreciation of success over the project life cycle (Muller and Judgev, 2012). On the basis of research literature, it seems that one ought to increase efforts in aligning

project output to the general strategy of the organisation and securing this by an increased use of project governance in a strategic perspective.

The following figure (from Shenhar et al., 2001) expresses the hierarchy of success dimensions. At the bottom is project efficiency (which is denoted as project management success), then, impact on customer (denoted as project success), next is the project's contribution to business success and, on top, the impact on preparing for the future. These are declined over time in order to illustrate that projects can be evaluated according to different dimensions over different time frames.

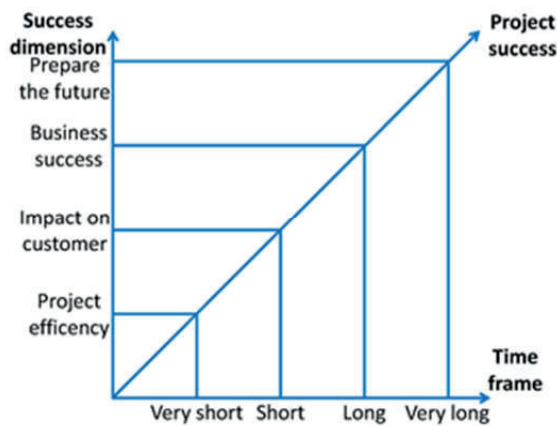


Figure 2 Time frame and hierarchy of success dimensions (Shenhar et al., 2001)

Freely based on de Wit (1988), it is possible to identify two success factors that can assure a positive outcome of projects. Firstly, the client must understand the needs that initiated the project, and how these are to be satisfied. The first success factor can thus be the client follows up strategy before decision on project execution. Secondly, the client has to supervise what is produced in the execution phase is in accordance with these needs. Thus, the second success factor can be the client follows up strategy after decision of project execution. The project management success is usually determined by the project performance at the date of the commissioning, whilst project success must be assessed according to impact on the customer. Both in the front-end phase and in the project execution phase, the client can monitor and adjust the strategy implementation in order to maximize the positive impacts.

2.5 Projects as strategic vehicles

Projects are initiated to create value and offer a competitive advantage. Defining and assessing project success is therefore a strategic management concept, the criteria against which projects should be assessed. It covers the project execution itself, the benefits for users, the financial outcome, as well as the future competitive benefits. According to this line of thought, both Shenhar (2012) and Maltz et al. (2012) suggest that project success ought to be assessed according to five dimensions (Figure 4). These range from short-term project efficiency to future strategic impact. The project success measurement is based on the same line of thought as found in the balanced scorecard model of Kaplan and Norton (2004). Shenhar's model includes both corporate and project success measures within five dimensions. A study based on Shenhar's success dimensions (Maltz et al., 2012) maintains that top-level management's vision needs to be translated into specific goals and measures at the project team levels. *By better understanding the overall organizational goals and by being better required to achieve specific business goals, project*

teams will be better equipped to do their job both effectively as well as efficiently. This understanding is summarized in the following figure:

Success Dimension	1	2	3	4	5
Time Horizon	Very Short	Short	Mid-term	Long	Very Long
Organization Level					
Project	Project efficiency	Team Leadership/People skills	Impact on Customer	Direct business success	Preparing the future
Corporate	Financial Performance	Market/Customer	Process	Human Capital	Creating the Future

Figure 3 Success Scorecards (Maltz et al., 2012)

The holistic approach outlined by Maltz et al. (2012) as well as by Cooke-Davies (2002) may meet some challenges when external suppliers deliver the project. This is typically the situation in a construction project context. As concluded by Vuori et al. (2013), the project organization needs to create a strategy that fits with the external environment, market issues as well as with the internal environment of the client. This is necessary to gain clients' acceptance, managerial support and resources to be effective. We need to understand the meaning of operational effectiveness (Porter, 1996), which *value drivers* matter (Ittner and Larcker, 2003) and where client-, user- and supplier strategy converge in a project context (that is, the manner by which separate strategies can work towards a common goal). Focusing on efficiency alone will not be the differentiator to superior operational effectiveness (Porter, 1996). Suppliers' need to meet customer needs and have a strategic approach focusing on performing different activities from rivals is key to competitive advantage. Performing similar activities better is good, but easily copied by competitors.

Finding the way into such a strategic "sweet spot", according to Ittner and Larcker (2003), necessitates taking a closer look at the cause- and effect relationship that may exist between the chosen drivers of strategic success and outcomes. Ittner and Larcker (2003) suggest that doing this correctly requires the development of a causal model based on the hypotheses in the strategic plan. To find and track the activities that lead to improvements and strategic success is in itself a challenging activity. Once it has been proven, however, and the final causal model is chosen, it is hard to argue with and will be the source of a broad-based agreement on the subject of strategy.

In order to address such challenges, a common claim of contemporary literature (especially within the context of product development) is that projects should have *value delivery* as a fundamental objective (Thomson et al., 2003). More specifically, projects should be intended to deliver value from which operations can derive benefits. From a strategic perspective, then, projects are undertaken in order to buttress core activities and thereby improve competitiveness (Cooke-Davies, 2002). This represents a business-case-based decision making process (Dinsmore and Cooke-Davies, 2006). The project represents a business case linked to the corporate strategy, having quantified benefits that the project is intended to contribute to core business. The model in Figure 4 visualises the project as a "supplier" with its own business model delivering the requested output according to what represents the project value of the owner. The project value enables core operations to deliver operational value – and realise benefits.

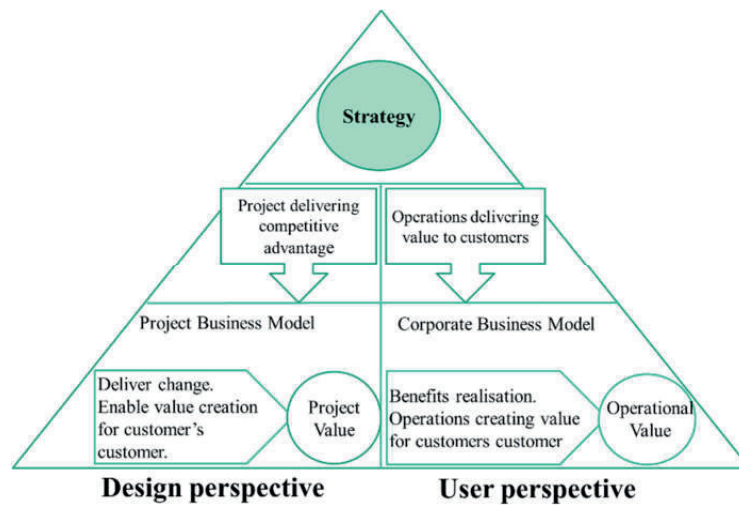


Figure 4 The concepts of strategy and business models combined (adaptation of Cooke-Davies' (2004) model for the connection between projects and operations).

Projects have, for decades, been managed by measuring the performance according to the so-called iron triangle of time, budgets and scope. The constraints implied by this have been directing project management and project teams, focusing their activities on efficiency. To increase performance within such constraints, the industry and research institutions have provided the project managers with a respectable amount of tactical tools and frameworks. However, the project's link to the business case and the strategic motivation is rarely in concordance with the idea of the project manager as a success factor.

Slevin and Pinto (1987) maintain that it is the rare project manager who is a brilliant strategist and a skilled tactician. To manage projects successfully, however, both capabilities must be brought to bear. They distinguish between tactical and strategic performance. Cooke-Davies (2002), who analyses the difference in project management success and project success, similarly deals with this. According to his view, the first one refers to the tactical level, dealing with the traditional project management measures of time, cost and quality, whilst the latter concerns the situation/stage where the owner can realize the benefits hopefully provided by the project. Cooke-Davies (2002) links project success and corporate success; in this conception, the project manager does not deliver benefits as such. Rather, it is the close cooperation between project and user that enables the future advantages/benefits. This cooperation must be organized within the framework of the corporate strategy. The goal is for processes and decisions to translate strategy into project management practice.

Projects, as integrated elements of a corporate strategy, are also the main message from Shenhar in his book, "Reinventing Project Management": "*the only way organizations can change, implement a strategy, innovate, or gain competitive advantages is through projects*". The most visible changes in organizations are set up as projects; this may be new IT solutions, re-organizations or new and suitable premises expected to deliver new capabilities. In short, projects are set up to create opportunities for the future. In the article, "Project Success: A Multidimensional Strategic Concept", Shenhar et al. (2001) discuss projects as powerful strategic weapons and describe them as the engine that drives strategy into new directions.

2.5.1 Construction projects

There is no doubt that the recent research on effectiveness within the construction industry has led to a heightened consciousness of project outcome and user value. Despite this new attention, common procurement strategies as well as design teams still are geared towards project efficiency and re-use of design solutions.

A central question when deciding to invest in a new building is what the return of investment will be. A typical approach to this – from an owner perspective – is to consider the potential value creation on the supplier side is whether this project will be performed with the building as an asset in mind or rather, the business benefits from enhanced efficiency in use. From an investors point of view, it seems that property has for the last two or three decades been a safe investment, with almost guaranteed profit. In the opinion of the author of this thesis, the value of the asset has increased steadily over time, more due to increasing demand for proper localization than the functionality of the building. In such a situation, with focus on the building as a physical asset, there has been no need for substantial changes of performance in the industry. Professional project management will grant the investors' return on investment despite the premises lack of effectiveness in use.

Again, in the opinion of the author of this thesis, the market situation where firms operated within a protected and limited competitive environment is now increasingly replaced with a global economy with international competitors. As a result, the focal point of nearly all organizations is to improve operative performance to withstand a harsh competitive environment.

The picture changes radically when the value of the building comprises both the value as a physical asset and as an asset that exists to facilitate the customer's objectives. The incorporation of both perspectives leads to the broader and more holistic definition of project success. This is a creation of a multi-dimensional value, as suggested by Shenhar et al. (2001), with tangible value giving financial benefits and the improved use value of functional workplaces giving organizational benefits.

The day-to-day activity in most firms is carried out within buildings, in which the functionality is obviously an important factor for performance. This new consciousness concerning user efficiency in turn leads to a need for change and a new mind-set within the construction industry. When productivity was the main success factor in earlier protected market environments, practice was based on proven technical solutions and limited interaction with the user. Now, delivering holistic solutions that offer competitive advantages to the customer through value creation in projects is the new success factor.

Two interdependent paths to success are described in the strategy map, the management perspective and the leadership perspective (Figure 5). This is the new challenge for the construction industry, which so far has tended to focus on the management side, where the business is productivity oriented, but still not successful. The classical inside-out thinking met the need for a building based on design competencies and routines of engineers. However, the new quest for business benefits from the functionality and perceived user value, which requires new mind-sets as well as new competencies.

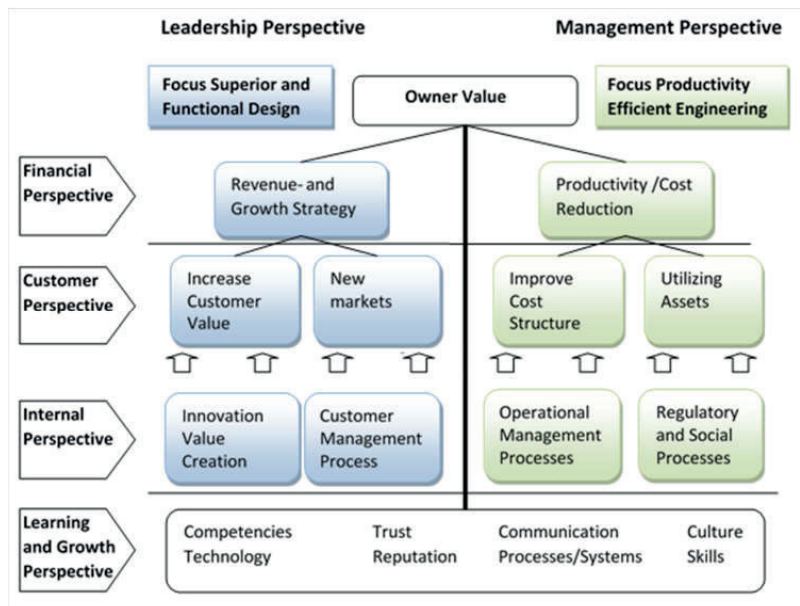


Figure 5 Strategy Map in a building project context, based on Kaplan and Norton (2004)

To understand the clients' needs in a holistic perspective, new leadership is required to move from an inside-out perspective to the outside-in focus (Porter and Cramer, 2006). The latter is approaching the project from the customer's perspective to make sure proposed solutions are in accordance with what the customer perceives as value. The new challenge is to organize the project in order to effectively cooperate with the users/owner and translate their needs, tangible as well as intangible, into functional buildings.

According to the analysis presented in the current thesis, the project needs to be based on creativity and innovative functionality, which requires deep understanding of what the customer needs. The project is directed towards customer success (long-term value is competitive advantage). At the same time, the supplier, legitimately, has his own success in mind and needs to do so. The supplier's long-term competitive advantage lies in being able to create a specific advantage that competitors cannot easily copy. If they only compete on productivity, they will end up delivering the same competitive advantage to the customer as all the others. This in turn will make the client turn to substitutes.

2.6 Corporate governance

Governance – overseeing performance and making crucial decisions

Governance is essential in order to secure value creation in projects. Governance is fundamentally about monitoring, incentive, leadership selection and control systems. Hermalin and Weisbach (2001) attribute agency-problems as the fundamental cause and motivation for governance. Corporate governance involves a set of relationships between a company's management, its board, its shareholders and its other stakeholders (OECD, 2004). Corporate governance also provides the structure through which the objectives of the company are set and the means of attaining those objectives and monitoring performance are determined (Müller, 2009). This indicates, as earlier proposed by Pierre and Peters (2000), that it is necessary to view governance as structure (hierarchy and systems, etc.) on one hand and as a process (relations and incentives, etc.) on the other.

In practice, structure-based governance typically incorporates five elements (Narayanan and DeFillippi, 2012):

- Stage gate approval process
- Stakeholder representation
- Formal roles and responsibilities
- Quality assurance
- Contracts and sign-offs.

Relationship-based governance typically focus on non-hierarchical elements such as:

- Leadership, motivation and incentives
- Resource allocation
- Alliances
- Involvement of stakeholders
- Informal relations and communication

Other researchers have discussed the effectiveness of governance along these lines. Yoshimori (2005) investigated the difference between corporate governance in large corporations in Japan and USA. He concludes that the value and culture based governance in Japanese corporations may explain corporate success better than the structure and control based governance found in American corporations. It is often argued that independence and external representation is important in boards and other governance bodies (Dalton et al., 1998) to make them effective – ref agency theory. These examples illustrate important aspects of governance as structure and governance as relations in firms.

2.6.1 Project governance

Project governance involves the same basic interpretations as corporate governance and is ultimately the responsibility of the organisation's board of directors (Klakegg and Shannon, 2013). Project governance includes establishing definitions and goals for the project. A major governance activity is to put in place the means to achieve these goals and then overlook the management of these means. According to the Office of Government Commerce, while corporate governance handles the way benefits are realised in operation, project governance deals with how to deliver the capability to realise benefits or values in operation through projects (OGC, 2007). This structurally based view is challenged by relation-based perspectives, which gives lead to developing more collaborative execution models.

Applied to programmes and projects, OGC (2007) defines governance as the framework through which programmes deliver their change objectives and remain under corporate supervision and control. Since projects are elements in a programme and - in compliance with other structured activities - deliver the expected outcome, this definition also covers the project governance function. The OGC definition and similar approaches place project management in the structure based tradition. We argue, in line with Windeler and Sydow (2001), Lindkvist (2004) and others, that projects need to be viewed as alliances and networks of actors inside as well as beyond the firm and the project organisation.

As Mankins and Steel (2005) reveal, the strategy-to-performance gap exists at most companies; on average, the companies' deliver only 63 % of the performance promised in the strategy. Management can minimize this gap by objectively assessing any performance shortfall and determining whether it stems from the strategy, the plan, the execution or employee's capabilities (or suppliers).

The survey conducted by Mankins and Steel revealed that less than 15 % of the companies did compare the forecasted performance with the strategy. As projects are recognized as "strategic vehicles", there is a reason to believe that this lack of strategic outcome and performance loss is also valid within building projects. They also noticed that most companies do not track performance against long-term plans, which Aaron Shenhar (2004) has identified as a major problem in most projects.

Cooke-Davies (2004) maintains that factors for project management success do not necessarily lead to project success. While factors for project management success are often directed at time and cost measures, project success is related to the project owner's major goals. In a professional project delivery organisation grouped together and managed according to project management success factors, the

probability of achieving goals related to success criteria, such as time and cost, is high. The effect-related goals and benefit realisation, however, are normally left to the owner organisation, which must realise organisational success by means of operations management. As Shenhar and Dvir (2007) found, meeting the design goals is not enough – the number one criterion is a performance aligned with the owners' strategic goals.

A critical factor for project success (Cooke-Davies, 2004) is therefore the existence of an effective benefit delivery and management process that involves the mutual co-operation of project management and client organisation line management functions. This mutual co-operation focusing on benefits in accordance with corporate strategy is then the main objective within the governance section of the project. The quest for success factors and corresponding performance indicators is a critical activity in the front-end phase. If agreed upon, this input to the management system leads directly or indirectly to the success of the project and business, according to Cooke-Davies.

According to Müller (2009), governance regulates the methods and processes of defining the objectives of an organisation, providing the means to achieve those objectives and controlling progress. Without a governance structure, an organisation runs the risk of conflicts and inconsistencies between the various means of achieving organizational goals, the processes and resources. Andersen (2012) concludes that project success may be strengthened by a project management governance structure consisting of close cooperation between project owner and project manager throughout all phases of project work and whenever one of them feels the need for contact. Klakegg (2009) examined how to improve the governance of major public investment projects, with respect to the evaluation criteria relevance and sustainability. He found that lack of relevance mainly arises from unclear objectives and from missing links between projects and user's needs. Lack of sustainability comes from unsolved conflict over objectives, lack of commitment and faulty economic assumptions. Based on project governance literature, we maintain that the first priority should be to ensure that relevant project concepts are chosen. When ensuring relevance, the project owner must have in mind that different values (project output value, shareholder value and operational value) will appear in different phases, as discussed by Cooper et al. (2002) and Porter (1996). The following figure illustrates our point:

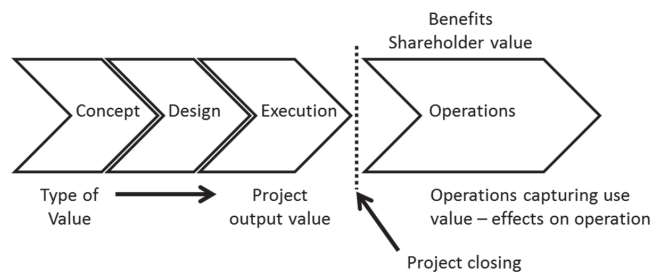


Figure 6 Simplified representation of the phases of the project. Different values will appear in the different phases of the project.

The value creation is commonly understood according to three separate levels of analysis, notably strategic, tactical and operational. We can illustrate the main roles of such an organisational hierarchy in the following, simplified manner:

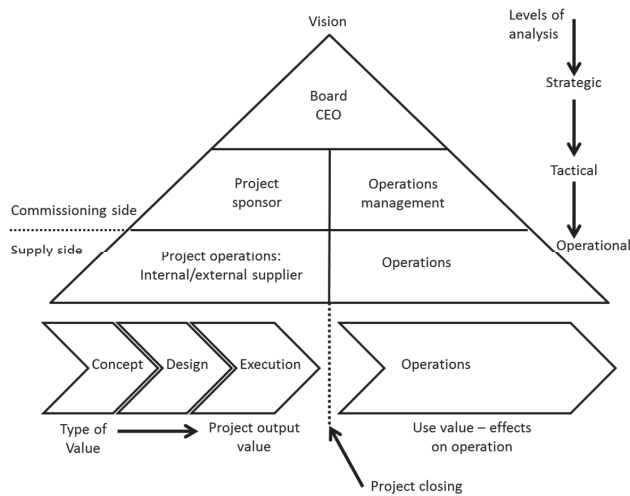


Figure 7 Roles and responsibilities according to levels of analysis, and division between running operations and project operations (freely based on Cooke-Davies, 2002).

Different roles correspond to each of the levels and different responsibilities correspond to the different roles. The board of directors owns the strategy, whilst the CEO is responsible for strategy implementation. The transmission of strategy into tangible projects is best assured by the use of a so-called project sponsor. The project sponsor is – on a tactical level – delegated the responsibility of translating the strategy into relevant project output. This responsibility can involve choice of concept, supplier follow-up, measurement and evaluation. The supplier is – on an operational level – responsible for the project output in light of the commission. This involves translating the goals into design and execution. In order to facilitate our analysis, we refer to project operations as the supply side. An internal supplier, an external supplier, or a combination of the two can fill the supply side.

The problem, as the findings section will amply show, is how to translate the owner needs for use value into relevant project output value. A key to assuring this translation can be found in the concept of *value proposition* (Anderson et al., 2006). This concept and its organisational implications serve as means to assure that the project aligns with strategic and tactical goals of the organisation, while it still can be analysed and measured on the operational level. The project owner formulates what use value the project is to produce in the *value proposition*, and the supplier states how the project output will align with the project owner's needs in the *customer value proposition*.

2.6.2 Project governance body

Significant research studies argue that governance is essential to ensure that the project will provide relevant value (e.g. Klakegg and Shannon (2013); Klakegg (2010); Müller and Lessard (2001); Muller (2009); Murrey (2011); OECD (2004); OGC (2007)). A *project governance body* can assure the governance function. The governance body can take several forms, be it a single executive officer, a steering committee, a portfolio management office, etc. Crawford et al. (2008b) list situations that call for an emphasis on project governance, among them are:

- The parent organization has a high level of risk exposure to the consequence of failure of the project,
- The project is persistently performing poorly against the parent organization's expectations,
- The project is mission critical or has a high level of exposure,
- There is a need to realign the project to new strategy or organizational context.

The point is: the project governance body is to be understood as a mean to assure process quality.

In a corporate perspective, governance has traditionally been understood as the link between the company and the owners (Klakegg, 2010). Today, the concept is increasingly being linked to projects, in order to align their outcome with the general strategy of the parent organisation. As a result, new guidelines have been developed in order to support owners' efforts to increase project effectiveness, such as APM (2011) and Murray (2011).

Turner and Müller (2003) and Müller (2009) identify projects as a production function of firms, where individual projects serve as agencies to manage new undertakings and stimulate changes. Within each agency, the project manager acts as CEO of the temporary organization. All of these agency decisions need to be aligned continuously with the firm's strategy, its tactical objectives and capabilities. Müller concludes that this leads to a need for governance of decision-making in projects. A temporary project organisation needs governance, just like a permanent organisation.

The responsibility of the project governance body is to monitor and supervise the process, as shown in Figure 8. It should encourage continuous improvement and interfere if the project is not providing the intended use value. On behalf of the owner, the governance body is also responsible for making decisions and answering questions from the supply side during the process in order to assure that the project is aligned with the strategy.

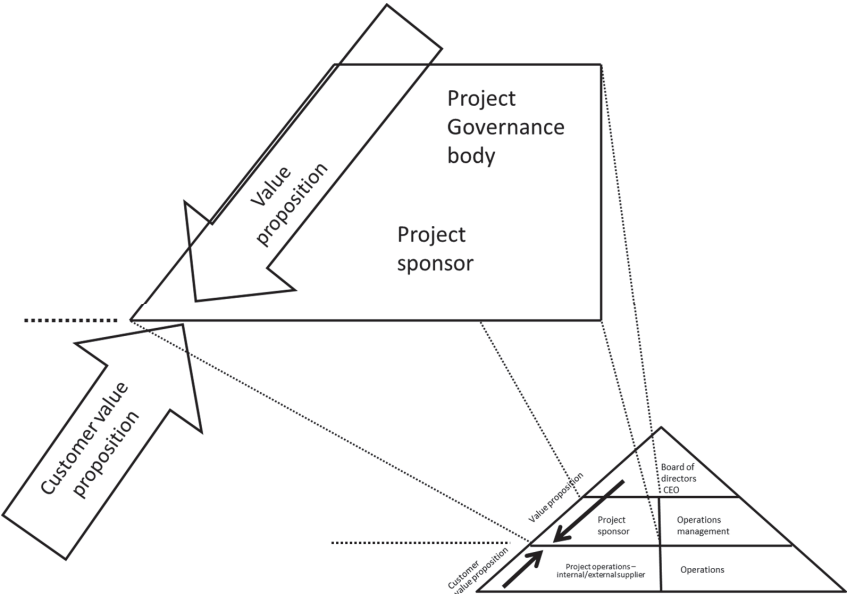


Figure 8 The project governance body monitors that the supplier receives the value proposition, and that the customer value proposition is communicated to the owner

The process aimed at assuring that the project owner organisation produces the relevant benefit involves significant communication challenges. Employing the vocabulary established by Gadamer (1960), all individuals are characterised by what he calls their historically affected consciousness, meaning that the way in which each individual conceptualises the world is determined by their particular history and the cultural context in which they operate. In the context of the construction industry, it is common knowledge that the language – references, preoccupations, and vocabulary – of the supply side is not equivalent to the language of the demand side (project owner side). The supply side – typically dominated by construction engineers – use a language typically based on models, specifications, rent values, etc. The demand side – typically dominated by business/organisation technocrats – use a language dominated

by flowcharts, financial reports, business cases, mission statements, etc. (Blyth and Worthington, 2010: 63).

It is not surprising, then, that the convergence point of these rationales (or intellectual horizons in Gadamer's words) becomes crucial. At this convergence point, the project sponsor not only needs to establish a purely technical transaction of information. The project sponsor, in effect, needs to be able to translate messages from one to another (operating with what Gadamer calls a fusion of horizons, *Horizontversmeltzung*). This is ultimately what the project sponsor is supposed to assure and the difficulty of this task necessitates a governance body to control that communication is functioning adequately. Figure 9 illustrates the governance processes of decoding and responding to messages and the noise that always will be present. If the project is not providing the intended value or the framework conditions have rendered this value irrelevant, then the project governance body should interfere.

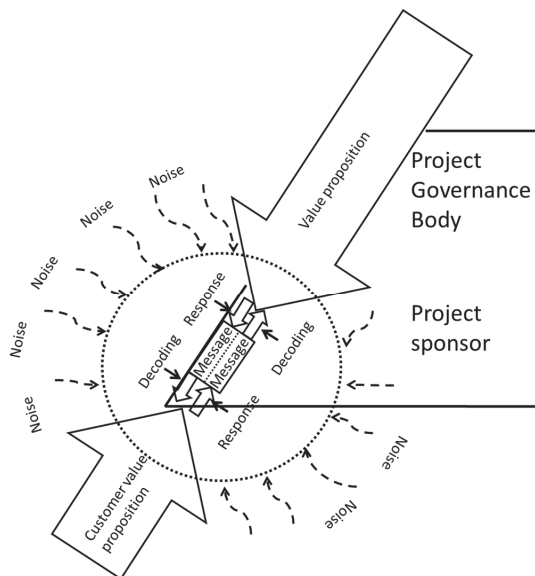


Figure 9 The communicative situation under supervision of the project governance body. This is the convergence point where two logics (owner and supplier side) meet. The unobstructed flow of information is the responsibility of the project sponsor, whilst the project governance body monitors and supervises the process.

Project governance involves the same basic interpretations as corporate governance and is ultimately the responsibility of the organisation's board of directors (Klakegg and Shannon, 2013). Project governance includes establishing definitions and goals for the project. A major governance activity is to put in place the means to achieve these goals and then overlook the management of these means. While corporate governance handles the way benefits are realised in operation, project governance deals with how to deliver the capability to realise benefits or values in operation through projects (OGC, 2007). This structurally based view is challenged by relation-based perspectives, which gives lead to developing more collaborative execution models.

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Windeler and Sydow (2001), Lindkvist (2004) and others, that projects need also to be viewed as alliances and networks of actors within, and well beyond the firm and the project organisation.

To sum it up, in this section we looked upon governance as functions for developing strategies, overseeing needs and objectives, making decisions concerning projects and following up on performance across the organisation. Understanding the role of governance is vital for both client and supplier in order to develop a successful project. To rephrase the above, governance includes relations and structures which make it possible to establish goals and choosing instruments for achieving the goals (creating intended changes). These instruments are organised as projects. Thus, projects are justified based on an organisation's business strategy.

Consequently, we maintain that the project organisation ought to establish a strategy and define long-term goals, aligned with the project owner's strategy. To make this possible, a "model" must be established, showing how the relationship between the permanent owner-user organisation and the temporary project organisation shall be handled. Further, this Governance Framework Model must secure the strategic goals of the owner, i.e. the project success, and at the same time avoid reducing the scope and productivity of the project, i.e. ensure project management success.

3. General methodological approach

The research design of the thesis as a whole is presented in this chapter, highlighting general issues of methodology pertinent to the thesis as well as literature studies. The applied methodology for the separate studies is presented in more detail in each of the included papers. For this reason, specific comments on each paper are omitted here.

The main research question governing this work has been *how can AEC-projects better align to business strategies from an owner perspective?* The main approach has been to analyse common practice within this industry with the recommendations and frameworks presented in the general management literature going from a theoretical to a practical approach.

The research presented in this thesis takes the form of a combination of case studies of Norwegian construction projects and conceptual papers. Studying the same phenomenon from multiple angles and using different sets of data and information, while employing different methods, increases the validity and reliability of the research results. The approach chosen was entirely qualitative and mostly exploratory in nature.

As described in Blumberg et al. (2014:155), exploratory studies are particularly useful to “develop concepts more clearly, establish priorities, develop operational definitions and improve the final research design”. The reason for choosing this approach was that the quantity of existent research within this field – namely, the alignment of projects with corporate strategy within the AEC-industry – proved to give limited insight, particularly at the outset of the process. Again, as Blumberg et al. (2014) underline, exploratory studies function well within areas of investigation that have not yet been covered through research, making a basic exploration necessary in order to acquire knowledge about the research or management dilemma.

Figure 10 (based on an example from Cooper and Schindler (2008)) illustrates an overview of the actions, steps and methodological approaches involved in the research process of this study.

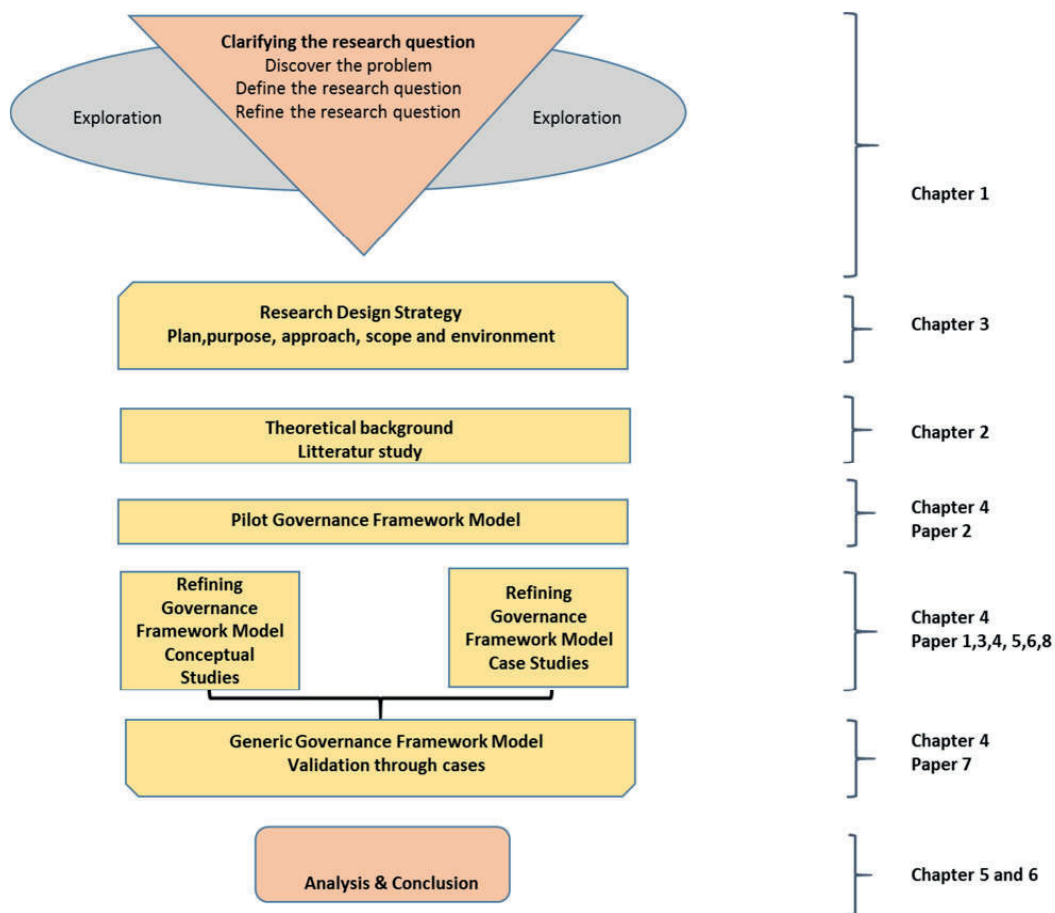


Figure 10 Overview of the actions and steps involved in the research process of this thesis

As illustrated above, the research started out with an explorative literature review, which continued throughout the whole research process. Based on this, pilot case studies (documented in paper 1) were carried out, based on interviews and document studies. The material collected in the pilot case studies and the literature studies permitted the articulation of a pilot governance framework model (paper 2). The proposed generic governance framework model (papers 2 and 7) is characterized by being normative in nature.

This model was further refined through additional case studies (documented in papers 3, 5, 6 and 8) and subsequent conceptual work (documented in paper 4, 6, 7) that permitted the establishment and validation of a generic governance framework. Finally, a governance framework was articulated and validated through further case studies and workshops.

Thus, the research is based on an inductive-deductive approach, as described by Fellows and Liu (2003). Inductive research explores an issue through observation. Consequently, the aim has been to establish explanatory principles. In deductive research, hypotheses are tested against observations. In this case, the framework developed has served as somewhat of a hypothesis on how to align AEC projects to business strategies. The reliability of the findings has increased correspondingly to the transition from an explorative to an inductive approach. A high validity has been the aim throughout the research process,

through such measures as the limitation of the scope to the AEC-industry, the specific nature of the cases studied, the use of case-specific documents, and the interviewing of key personnel involved in the cases.

In a study conducted by Yin (2014), case studies are recommended as a research method, among several others, in order to understand the richness of a phenomenon. As a general rule, Yin (2014:2) continues, “[t]here will be many more variables of interest than data points”. This is definitely the case with the highly complex world of governing projects from a client perspective. Therefore, the strategy of choosing “multiple sources of evidence” has been applied, in order that they “converge in a triangulating fashion”. In all of the papers presented in this thesis, methodological triangulation has been sought by the use of multiple sources of evidence. Much attention has been given to understanding the projects based on empirical evidence, interpreted in light of the theoretical framework presented.

Basing research solely on case studies typically elicits comments concerning “soft” analyses, and questions the potential of generalization in the results presented. The complexity of the subject matter addressed in this thesis, however, necessitates veritable in-depth analysis that traditional quantitative approaches would not be able to reach. Rather, we claim, in line with the argument of Flyvbjerg (2006), single cases can prove vastly more productive in bringing forward veritable knowledge on the subject examined. According to this line of thought, the research has followed cases found exemplary, both concerning failures and successes.

References to the use of theory usually involve the formation of a hypothesis of cause-effect relationships. These theories would therefore be considered relevant to explanatory case studies. However, theories can also be significant in descriptive case studies. A descriptive theory is not an expression of a cause-effect relationship. Rather, a descriptive theory covers the scope and depth of the object (case) being described (Yin, 2003).

In the context of the research reported on in this thesis, a rich literature and discourse on the limitations of project management and delivery organizations to deliver strategic project value permitted the creation of a theoretical model for value creation in building projects. This is the governance model described in paper 2.

In order to make sure that user effectiveness and long term effectiveness for owner and societal goals are fulfilled in building projects, paper 2 outlines the following assertions behind the model:

:

- Project governance (the use of governing mechanisms) on behalf of the project owner and user organization is needed
- The delivery of the organization’s business model must reflect the project owner’s business model

The study in papers 2 and 7 is a descriptive case study (Yin, 2003) where the theoretical model has been used as a framework for analyzing two project cases, focusing on two elements: the project owner’s governance model and the main stakeholders’ value and business models.

The study and model presented in paper 2 served as a formative pilot and was developed through case studies and conceptual papers. The case studies follow the prescriptions of Yin (2009). Three important principles applied have been 1) multiple sources of information, 2) the use of case-specific information and 3) a concern for maintaining a chain of evidence between the questions asked, the data collected and the conclusions drawn.

3.1 Literature study

The ambition of the work presented in this thesis has been to investigate the relationship between business theories concerning the alignment of projects with the overall strategy of the company – with a focus on the Norwegian construction industry. The main approach has been to analyse common practice within this industry in the light of the recommendations and frameworks presented in management literature.

Particular interest has been given to the subject of project management and its relationship to overall strategy, and to the question of how owners assure the fulfilment of strategic goals in carrying out projects. The theoretical framework from management literature forms the basis for the empirical studies carried out. To a certain degree, the challenge of rendering projects into successful strategic vehicles is equally reflected in some literature addressing the construction industry more specifically (Samsset, 2003, 2010; Cooke-Davies, 2002).

The starting point of this research was a survey of management literature carried out to identify possible knowledge gaps existing in the field of research. Findings in this part of the project enabled us to outline a schematic model of a building process consistent with general theories of product development and management theories (Baden-Füller and Morgan, 2010; Kaplan and Norton, 2014; Müller, 2009; Shenhar et al 2001; Shenhar and Patanakul, 2012; Turner, 2014; Turner and Müller 2003).

The literature study was carried out by the use of internet-based search engines (in particular, Google Scholar, Primo Central and BIBSYS (Norwegian Libraries Search Engine) were used). The main keywords used in the search were related to strategy, project strategy, project success, project management success, project effectiveness, governance and project governance. This provided an introduction to important elements in strategic thinking related to products and projects. This analysis further permitted the focus on what was regarded as success factors in project strategy, specifically value creation, project governance, business models and value propositions.

3.2 Conceptual analysis

The identified problem motivating the initiation of the research project was the lack of effective processes in construction projects. To clarify the research question, it was necessary in the initiation phase to build a generic model that could explain the components in a generic construction process.

In order to systematize the concepts and ideas gathered from the literature study, two conceptual papers were written. The conceptual papers were based on insights gathered from general management theories within strategy and project strategy, governance and project governance, business models, value propositions and value creation. These topics were studied with the ambition of enabling us to develop a conceptual framework. The main feature of this theoretical framework is the ability to combine a project's business case and governance functions with the business model of the design team.

The research is limited to what is defined as the most influential factors regarding the outcome, notably the initial phases and processes leading up to the finalization of the schematic design. On the basis of this, it was considered crucial to reveal which actors are participating and the quality of the collaboration in the process.

The analysis has been carried out in order to identify elements which hamper and support, respectively, value creation from the project owner's perspective; or more precisely, to what extent the business model of the design team is aligned with the owner's project requirements and needs.

3.3 Case studies

A large number (21 in total) of cases have been examined, with a significant number of respondents in each case. One reason for the choice of these cases was their accessibility and the availability of project documentation. Equally, an ambition was to combine private and public projects. Further, the cases examined spanned from small to major, ranging from NOK 3 million (a kindergarten) to NOK 3-4 billion (the National Museum of Art and Design). To a certain extent, master students have been involved as interviewers. The first author in cooperation with the master students involved determined interview guidelines. Case studies included in the thesis apply a research methodology based on the works of Yin (2003).

The case studies were carried out using literature studies focusing on the prime conceptual object of the specific analysis undertaken in the paper, documentation studies and in-depth semi-structured interviews.

In the projects chosen for case studies, the practical consequences of governance were examined. We have ensured a varied case portfolio, both with respect to their nature (constructions or buildings), owners (public or private), size, and degree of success (operational and/or strategic). We selected the cases randomly, and achieved the initial contact with respondents from all cases through telephone and e-mail.

A main source of data from these cases is found in various project documents such as project descriptions, contracts, budgets, etc. The data was sorted and analysed in regards to the main issues in the governance framework pilot model from paper 2, e.g. governance, business case, supplier business model, project management and long term effects to get empirical evidence and an in-depth understanding of processes and behaviours of the owner as well as on the supplier side.

In addition, the insights of individuals directly involved in the projects were gathered through interviews, mainly following interview-guides. Interviewees who had first-hand experience with the phenomena in question, such as a project manager, designer, project sponsor, client representative, etc., were always chosen. The views presented in the interviews are highly subjective, as each individual was asked about their personal opinion. However, together with the views expressed by the owners and decision makers, the responses add to the richness of the information, and can reveal gaps in the interpretation of the intervention. To make the interviews effective, the interviewees were presented with an outline of the interview guide before the interview was held. Minutes were taken from all interviews, drafted during the interviews and later presented to the interviewees. The interviewees were also able to comment on the minutes from the interviews before the papers were completed. Their comments led to some additions and adjustments to the minutes.

The interviews conducted in the two last cases in paper 7 were based on the developed generic governance framework and the questionnaire was structured to be consistent with it. The questionnaire concentrated on the main issues in the refined version of the project governance model and specifically, the strategic need, owner value proposition (business case) and project effects/use value. This also provided feedback, which improved the validity of the model. The analysis consisted of, firstly, observations of noted challenges; secondly, the articulation of these challenges in the vocabulary gathered from general theories of business, and thirdly, considering whether these articulations were transferable to the AEC-industry. The proposed model was based on the conclusions following the procedure described above. In the aftermath of these procedures, validation of the conclusions reached was sought through expert workshops.

3.4 Expert workshop

Workshops with experts and executives from two owner organisations were held to gather information as a basis for the research presented in paper 7. The cases were selected among projects where the client is recognised as being both a professional project owner and concerned with project effectiveness, to some extent being what Flyvbjerg (2006) denotes as virtuosi of the profession and thereby especially interesting examples to study. The workshops were used for validation purposes. The analysis was carried out in order to identify which elements hamper and which support value creation from the project owner's perspective; or more precisely, to what extent the business model of the design team is aligned with the owner's project requirements and needs. Subsequent to the case studies in paper 7, workshops with the respective owners and users were arranged. From these, minutes were written and approved by the participants.

The findings have also been presented and discussed in workshops with 40 representatives from the Association of Consulting Engineers and the Association of Consulting Architects in Norway. At the workshop, the governance framework model was presented as well as major findings from the connected

cases regarding the governance function, the approach to the clients' business case and finally the design teams' methodology and performance with regard to understanding the customer's need and requirements. The plenary presentation of findings was followed by group discussions on the various issues. The purpose of these workshops was to determine whether the findings were considered valid by working professionals from Norwegian design companies. Findings and conclusions from the workshops were transcribed and presented to the participants, both as meeting minutes and as a summary in a PowerPoint presentation.

To analyse to what extent the framework reveals the underlying problems of limited project success, two case studies in two major Norwegian building projects were carried out according to the methods of Yin (2009). The case studies were based on a combination of document studies and interviews with representatives from owner/user, architects and engineering consultants, and the project management.

The characteristics were presented in tables where the findings were grouped in the following categories:

Owner strategy

<i>Strategic Need</i>	<i>Project Governance</i>	<i>Use Value and Effects</i>
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The supplier business model

<i>Supply Side Business Models</i>	<i>Project Business Model</i>	<i>Metrics (KPIs)</i>
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Summary of findings presented as an assessment of the performance regarding issues organized as shown below.

Business Model of the owner	Governance function
Business Model Project Manager	Measurements
Business Model (Design Team)	Measurement

The findings were then analysed to assess the impact of the governance function, to what extent the business case was formulated and communicated and lastly to assess the design team's methodology in alignment with the business case. The detailed analysis of the findings is presented in paper 7.

3.5 Validity and reliability

The particular considerations for assuring the reliability of the individual papers are reported in this section. The general approach to this follows to a large extent Olsson (2006), who – working in the same field – the author has found most convincing within this specific context. According to Yin (2003), case studies using multiple sources of evidence prove in general to assure a higher quality of the research presented than single-source studies. The validity and reliability of the data presented in the individual papers constituting the main bulk of this thesis are not sufficient to provide solid answers to the overall research questions, taken in isolation. However, the research has taken previous studies on related issues into account. To a large extent, the results found in this thesis are consistent with results in previous studies, in particular, from other industries. Again, according to Yin, trustworthy results can best be established through a series of replications and validations. When the number of studies with consistent results grows, the confidence in the findings should increase. The papers presented in this thesis confirm, to a certain degree and with some nuances stemming from the particularities of the industry, that results found in other industries are found within the context of the construction industry. Further research is needed to clarify to what extent these indications are of a general nature or are project-specific.

4. Papers

To give the reader an overview of the main findings, the papers are presented briefly here. For a more detailed exposé, please see the papers respectively. In chapter 5, the general findings are discussed.

Paper 1 Project goals in construction projects

- Hjelmbrekke, H. and Lædre, O. (2011). Project goals in construction projects. 5th Nordic Conference on Construction Economics and Organisation

The purpose of the study was to investigate to what extent project owners:

- Formulate project goals in the front-end phase
- Communicate their goals to contractors
- Use their goals actively during planning and construction
- Benefit from active use of goals

In this paper, the goals are related to the effectiveness and satisfaction of actual user needs in the operational phase. This is a broader approach than solely focusing on traditional project objectives relating to cost, time, quality, and scope.

Empirical material was collected through semi-structured interviews with the project managers of three building projects. The projects and respondents were selected on a strategic basis. The projects had professional owners, and based on experience from earlier collaborations, it was anticipated that they had put ample effort into formulating and communicating their goals. A written survey was conducted, with special focus on sources, which stress the importance that project goals have for project success. Ideally, a project owner should formulate goals during the front-end phase so that it can form a basis for the programming phase.

The three building projects examined were all characterized by an explicit absence of formulation of goals, and the investigation showed that the project managers believed that clear goals would have contributed to improving the processes. Even if the projects were individually perceived as well executed, to a greater degree, it was considered a problem that no superior or visible goals existed. To what extent the final projects and buildings investigated would have actually changed if a concept had been developed early on is hard to be certain. The fact that the owners were aware of deficiencies in processing when actual goals were clearly lacking is a confirmation that the potential to make better buildings existed.

No conscious strategy was found for how goals should be communicated in the projects examined. The culture building (Dokkhuset) project had its goals in sight during the developmental phase and project participants were conscious of these goals due to the limited number of persons involved and the project's small scale. Such communication was absent from both the administration building project and university building project. The respondents that were interviewed characterized this as a very limiting situation regarding the utilization of the opportunities existent in the projects.

The developers of the examined projects assessed the execution processes as good, even if the project managers considered it problematic that processes for visible overall goals were not for guiding the projects. The owners understood that a greater focus on the communication of goals would have improved the development process. This would first of all be significant for prioritizing designs adapted to user needs instead of simply responding to technical specification requirements. Project evaluations subsequently were directed mainly toward the project objectives, while users were only informally concerned and in general, the owners only made unsystematic investigations of effects.

In summary, the case studies revealed that the projects did not implement systematic processes with the purpose of describing the main business goals or objectives, did not communicate these from the decision-makers and owners to the implementation organization, and did not undertake evaluation of goals in the operational phase. Theory and literature clearly indicate that objectives are of large significance for a project's success and that contractors must place great emphasis on both formulating them and following them up.

The study gave a clear indication that project goals and objectives are controlling in building projects. A project's success is evaluated in terms of its ultimate quality, timeliness and cost. It was recorded that the question of objectives was very central in the development phase of one of the projects. In that particular project, the project goals were moderated in the processes and the owner had no special requirements in terms of returns.

In one of the cases, a university building project, the user goals were not formulated, and hence could not be followed up in the process. In the case of the administrative building project, basic measures were found which in principal were not communicated to the project. The objectives were formulated, but were not used in the process and hence had significantly less impact for the project's end result. In the case of the culture building project, the users and owners made awareness of the multi-perspective goal well known throughout the whole process. The goals were governed informally and they resulted in benefits for users and hence for project owners. A formalized application of a multi-perspective goal hierarchy would have improved the project considerably.

Based on the interviews conducted and the pilot study, it has been found that an owner who commissions a project (the project owner) must be made aware of the business potential that lies in having a structured process wherein the main focus is on establishing real objectives relating to the user and also on the effect of the project on the organization's core activities.

Communication and follow-up of project owners' objectives in the building profession constitute a small focused area. With the exception of large state-run projects, established general systems, which should control the quality of this process, do not exist to any great extent.

Project owners and/or users are also partly unaware of the importance of implementing a process involving the preparation of a strategic program for the project and thereby control the quality of the end result and long-term profitability.

The conclusions of the three case studies indicate that project owners focus on project objectives and that there is a lack of formal goal formulation processes. Owners do not formulate clear project goals from the users' perspective. As a consequence, there are no clear goals to communicate to the project organization. When confronted, the respondents were aware that a stronger focus on goals and the bigger picture in the front-end could contribute to improved projects. If buildings are adapted to actual needs, the users' business potential will be higher than if owners only focus on project objectives. Hence, owners have to shift their focus from project objectives to project goals.

Both private and public owners tend to emphasize relatively narrow project objectives instead of user needs. This paper argues that more focus on project goals is required.

From the study, it can be concluded that the lack of formulation of objectives in the management perspective in general and in the end results in particular, was a hindrance to optimal processes. Project goals were highly controlling in the case of both the university building and the administrative building.

Paper 2 Value Enhancing Processes in Building and Real Estate

Arge, K. and Hjelmbrekke, H. (2012) Value Enhancing Processes in Building and Real Estate. CIB W092/W070/TG72 Joint Conference on Procurement Systems, Facilities Management and Maintenance and Public Private Partnership: Delivering Value to the Community

Paper 2 constitutes a pilot study on ideas that are further analysed in paper 7 where the findings are explicitly presented.

ValPro (Value driven procurement of buildings and real estate) is a case based R&D project in the Eracobuild network with participants from Norway, Denmark, Sweden, Finland, France and Cyprus. The R&D project aims at defining frameworks and business scenarios for a value driven vision, based on state of art and trends, barriers and drivers that can be identified in case studies. This paper discusses barriers and drivers related to value creation in a case study of a new office building project procured by a large oil and gas company. The case study shows that despite the fact that the procurement documents clearly defined strategic goals aimed at creating use value for the end user, the project delivery organizations' value and business models are focused on project efficiency goals and quality as defined by their own discipline.

In the paper, we argue that in order for an end user organization to make sure the end product will deliver value in use, regardless of being an owner-occupier or renter of the building, the organization must exert governance throughout the project related to strategic business goals and concrete success criteria.

Our main thesis is that understanding building projects as critical enablers for realizing operational goals in the short run and creating corporate success and sustainable values in the long run is essential to consolidate strategic value creation related to project goals. Establishing a business model for a project means establishing a building project context where corporate strategies and long-term value creation are emphasized. In the paper, we present a governance model framework that may enable both the demand and the supply side to focus on both effectiveness and efficiency related project goals.

Paper 3 On the difference between project management success and project success

- Hjelmbrekke, H., Lædre, O. and Lohne J. (2013) On the difference between project management success and project success. 7th Nordic Conference on Construction Economics and Organisation

In construction projects, the perspective of the supply side (as represented by the design team) should converge with the business logics directing the demand side. Project management success is measured against the traditional efficiency factors such as cost, time and scope. Project success from the demand side is, on the other hand, measured as effectiveness according to a strategic perspective. It is acknowledged that project management success is important during project execution, and that professional clients will evaluate the probability of project success before they start execution. We have examined four cases, and analysed how the clients followed up efficiency and effectiveness in the front-end and during execution.

In our cases, we found that the efficiency factors seemed to be followed-up continuously, from the early front-end and into the operational phase. When examining the governance of effectiveness from the early front-end and into the operational phase, we found a more varied situation. In one of the cases, the client did not execute any governance of the effectiveness in neither the front-end nor in the execution phase. In the next case, the client governed up effectiveness only in the front-end. In the third case, the client focused effectiveness only in the execution phase. In the fourth case, the client had a continuous follow-up of effectiveness, from the early front-end and into the operational phase.

According to our analysis of the clients' assessment of project effectiveness in a strategic perspective (governance), we identified a correlation between this assessment and project success. The more focus upon effectiveness, the more project success the clients experienced. Our conclusion is that in order to

achieve project success, the client has to continuously execute project governance from initiation until handover.

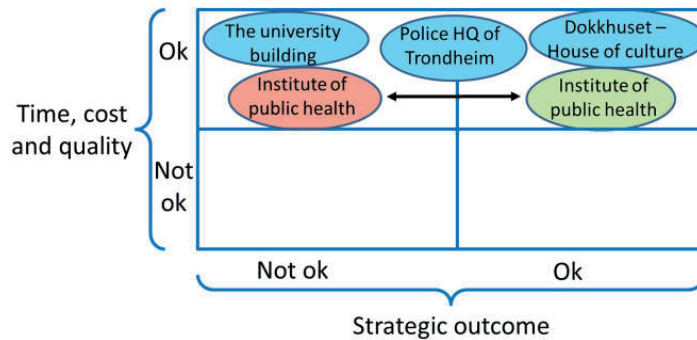


Figure 11 Outcome of the projects according to project management success (project efficiency) and project success (impact on customer).

It is acknowledged that both project efficiency and impact on the customer are important success dimensions (effectiveness). The project manager is responsible for project efficiency. The client is the one that should be interested in the impact on the customer. When it comes to achieving project success, we have described two main success factors:

1. A proper follow-up of strategy before decision of project execution (aligning the project with the organisation's strategy).
2. A proper follow-up of the strategy after the decision of project execution (assuring that the project actually executed in fact is aligned with the organisation's strategy).

From the matrix concerning the follow-up of strategy before and after the decision on project execution, we can observe how these two success factors are or are not acknowledged in the individual cases. On the operational level, all of the four projects must be considered successful. They were all designed and built with the specified scope within budget and schedule. When it comes to project success, in terms of delivering impact on the customer, only one of the projects were successful in the strategic perspective.

Interestingly, the analysis shows a correlation between the observance of the success factors and the outcome of the project according to a strategic perspective. The project where both success factors were observed, Dokkhuset – house of culture, was successful according to the project management perspective (project efficiency) and according to the strategic perspective (impact on customer). The projects where none of the two success factors were observed, the NTNU reading room, proved successful according to a project management perspective (project efficiency), but highly unsuccessful in the strategic perspective (impact on customer).

This correlation is weak in the sense that the cases are few, and that the conclusion is based on subjective interpretations of the respondents' answers. Though, our impression is that the clients paid less attention to project success in the strategic perspective during project execution than they paid to the project management success (time, cost and scope).

This is not to say that the project manager focusing on the traditional success criteria (time, cost and scope) is unimportant; they are in fact crucial to the efficiency of the project. What we do maintain is that

the client must follow-up effectiveness and project success in the strategic perspective after the decision on project execution.

Paper 4 The new common ground: understanding value

- Hjelmbrække H. and Klakegg Ole J. (2013) The new common ground: Understanding Value. 7th Nordic Conference on Construction Economics and Organisation

This is a conceptual paper and as such, the research methodology is meant to stay in the background. The theory and discussions here are primarily based on literature held up against observed practical problems. The literature study is conventional, based on seeking relevant contributions from several scientific databases (Primo Central and BIBSYS) with search terms connected to the concept of value: value, value creation, value capture, value proposition, strategy, business models, project value and user value, combined with terms related to project management.

The literature search indicated projects having a terrible track record of failure; especially large engineering projects and other investment projects like IT-systems, which have been notoriously reported as less than successful. They sometimes appear to destroy value instead of creating the value they intended to. Some projects are not valid and should never have been started. Others have good potential, but seem to be lost in the process somehow. This conceptual paper suggests a new starting point for developing successful projects in a client-supplier relationship. We need to strengthen the fundament for designing a project process and setting up a project organization that is able to create intended value and long term benefits. A successful project is impossible unless it supports the client's business idea and strategy. Various literature discusses this in terms of alignment with strategy and relevance in a changing environment. The question discussed here is whether the supplier understands the client's business well enough to understand the consequences of this alignment. The necessary prerequisite for a really successful project is that both the client and the supplier understand the business, which the project is supposed to support. Many suppliers tend to focus productivity as their competitive advantage. We suggest this is not a viable business strategy for suppliers. Increasing customer value is the main building block in any growth strategy. Any procurement should be based upon a judgment of which supplier has the ability to deliver the expected outcome in terms of use value. This paper explains the need for and consequences of developing a new common ground for systematically creating successful projects.

The new common ground is the space where the customer and the supplier value creation loops/processes meet – where the value propositions meet the transition point. If the propositions from each side are compatible/in harmony, then this will create maximum value when all parties understand what creates value. In other words, when the actors are able to find the sweet spot and develop the common ground, that is when the projects will tend to be more successful.

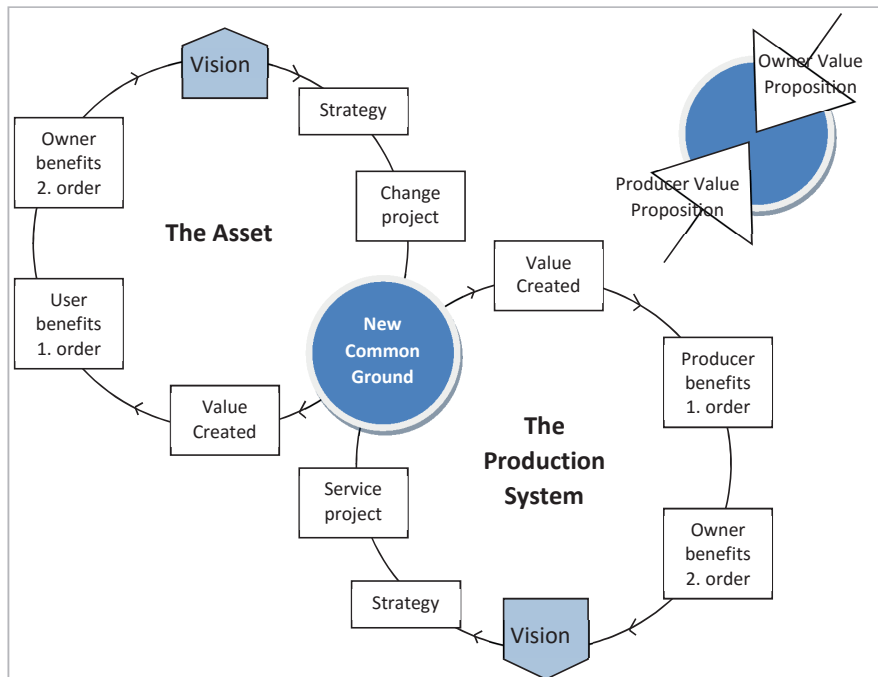


Figure 12 New Common Ground: Where opposite interests meet

The new concept is a project approach founded within the strategic priorities of the project owner. Every single activity in the design process must be addressed to contribute to the required value creation intended to support the client's success. The benefit of the supplier side will be the enforced competitive platform given by capability to solve the client's strategic problems. It is about understanding the project's complex environment, why the client needs the project, what the business need is, what the business objectives are, and finally, how the problem will be solved. It is about the necessity of rethinking the functionality of the supplier's organization to prepare it for delivering the strategic outcome based on excellence in innovation, skills and competencies as well as efficiency. Meeting only parts of these requirements will not be sufficient, it is the overall performance that counts.

The change in approach will require a change of supplier's strategy, where the traditional productivity focus is supplemented with strategic and value focused teams. Where projects earlier were framed within the iron triangle of time, cost and scope, the new approach will consist of a new mind-set acknowledging the mutual benefits of project success. The project approach is essential; this is a mutual strategic perspective, where the client's and supplier's strategic reasons for undertaking the project are conformed in the common ground.

Paper 5 The need for a project governance body

- Hjelmbrekke, H, Lædre, O and Lohne J. (2014) The need for a project governance body. International Journal of Managing Projects in Business Vol7 No 4 pp. 661-677

From a project owner perspective, it is obvious that the project shall contribute to achieving the organisation's strategic goals. The purpose of this paper is to find out what project owners *can do* to

assure value creation in their projects, what owners (in the few cases where they were actively involved) in assuring value creation actually *do* and what the *result* of their choice was.

We have analysed 12 construction projects within the Norwegian construction industry with a qualitative approach. A general business framework for understanding projects has been applied in order to articulate possible shortcomings and success factors. We have used semi-structured in-depth interviews with questionnaires for data collection.

The originality of our paper consists in introducing insights from business literature to the construction industry. In the value proposition, the owner defines benefits of the project. The customer value proposition is the statement where the supplier aligns the proposed project output with the project owner's needs. The *project governance body* is responsible for assuring this communication process.

Mainly based on the literature study, we established our theoretical framework with value proposition (VP), project governance body and customer value proposition (CVP). This is the answer to our first research question, about what project owners can do to assure value creation in their projects. The value proposition states what value the project is intended to obtain (on the strategic and tactical level), and the customer value proposition states how the supplier is going to create the relevant value (on the operational level). The answers to our research questions about what project owners actually do to assure value creation in their projects and what the result of their choice will be is based on the empirical findings from the twelve cases.

Summary of findings

The following table sums up our findings from the three presented cases and from nine other projects:

Project	VP in line with strategic goals	Governance body linked to strategic goals	CVP in line with VP	Accuracy Time/cost/ quality	Contribution to strategically relevant value creation
NTNU	No	No	No	High	Minor
Granåsen	Yes	No	No	Minor	Minor
Øya H	Yes	No	No	Low	Minor
Politihus	No	Partly	Partly	High	Partly
Kulturbygg	Yes	Yes	Yes	Low	High
Hovde	Yes	Yes	No	Low	High
Fokus	No	No	No	High	Minor
E6	No	No	No	Low	Minor
Bilbygg	No	No	Yes	Average	High
Bank1	Yes	Yes	Yes	High	High
Bromstad	Yes	No	No	High	Minor
HUNT	Yes	Yes	Yes	Average	High

Table 1 Summary of findings from 12 cases

The cases examined range from small (NOK 3 million) to large projects (NOK 1 billion), public and private projects, and simple and complex projects.

As can be observed in the above matrix, several of our cases came short when regarding their contribution to the strategic goals of their owners. At the same time, there is no obvious correlation between the strategic performance and the performance measured by the traditional time/cost/quality criteria. In effect, a project can be constructed at an acceptable cost, in time and with excellent quality, but still be irrelevant for the strategic goals of the owner. If standing alone, the traditional criteria are not sufficient to assess project success.

Our findings also indicate a correlation between the projects' contribution to the strategic goals and a lack of value proposition, customer value proposition and/or project governance body. In the NTNU (a university building), Fokus (a commercial building) and E6 (an infrastructure project) cases, none of the elements prescribed by the business literature referred above were taken care of in an appropriate manner. Their contributions to the strategic goals were minor.

Granåsen (a jumping hill facilitating World Cup events), Øya H (a healthcare building) and Bromstad (a kindergarten) all had value propositions in accordance with the strategic goals of the project owner organisation. They failed, however, both in establishing a project governance body and in assuring an adequate customer value proposition. Interestingly, the projects' contributions to the strategic goals of the project owner organisation were minor.

In one of the cases, Hovde (an office building), one of the elements proposed by the strategy literature referred above – the customer value proposition – was omitted. The fact that the project's contribution to the strategic goals of the project owner organisation in this case was high seems to stem from the governance capabilities of the project owner; the owner knew the technical capabilities of the project supplier and was fully aware of the potential contribution to the use value. This project ending as a success can therefore be ascribed to this oversight. To put it in Gadamer's (1960) words, no fusion of horizons was necessary in order to arrive at the relevant value creation.

Politihus (a regional police HQ) and Bilbygg (a car dealer) did not have proper value propositions. Politihus had a project governance body and a customer value proposition, but experienced problems since the project governance body only had a small room for manoeuvre. That appeared to be the main reason why Politihus only partly contributed to the strategic goals. Bilbygg did not have a project governance body, but the supplier was heavily involved already in the concept selection phase with technical solutions and adaptations in the customer value proposition. Bilbygg contributed to the strategic goals of the project owner.

Lastly, in the Kulturbygg (a culture building), Bank1 (a bank HQ) and HUNT (a research facility) cases, all elements proposed by the strategy literature were present and well-functioning. Significantly, the projects' contributions to the strategic goals of the project owner organisation were high in these three cases.

Appointing a project governance body with a sponsor can help the project owner (represented by the board of directors and the chief executive officer) to make sure that the project supplier understands and aligns with the Value Proposition. Vice versa, the project governance body should be responsible for communicating the Customer Value Proposition from the project supplier to the project owner. The owner must clearly communicate what value the project is to give, and the supplier must communicate the cost, time and quality measures needed to give this value. The project governance body has a responsibility, on behalf of the project owner, on the tactical level.

We have also found that the *project governance* function is not widely recognized in our cases from the Norwegian construction industry. We found, however, that an alignment of project outputs with strategic goals happens to a certain extent in some projects, but it appears to be random and very dependent on individuals taking a wide-ranging responsibility.

The findings in the examined cases indicate that owners, who do not use the general strategic insight outlined in our theory section, will often leave relevant value creation to chance. A formal project

governance body, with a well operating project sponsor, will improve the necessary two-way communication between the strategic and operational levels in projects.

Paper 6 The project – a motherless child?

- Hjelmbrekke, H., Hansen G.K. and Lohne J. (2015) A motherless child? Why construction projects fail. 8th Nordic Conference on Construction Economics and Organisation

Organizational hierarchy and bureaucratic structures are in general obstructions to the clients demand for higher value, pushing innovation and effectiveness. This client awareness of the cost/benefit ratio is motivated by his/her need for competitiveness. The value captured from the project is thus the foundation for future success.

This should lead to a comprehension of projects as the vehicle that drives corporate strategy forward and a mean to increase effectiveness as well as deliver competitive advantages. Success, from a project perspective, will include projects' ability to support the strategic efforts to increase competitiveness. Major studies, on the other hand, indicate that most projects in general fail regarding the effects (and consequently, the strategic outcome). This is in accordance with what a Harvard survey revealed: a lot of value is lost in translation and strategic activities and initiatives have only a 63% average realized financial performance. The reason for this strategy-to-performance gap is attributed to poorly formulated plans, misapplied resources, a breakdown in communication and limited accountability for results.

This paper assesses this challenge from a construction project perspective, focusing on what may be the missing link between the strategic decisions and the project outcome, notably the formulation and use of the project strategy.

From the author's understanding, the challenge is double. Firstly, it concerns clearly expressing the intention of the project (the why, what and how). Secondly, it concerns establishing a project organization responsive to the project strategies. A major challenge for the design team is to balance the functional expertise with the client's need for integrated teams focusing on solutions enabling users to create value. The functional organization providing resources represented by the design and engineering expertise is directed by their respective department's goals. On the other side, the project is directed by the client's goals, but affected by the functional goals. Project strategy should be applied in order to provide mutual benefits.

The paper aims to develop an insight in recent theories of project strategy as well as the organizational challenges to consultants and designers to align their business model in accordance with clients' needs and strategic goals.

What, then, are the consequences of the above insights for our understanding of construction projects? According to Shenhar et al. (2001), most projects are conceived with a business perspective in mind and with goals reaching beyond efficiency in project execution. When project managers and a project team are engaged to set up a project organization, they typically do not focus on the business aspect, but on the immediate task. Suppliers bring in their own strategy focusing on delivering efficient execution. Success is regarded as achieved when the project is delivered within time and cost and at a quality level pleasing to the client. The project may in this perspective, be understood as an independent organization according to Mutka and Aaltonen (2012), with a lack of consciousness of the projects owner business and strategy.

This contradiction in behaviour between the parties, the user and owner on one side and the design team /suppliers on the other side, may have its origin in the respective managements' interpretation of which measures count regarding customer satisfaction and achieving strategic goals. Ittner and Larcker (2003) argue that successful companies have attacked the problem of not linking measures to strategy by

choosing their performance measures on the basis of causal models, also called value driver maps. In this perspective, the project success as defined by Shenhar (2012) ranks on top and all activities must have causality to a strategic goal of the project. “*Any strategy statement must begin with a definition of the ends that strategy is designed to achieve* (Porter, 1996)”. If this end is achieving uniqueness and competitive advantages, project efficiency as the only solution is not enough according to Porter (1996).

A construction project is normally a project based on bilateral contracts between three parties in a pattern that leaves one of these relations unsolved (Hjelmbrekke and Klakegg, 2013). The project delivery is typically an agreement between the supplier vs. owner, leaving the users in a half-way excluded/partly included position. There is a major obstruction when realizing the benefits of any project according to Drivers (2014). One of his major conclusions is that project results will never provide any benefits. It is the use and exploitation that creates benefits. The backwards strategic reasoning and identification of cause-effect evidences starts with the user, which is in accordance with Steiner’s (1969) statement that planning is a process which begins with the objectives and gradually moves into the task of making the detailed plans to achieve them.

In the language of agency-theory, one can explain the traditional view/internal view; the agent (project organization) is expected to do what the principal (project owner) orders (Hjelmbrekke and Klakegg, 2013). This view of the project as an obedient servant is a condition more likely to be found if executed with internal resources. When the project is classified as a building project, resources normally have to be procured externally as a temporary organization with suppliers defined as project based organizations (PBO).

The external project organization (PBO) within project design traditionally would be organized as a matrix organization (Turner 2014). The supplier may create a project organization set up with a project manager and people from the line/functional organization would be given project responsibilities for the duration of their involvement in the project. This matrix has, according to Turner (2014), a fundamental weakness in having project participants given orders from either the project manager or the functional manager. Shenhar (2012) pinpoints the third major problem, the project team as a supplier, which in turn has their main focus on project efficiency rather than what the viable project output is for the user and the owner.

Driver defines the core role of organizations is to create assets and enable people to use them to create benefits. To enable benefits from a project, it is vital to have solid cause-and effect evidence that will confirm that the project output will enable the users to improve performance, which will present benefits. This evidence is to be found in the handover process, the how/why question of which project output will increase benefits. This is looking forward and planning backwards, starting with the benefits to articulate the project strategy, then starting with the project to implement it. According to the success scorecard matrix (Figure 2) of Maltz et al. (2012), the project team are engaged in day-to-day project execution, with a mind-set focusing on “getting the job done” and continuing on to the next job. The project may be an economical success for the PBO in the short term, but a failure for the client. The project success scorecard take into action all the client’s success factors and includes what should have been the PBO’s success factors to achieve their strategic goals.

Many scholars have explored project strategy during the recent years. One example is Turner (2014), who in his book, “Handbook of Project-based Management” presented some of those works. Project strategy, according to Shenhar and Patanakul (2012) is needed to guide an individual project in its planning and execution processes. Their suggested framework also begins with the end – the outcome – and defines the project strategy as: *the project perspective, position and guidelines for what to do and how to do it, to achieve the highest competitive advantage and the best value from the project outcome*. The framework sets up a roadmap, which reasons backwards from the client’s strategic objectives, to what should be the outcome for a guideline on how to do it.

Management theories have declared the project strategy as the missing link in project planning and execution. The impact of the problem, as discussed earlier, is that major strategic investments in projects turn out to be a failure. This has a negative influence on private corporations as well as public organizations and citizen in general. As we assume that most projects have a strategic intent, those failures will have an impact on the competitiveness of the owner, reduced quality of public services and probably on the general welfare of citizens.

Scholars in management science have for years been studying the problem and what may be the root causes if that strategic investment fails. The success factors are defined as the independent variables that will influence the successful achievement of project success and what factors are prevailing will be dependent of the project context. Some success factors that will appear in most projects include the ability to communicate with the client, to understand the project mission and the ability to plan the projects by finding the cause and effect evidence from the expected project benefits to use to project output and to set up the project to deliver this output.

The construction industry has for years been focusing only on project efficiency, as this success dimension is instantly measurable at the project completion. When it comes to measurements beyond project efficiency, i.e. the success for the owner regarding the business goals and future benefits, the evidence given in the literature tells a story of an industry not capable of delivering excellence.

Consultants and architects must, to a greater extent, acknowledge that planning is the first step in design, that planning is backwards reasoning from the end project's strategic goal and to find the cause and effect evidence that will lead to the starting point of design.

Paper 7 A Project Governance Framework Model for Enhanced Value Creation in Construction Projects

- Hjelmbrekke H. and Klakegg Ole J. (2015) A Project Governance Framework Model for Enhanced Value Creation in Construction Projects. Paper accepted for publication in the International Journal of Managing Projects in Business. Will appear in Volume 10, 2017

According to international research, a significant share of projects fail with respect to both producing the intended effect and achieving the expected business results (Shenhar et al., 2007; The Standish Group, 2001). The prevailing explanation seems to be the assumption that available and traditional project management tools are not adequate to assure project success. Equally disturbing, the contemporary understanding of project success is predominantly in the eyes of the beholder (Müller and Judgev, 2012). In order to address such challenges, a common claim of contemporary literature (especially within the context of product development) is that projects should have *value delivery* as a fundamental objective (Thomson et al., 2003). More specifically, projects should be intended to deliver value from which operations can derive benefits. From a strategic perspective, then, projects are undertaken in order to buttress core activities and thereby improve competitiveness (Cooke-Davies, 2002). This represents a business-case-based decision making process (Dinsmore and Cooke-Davies, 2006). The project represents a business case linked to the corporate strategy, having quantified benefits that the project is intended to contribute to core business. This paper describes how the concepts of business models and project governance can enhance value creation in building projects.

Based on theory derived from management literature, we outline a framework combining a project's business case and governance functions with the business model of the design team. This was tested in two major projects and evaluated in three expert workshops.

This research reveals that the business model of the design team focuses on efficiency rather than on the client's strategic objectives. This entails a need for project governance functions. The framework presented shows promising capability of aligning the project with client strategy. We believe there is significant value in transferring these ideas and knowledge across national boundaries. The conceptual framework provides the industry with a new tool for improving its knowledge and practice.

A study of theoretical relations between 1) corporate governance, 2) project governance and 3) business models led us to develop a research design framework shown in Figure 3. It serves as a theoretical framework for understanding what hampers and/or enhances value creation in projects. It is deliberately made more explicit in the front-end phase. This is where the most critical problems are found and the basis for success is developed (Klakegg, 2009a).

The suggested project governance model is based upon a generic stage-gate decision model and governance functions as described in the theory section. The stage-gate process (Cooper, 2008) is widely used in organisations in order to help secure the strategic effects of projects. Originally developed for managing product development, similar processes with decision gates are used in a variety of businesses to secure and improve project effectiveness and efficiency. Some success factors typically assessed at each gate are strategic fit and importance, project competitive advantage and financial reward versus risk. Project evaluation in decision gates may also be executed using specific success criteria relevant to the stage and defined for each project. The process thus links project management success with project success and corporate success.

A central element in the business model is defining the key performance criteria, which are the foundation of the design. Throughout the design process, development and deliverables (decision gate packages) are assessed according to these criteria in decision gates (DG). This governance function runs parallel with the project management.

The model allows a choice of execution strategy. A main point is that the project's business model is developed in accordance with the owner's defined needs and expected user effect. In line with the conclusion of Samset (2003), this opens up success in all three perspectives for the owner, user and executing party.

The governance framework model is based on a project governance function, which communicates with the project in the initial face (the value proposition) by clarifying the needs and in the project execution through the decision gates (DG). The business model of the supplier organisation, based on the value proposition is delivering strategic capability to the client. At the project milestones (M) phases/sub-

phases, the project governance body monitors the performance of the Decision Gate Package (DGP).

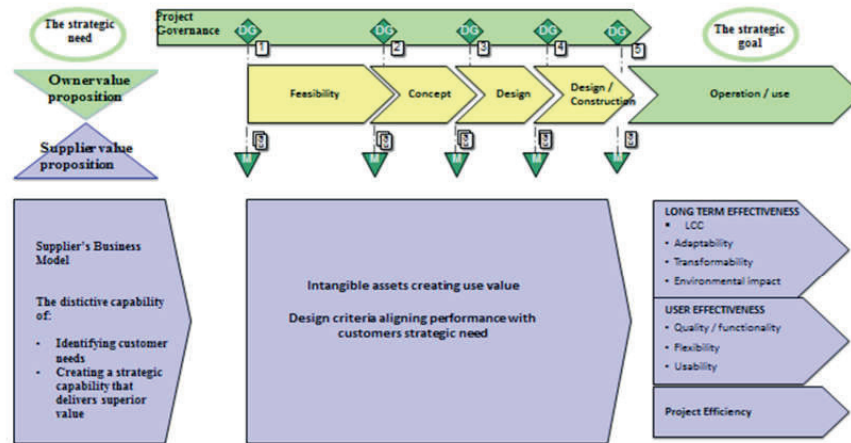


Figure 13 The Generic Governance framework model

The proposed model utilizes the concept of value proposition to secure alignment of a unified project strategy with owner needs. The supplier's value proposition, as an important part of their project business model, is an explicit statement of how the supplier (e.g. a design team) will meet the owner's value proposition. The project business model should be developed through dialogue between client and supplier(s) to secure its consistency with strategic objectives, understanding of values, and priorities.

It is also worth giving attention to the principles of competitive dialogue (CD) as an alternative approach to align the client's strategic need with available or innovative solutions provided by the suppliers. As Hoezen et al. (2010, 2012) notices, in complex projects, there is an increasing need for other procurement methods due to the importance of communicating and addressing the required outcome of a project. Hoezen et al. (2010, 2012) conclude that the CD procedure is useful at "an early stage in the planning process. As the dialogue continues, design decisions can be made and used for the subsequent stages in the planning process." CD would thus be a useful tool to establish the metrics to align the deliverables with strategic needs.

The key components of the Governance Framework Model are:

Strategic Need: Why questions – The need for change and the specific user needs that should be satisfied, which problems should be solved as well as why a specific value creation should benefit the client.

Strategic Effect: What questions – Business perspective, what are the final benefits to be acquired.

Project Success Criteria: What questions – Intended outcome–user effectiveness and project efficiency

Suppliers Project Business Model: How questions – The organizational structure of the design team, their capabilities and the distinct plan for how to align the outcome with the owner's needs (The design team).

Project Business Model: How questions – What metrics (KPIs) are being used to align the design with the owners strategy throughout the design phase.

The proposed model can be adapted to any success criteria that the parties may find relevant. It is important to be explicit regarding what criteria represent the long-term effects of strategic importance for the owner, what the outcome and effects will be for the users, and what criteria are going to be used to evaluate the project organisation's performance in project design and execution.

From a theoretical point of view, the model links the activities within the project. It visualises how the project owner organisation, with its project governing body, links to the project organisation. In the construction industry, these connections have traditionally been explained as organisational structures (project organisation) with pure principal-agent relationships or as relationships between contracting parties as in transaction cost economics. This governance framework model allows more complex governance to be implemented, thereby securing increased control over project execution and corresponding value creation.

Paper 8 Lean design versus traditional design approach

- Munthe-Kaaas, T.S, Hjelmbrekke, H, Lohne, J. and Lædre , O. (2015) Lean design versus traditional design approach. Proc. 23th Ann. Conference of the Int'l Group for Lean Construction pp.578-588

Recent research from Statistics Norway shows a reduction of 9% in the Norwegian construction industry's productivity from 1992 to 2012. The purpose of this paper is to determine if lean design can enhance value for the customer in the construction industry based on an examination of the design phase. It also discusses if this can have an overall positive effect on the productivity. A case study has been carried out, comparing two projects using a qualitative approach. The projects use different methods in the design phase; lean design versus traditional design approach.

Implementing lean design can increase value for the client. Lean design might enable productivity growth in the Norwegian construction industry similar to the growth observed until the 1990s. Similarities are found between classic project execution and projects where lean design is implemented, particularly the focus on planning and control. The originality lies in comparison of the recently implemented lean design and the classic project execution model. This permits an in-depth analysis of the novelty and effects of certain lean design features. A major finding was that the use of lean principles was that this was considered to contribute to increased value creation through increased transparency, resulting in a better realization of the participants' primary objectives and better collaboration. Lean design created value by increasing the probability of completing the project within the time, cost and quality through better planning. Use of more resources in detail design reduces waste in the design and is believed to reduce waste under construction.

5. Discussion and conclusions

The main question governing this work has been how AEC-projects can better align to business strategies from an owner perspective. This overall question has been broken down into three research questions, notably:

- What does the discrepancy between the general needs of the organization and the projects carried out to improve performance consist in?
- What fundamental reasons underlie the existence of such challenges?
- What measures can be envisaged to improve owners' project governance?

In the following, we examine to what extent the research carried out has actually been able to address these question within the limits described in the introduction. Most notably, how the findings expand on insights from the general business theory explored and thus proves the relevance of this to the Norwegian AEC-industry.

5.1 The discrepancy between the general needs of the organization and the projects carried out to improve performance

The first of these questions thus concerns the problem definition and has been addressed through several of the papers presented in this thesis. As exposed in the papers 1, 2, 3, 5, 6 and 7, there is a major discrepancy between the general needs of the organisations and the projects carried out to improve performance. According to the analyses presented in this thesis, the main elements of discrepancy are 1) a lack of project objectives grounded in general strategy, 2) a lack of alignment of objectives between clients and suppliers, 3) a lack of understanding of success (project management success vs. project success) and 4) a lack of project strategy definition. Lastly, a general conclusion to the analysis is presented in chapter 6.

5.1.1 A lack of project objectives grounded in general strategy

As documented in paper 1, a survey of three projects showed that the owners all had high-level visions and strategies. These were not, however, brought forward to the project organizations and the three investigated projects each lacked a formulated concept with goals and strategies.

As described in the theory chapter, the general business theory clearly recommends that project objectives be firmly grounded in general strategy. The case studies carried out show that an understanding of this principle clearly is lacking in the Norwegian construction industry. In the theory chapter, we have argued that the governance function is crucial for establishing clear links between project objectives and the general strategy of the project owner.

The three building projects examined were all characterized by an explicit absence of formulated goals, and the investigation showed that the project managers believed that clear goals would have contributed to improving the processes. Even if the projects were individually perceived as well executed, it was considered a problem that no superior and visible goals existed. The fact that the owners were aware of deficiencies in the project process regarding lack of concrete goals is a confirmation that the potential existed to make more effective buildings.

No definitive strategy was found for how goals should be communicated in the projects examined. The culture building project (Dokkhuset) had its goals in sight during the developmental phase and project participants were conscious of these goals due to the limited number of persons involved and the project's small scale. Such communication was absent from both the administration building project and the university building project. The respondents that were interviewed characterized this as a very reductive situation regarding the utilization of the opportunities existent in the projects.

The developers of the examined projects assessed the execution processes as good. The project managers, on the other hand, considered it problematic that visible overall goals were not present for guiding the projects. The owners understood that a greater focus on the communication of goals would have improved the development process. This would first of all be significant for prioritizing designs adapted to user needs instead of simply responding to technical specification requirements. Subsequent project evaluations were mainly directed toward the project objectives, while users were only informally involved. In general, the owners made only unsystematic investigations of effects.

The findings in paper 3 tell a similar story. The clients were focused on governing the project regarding cost, time and scope. The intended impacts on users were not clearly articulated in any of the examined cases. This does not imply, however, that project strategies were not to a certain extent developed. The case of Dokkhuset is the most distinctive representative concerning the requisite involvement of users in the front-end phase, and initiatives regarding new requirements were implemented in the project during the project design phase. Such focus on the strategy during the project design- and execution phase was non-existent as far as we have found in the other cases. In the case of the new police headquarters, the follow-up of strategy in the front-end resulted in an identification of the user needs and a specification of requirements was articulated. The passage to the project design- and execution phase, however, was characterized by abandonment of these requirements, and a near *carte blanche* was given to the project manager in completing the project according to traditional project management criteria. The link between the projects' business case and the general strategy of the owner appears to be largely missing within the Norwegian AEC-industry, something that indicates a lack of a proper governance function.

5.1.2 A lack of alignment of objectives between clients and suppliers

The second identified element of discrepancy between the general needs of the organisation and the projects carried out to improve performance consists in a lack of alignment of objectives between clients and suppliers. The manner in which this element has been addressed has been mainly of a theoretical nature in papers 1, 2, 3, 4, 5, 6 and 7.

The empirical research on this subject has been presented in papers 2, 7 and 8. The main point in paper 2 was that understanding building projects as critical enablers for realizing operational goals in the short run and sustainable values in the long run. This is essential to consolidate strategic value creation related to project goals. The case study of two projects (further discussed in paper 8) showed that despite clearly defined strategic goals aimed at creating use value in the procurement documents, the project design team's business model was aimed at project efficiency goals and their own success criteria and benefits. This may, according to Porter and Kramer (2006), find its reasons in two different organizational and strategic perspectives. While the client was looking for a value that could improve the competitive edge by providing high customer value, the design team focused on its own capabilities and strengths, instead of focusing on creating value for the customer. The client's approach is the *Outside-In* strategy (Porter and Cramer, 2006) where it takes the customer's value as a starting point, and the design team, having an *Inside Out* strategy, pleases their shareholders.

Paper 7 documented that the design team, operating according to their own routines, largely influenced the performance in projects. This contributed to a lack of communication with client executives as well as a lack of respect for client leadership in projects. Such factors, it has been argued, render corporate governance even more necessary.

The bulk of the research on the subject of the alignment of objectives within the research literature has been of a theoretical nature.

This is also discussed in paper 6. According to Shenhar et al. (2001), most projects are conceived with a business perspective in mind and with goals reaching beyond efficiency in project execution. When project managers and a project team are engaged to set up a project organization, they typically do not focus the business aspect, but on the immediate task. Suppliers bring in their own strategy focusing on delivering efficient execution. Success is regarded as achieved when the project is delivered within time and cost and at a quality level satisfying the client. The project may in this perspective, be understood as an independent organization according to Mutka and Aaltonen (2012), with a lack of awareness of the projects' owner business and strategy.

This contradiction in behaviour between the parties, the user and owner on one side and the design team/suppliers on the other, may have its origin in the respective managements' interpretation of which measures count regarding customer satisfaction and achieving strategic goals. Ittner and Larcker (2003) argue that successful companies have attacked the problem of not linking measures to strategy by choosing their performance measures on the basis of causal models, also called "value driver maps". In this perspective, project success as defined by Shenhar (2012) ranks on top and all activities must have causality to a strategic goal of the project. "*Any strategy statement must begin with a definition of the ends that strategy is designed to achieve* (Porter, 1996)". If this end is achieving uniqueness and competitive advantages, project efficiency as the only solution is not enough according to Porter (1996).

In the examined cases, the findings indicate that this contradiction in behaviour also happens within the context of the Norwegian AEC-industry. What is visible in the cases presented in paper 3 as well as paper 5, are the apparent lack of alignment of proposed solutions with the client's strategic goals. In some of the cases, this was corrected by the existence of a project governance body. This behaviour may partly be caused by the supplier's business models focusing on different incentives. The root of this problem is the inside-out perspective discussed in paper 2. This problem is discussed further in paper 7, where leaders from the major Norwegian engineering and architectural firms concluded that their performance in projects was directed by their respective company's internal routines rather than by the project objectives. Consensus among the leaders was that the most important factor preventing them from improving their practice was a lack of respect for the customer's business needs.

A construction project is normally based on bilateral contracts between these three parties in a pattern that leaves one of these relations unsolved (Hjelmbrekke and Klakegg, 2013). The project delivery is typically an agreement between the supplier vs. owner, leaving the users in a halfway excluded/partly included position. This will be a major obstruction to the realization of the benefits of any project according to Drivers (2014). One of Drivers' major conclusions is that project results will never provide any benefits. It is the use and exploitation that creates benefits. The backwards strategic reasoning and identification of cause-effect evidences starts with the user, which is in accordance with Steiner's (1969) statement that planning is a process which begins with the objectives and gradually moves into the task of making the detailed plans to achieve them.

In the language of agency-theory, one can explain the traditional view/internal view; the agent (project organization) is expected to do what the principal (project owner) orders (Hjelmbrekke and Klakegg, 2013). This view of the project as an obedient servant is a condition more likely to be found if executed with internal resources. When the project is classified as a building project, resources normally have to be procured externally as a temporary organization with suppliers defined as project based organizations (PBO).

The external project organization (PBO) within project design would traditionally be organized as a matrix organization (Turner, 2014). The supplier may create a project team with a project manager and team members from the line/functional organisation, and give project responsibilities for the duration of their involvement in the project. This matrix has, according to Turner (2014), a fundamental weakness in having project participants receiving orders from either the project manager or the functional manager. Shenhar (2012) pinpoints the third major problem: the project team as a supplier has their main focus on project efficiency rather than on what the viable project output for the user and the owner is.

5.1.3 A lack of understanding of success (project management success vs. project success)

In paper 3, the definition of success – both from a project management and a project perspective – is at the heart of the inquiry. The research carried out was mainly of an empirical nature. The concept of success was assessed in four case studies, two public projects and two private investments. In all of the examined cases, the clients were found to base their governance of the project on elements of cost, time and scope. This was found to be the case in the front-end phase as well as the design and construction phase. Furthermore, the specifications of scope, budgets and schedules were continuously communicated to the design teams and to the project managers.

The intended impacts on users are not clearly articulated in any of the examined cases. This does not imply, however, that project strategies were not to a certain extent developed. The case of “Dokkhuset” is the most distinctive representative concerning the requisite involvement of users in the front-end phase, and initiatives regarding new requirements were implemented in the project during the project design phase. Such focus on the strategy during the project design and execution phase was non-existent, as far as we have found, in the other cases. In the case of the new police headquarters, the follow-up of strategy in the front-end resulted in an identification of the user needs, and a specification of requirements was articulated. The passage to the project design and execution phases, however, was characterized by abandonment of these requirements and the project manager directed the project according to traditional project management criteria.

The clients did not establish a strategy for communication of the goals (intended impact on customer) in any of the examined projects. What characterizes “Dokkhuset” is that the strategy was governed by the client in the front-end phase, and thereafter, clearly communicated to the project manager in the execution phase. Due to the limited extent of the project, this was most likely what made it possible. We have not found that such goals (intended impact on customer) were communicated to the project manager in the other projects.

All project clients in our cases had visions and strategies for their organisations. What was observable in our cases was that these strategies and visions did not seem to be fully communicated to the supply side in the projects. This was particularly evident within the university reading room case. It was also clear in the police headquarter case, where the project manager did not get the description of the intended impacts on the customer. “Dokkhuset” differed from the other projects, in that the client was very clear regarding the intent that the particular project should contribute to the success of the greater property development area.

As outlined in the theory chapter, when evaluating whether a project is successful or not, the perspective of the supply side (as represented by the design team) and the business logics governing the demand side should converge. It is important to achieve both project management success (in the operational perspective) and project success (in the strategic perspective). Even if this perspective in every aspect seems to be reasonable, the interaction between the supply side and the demand side can prove to be rough. This is observable on a practical as well as on a purely theoretical level. It is common knowledge in the construction industry that the language – including references, preoccupations, and vocabulary –

of the supply side is not equivalent to the language of the demand side. The supply side (represented by the design team) use a language typically based on models, specifications, rent values, etc. The demand side (dominated by business/organization technocrats) use a language dominated by flowcharts, financial reports, business cases, mission statements, etc. (Blyth and Worthington, 2010: 63).

In paper 5, we observed that out of 12 projects, 5 did not have a defined business case with explicit goals, while 7 of the projects came short regarding their contribution to the strategic goals of their owners. The survey indicated that those projects' lack of contribution to strategically relevant value creation correlated with lack of defined goals in the business case as well as the absence of a project governance linked to the clients strategic goals.

The main interest of these examples is that they illustrate the possible clash of the supply side (understood as the design team) perspective and the business logics we intend to examine in this paper. From the above analysis, we conclude that there exists a discrepancy between the judgments of whether or not the project can be considered a success.

5.1.4 A lack of project strategy definition

The fourth identified element of discrepancy between the general needs of the organisation and the projects carried out to improve performance consists in the observed lack of project strategy definitions. This element has been addressed in papers 5 and 7. The first of these examine existing practice from numerous cases, whilst the second treats the question in a theoretical manner as well as in two major project cases.

As discussed in paper 5, different roles correspond to each of the strategic, tactical and operational levels in any organization. Equally, different responsibilities correspond to the different roles. That the board of directors owns the strategy, whilst the CEO is responsible for strategy implementation, is common knowledge. Of particular interest in the research presented has been how to actually transform strategic decisions into concrete action. The research presented in paper 5 illustrates how the transmission of strategy into tangible projects is best assured by the so-called project sponsor. The project sponsor is – on a tactical level – delegated the responsibility for translating the strategy into relevant project output. This responsibility can involve choice of concept, supplier follow-up, measurement and evaluation. The supplier is – on an operational level – responsible for the project output in light of the commission. This involves translating the goals into design and execution. In summary, transforming strategic decisions into tangible results demands a complex set of interactions between different actors. A complete understanding of these interactions forms the basis of successful strategic project implementation.

The general methodological approach to the research carried out has been to apply insights from general business strategy to projects within the construction industry. A central ambition has been to identify key terms that can elucidate the interaction described above, and to assess their pertinence to the AEC-industry. Of these, the terms *value proposition* and *customer value proposition* are of key interest.

This concept and its organizational implications serve as a means to assure that the project aligns with strategic and tactical goals of the organization, while it still can be analysed and measured on the operational level. The project owner formulates what use value the project is to produce in the *value proposition*, and the supplier states how the project output will align with the project owner's needs in the *customer value proposition*. The value proposition is the business case and the communication of the intended strategic effects to the supplier.

The term value proposition either addresses the question of how to create value in an internal strategic meaning or is addressed to the supply side in order to explain how the specific product should provide value for money (“bang for buck”). When initiating projects, the project owner should explain what kind of value the project is to produce, i.e. the *effect on the core activities*. This is the value proposition as we understand it here: an explication of what use value the project is intended to enable, in accordance with

the owner's strategy. A lack of the value proposition and/or a similar corresponding customer value proposition from the supply side, defining the tactical means and measures to meet the owner's requirements (this is in paper 7 defined as the project business model) is thus a lack of a project strategy.

One of the major findings in paper 5 was that out of 12 cases, 7 had no value proposition or customer value propositions linking the project to the strategic goals. Their success and contribution to the overall strategy were also found to be minor.

The reason for this lack of strategic effect is not surprising to scholars. The root of the problem lies firstly in the missing explicit definition of the intended strategic effects of the project (Shenhar, 2012; Ittner and Larcker, 2003; Driver, 2014). Secondly, this is a problem due to the fact that a construction project within an AEC context must be regarded as an independent organisation (Mutka and Altonen, 2012) with a lack of knowledge of the project owners' business and strategy. The project owner must take this into account by linking deliverables and measures in project execution to the overall strategy. In other words, define how the project should be undertaken to meet the strategic objectives. Without the project strategy, the project is left to chance.

We have also found a similar lack of project strategy in paper 7, in the case of The Norwegian School of Sports and Science. In this major project, the problem was grounded in a massive scope creep. The project was initially regarded as a technical rehabilitation project and ended up as a university campus development. The new scope was not followed by any new definition of what should be the strategic effects nor any tactical plan. The project was halted and later restructured.

The problem, as analysed in the findings, is how to translate the owner needs for use value into relevant project output value. Applying the vocabulary from general business literature, the findings clearly show how the lack of a proper value proposition characterises the projects examined. On a general basis, it thus seems clear that the terms identified from the general literature serve to highlight essential process elements that ought to be present in AEC-industry projects. The research presented in the findings sections cannot prove any truly causal relationship between this lack of awareness of fundamental principles and project failure; the correlation proves strong enough, however, for us to strongly assert the need for such an understanding.

The research documented in the findings section indicate that project owners are partly unaware of the importance of implementing processes involving their strategic programme as guidelines for establishing project goals (paper 1). Equally, there is a lack of understanding of the project as a critical enabler for realizing operational goals in the core activity of the owner organisation. This concerns short-term effects, corporate success, and sustainable value in the long run (paper 2).

It was also observed that projects with a structured follow-up on effect issues in the design and execution phases were more successful than those with a project efficiency focus only (paper 3).

The findings indicate that owners in fact leave value creation in projects to chance. The idea pursued has been that this stems from a lack of insight in project governance theories – an assumption that corresponds well with the findings presented. We found, however, that an alignment of project outputs with strategic goals happens to a certain extent in some projects, however, it seems random and very dependent on individuals taking extended responsibility (paper 5).

This literature documents show in fact that a significant share of projects fails with respect to both producing the intended effect and achieving the expected business results (Shenhar, 2007; The Standish Group, 2001). The prevailing explanation seems to be the assumption that available and traditional project management tools are not adequate to assure project success. Equally disturbing, the contemporary understanding of project success is predominantly in the eyes of the beholder (Müller and Judgev, 2012). According to the conclusions of the series of papers presented in this thesis, this seems equally to be a valid claim in the context of the Norwegian construction industry. The problem and the reason for this

performance bottleneck are frequently invisible to top management and are to be found in poor planning, poor execution or both. The repetitive nature of the problems observed points to a disturbing insight, notably that poor project governance lies at the heart of the problem. Poor project governance is found to be a crucial management problem.

The above findings are thus in accordance with international research from the general business literature. The findings indicate, in effect, a lack of project governance. Equally, there seems to be a lack of communication between client executives and the design teams. In addition, a lack of respect for client leadership in projects has been observed. Within the supply side, the architects and engineering consultants did not have an active culture for innovation and multidisciplinary work. They seemed, in fact, mostly focused on their own cash flow and invoicing. In addition, a lack of competence concerning proper processes in the early project phase was reported. On the client side of the projects, a major finding was that a governance function focusing on strategic and tactical goals as well as an active involvement of stakeholders would have had significant positive effects on the project outcome (paper 7).

5.2 The fundamental reasons underlying the existence of the challenges

The second research questions address concerns of a theoretical nature. As exposed in papers 2, 3, 6, 7 and 8, analyses concerning how to align projects with general strategy are widely spread and understood within the context of general business literature. Within the context of the AEC-industry, however, a proper understanding of this challenge seems to be lacking. According to the analyses presented in this thesis, the main elements for understanding the challenge is the understanding of the project in an organisational framework, the corporate governance, as well as project governance and how to measure success.

The general analysis of these concerns is presented in the theoretical framework of this thesis. Some general remarks can none the less be made. 1) There is a lack of competence on the owner side, rendering efficient governance of projects difficult. 2) There is a lack of competence on the supplier side regarding how to understand the project owner's business context and how the project can buttress core competences as well as competitive advantage. 3) There is a fundamental lack of understanding of how to measure the probability for success in the implementation phase of projects. This latter point concerns both owner and supplier sides.

5.2.1 The lack of competence on the owner side

The question of owner competence has been addressed in papers 2, 3, 4, 5 and 7. As Mankins and Steel (2005) reveal, the strategy-to-performance gap is present in most companies. According to their research, companies deliver on average only 63 % of the performance promised in the strategy. Their main argument is that management can close this gap by objectively assessing any performance shortfall and determine whether it stems from the strategy, the plan, the execution, or employee capabilities (or suppliers). Less than 15 % of the companies they examined did in fact compare the forecasted performance with the strategy. The research presented in this thesis indicates that this claim is also valid within projects in the AEC-industry.

A critical factor for project success (Cooke-Davies, 2004) is the existence of effective benefit delivery and management processes. These ought to involve the mutual cooperation of project management and client organisation line management functions. This mutual cooperation, focusing on benefits in accordance with corporate strategy, is then the main objective within the governance body of the project. The quest for success factors and corresponding performance indicators is a critical activity in the front-end phase. If agreed upon, then this input to the management system leads directly or indirectly to the success of the project and business, according to Cooke-Davies. The research presented in this thesis indicates that owners within the Norwegian AEC-industry are not sufficiently competent to actually manage the processes necessary to assure project success and thereby realise adequate benefits.

Based on these conclusions, the research presented has examined the role of governance functions within this picture. Proper governance has been found to be essential for assuring performance according to strategies, overseeing needs and objectives, making decisions concerning projects and following up on performance across the organisation. Understanding the role of governance is vital for both client and supplier in order to develop a successful project.

Project governance involves the same basic interpretations as corporate governance and is ultimately the responsibility of the organisation's board of directors (Klakegg and Shannon, 2013). Project governance includes establishing definitions and goals for the project. A major governance activity is to establish the means to achieve these goals, and then overlook the management of these means. While corporate governance handles the way benefits are realised in operation, project governance deals with how to deliver the capability to realise benefits or values in operation through projects (OGC, 2007).

5.2.2 The lack of competence on the supplier side

The second element that underlies the challenges identified concerns the competence on the supplier side. Again, the approach to the analysis has been to examine what is perceived to be at the forefront of international research literature on the subject in order to describe the challenges as precisely as possible.

Porter and Kramer (2006) claim that in order to improve a company's competitive edge, you need a so-called "Outside-In linkage". This linkage affects the ability of the company to improve productivity and execute strategy. The Outside-In linkage takes customer value as its starting and end point. Companies using this approach are focused on creating and nurturing their customers by providing high calibre customer value. They put themselves in the position of their customers, and look at the services or products they are going to deliver from their customer's perspective.

The Outside-In linkage depends upon a business vision that is forward looking. In contrast, the Inside-Out perspective mainly focuses on the company's own capabilities and strengths. With this approach, a company will provide a customer a part of the company's resources, aiming to provide the services agreed upon in the most efficient way. The problem with such an Inside-Out approach is the lack of agility towards adapting to changes in the market. This lack of agility leads to limited organizational development.

Comparing the two approaches suggests that there exists a conflict on a fundamental level between the two stakeholders that a company needs to deliver to, notably its customers and its shareholders. If incorporated appropriately, pleasing and keeping customers will increase profits, which in turn will secure shareholder returns. However, this does suggest a shift in emphasis away from directly trying to deliver to shareholders. Keeping the main focus on shareholder value can easily lead to short-term thinking and an Inside-Out approach to business. The findings in papers 2, 5 and 7 indicate that suppliers are mostly concerned with their project's specific outcome.

Outside-In linkage focuses on customer value and is based on the belief that the ability to compete is dependent on market insight and ensuring that every part of the company puts customer value first. The key is to understand that the customer is the source of value, and the market will reward the best value proposition. This is a realignment of values that places shareholder value as an outcome of customer value. Customer value should always be the primary focus.

Paper 7 of the present thesis discusses the above insights from the theory (mainly Porter and Kramer (2006) and Kapland and Norton (2004)) within the context of Norwegian AEC-industry projects. The findings from the two cases were validated in workshops with executives from the owner organisation. The problem was clearly identified by Statoil (a global actor in the oil and gas industry). It is Statoil's policy that the upfront preparations shall determine the results and value creation for the company. Everything is based on knowledge and competence and it is their expectation that project design is excellent. The project should not be an educational arena for suppliers. Statoil's experience with

suppliers' ability to deliver in accordance with requirements is somewhat negative, as was the experience with the overall design in this case. A re-use of design solutions was not in accordance with Statoil's goals and the insufficiently value-focused business models of the design team resulted in extensive use of resources.

The findings in the Statoil case were on a general basis confirmed in a workshop with executives from Norwegian engineering consultants and architects: Their actual performance in execution is focused more on their capability for delivery than the customer's requirements and need.

The insights from the general business literature thus seem valid to the Norwegian AEC-industry.

5.2.3 The lack of competence on measuring probability for project success

The third element that underlies the challenges identified concerns the competence in measuring probability for project success – both on the owner side and on the supplier side. Again, the approach to the analysis has been to examine what is perceived to be at the forefront of the international research literature on the subject, so that the challenges can be described as precisely as possible. In paper 7 of this thesis, this analysis is outlined further.

To secure a beneficial outcome of a project, it is of great significance to be able to measure success. Shenhar et al. (2001) have identified six measures of effectual impact on the customer. These indicators measure whether or not the project meets functional performance, meets technical specifications, fulfils customer needs, solves a customer problem, has delivered a product the customer is using, and satisfies the customer.

When evaluating whether a project is successful or not, the perspective of the supply side (as represented by the design team) and the business logics governing the demand side should converge. This does not, however, occur at all times. As described in paper 5, it is common knowledge in the Norwegian AEC-industry that the language – references, preoccupations and vocabulary – of the supply side is not equivalent to the language of the demand side. The supply side (represented by the design team) use a language typically based on models, specifications, rent values, etc. The demand side (dominated by business/organization technocrats) use a language dominated by flowcharts, financial reports, business cases, mission statements, etc. Differences in vocabulary of this sort render the establishment of proper measurements difficult. This corresponds to research carried out internationally by Blyth and Worthington (2010).

These questions become particularly acute when involving nonfinancial measurements. Ittner and Larcker (2003) point out several advantages related to nonfinancial performance measurement. Most of the companies in their survey made little attempt to identify areas of nonfinancial performance that might advance the chosen strategy. Nor have they demonstrated a cause-and-effect link between improvements in those nonfinancial areas and in cash flow, profit or stock price. They do of course measure the financial performance. *As a result, self-serving managers are able to choose and manipulate (financial) measures solely for the purpose of making themselves look good and earning nice bonuses.*

The findings from the Norwegian context presented in paper 7 shows that the same phenomenon occurs here. In both cases it was revealed that the occurring metrics on the supply side were solely connected to project efficiency (time and cost indicators). In the Statoil case, this was a conflict with the owner's established project strategy. The resulting deficiencies in design were corrected by the Statoil's project governance structure.

In the NIH case, the established metrics were of either a purely technical nature or related to project efficiency measures. When the scope changed, the established metrics gave no meaning.

One of the central elements in a business model is defining the key performance criteria, which will secure the intended value for the customer. This should be the foundation of the development of the design and

is strategically important for the owner with regard to the probability of realising the long-term benefits. The metrics are of vital importance to link the activity within the project with the project governing body.

5.3 What measures can be envisaged?

The third research question concerns possible ways out of the conundrums of present-day AEC-industry projects. Based on insights presented in several of the papers presented (papers 2, 3, 4, 5 and 7, a generic governance framework is established.

5.3.1 Measure 1: Appointing a project governance body

Appointing a project governance body with a sponsor can help the project owner (represented by the board of directors and the chief executive officer) to ensure that the project supplier understands and aligns with the Value Proposition. Vice versa, the project governance body should be responsible for communicating the Customer Value Proposition from the project supplier to the project owner. The owner must clearly communicate what value the project offers, and the supplier must communicate the cost, time and quality measures needed to provide this value. The project governance body has a responsibility, on behalf of the project owner, on the tactical level.

We have also found in paper 5, that the *project governance* function is not widely recognized in our cases from the Norwegian construction industry. However, we found that an alignment of project outputs with strategic goals happens to a certain extent in some projects, yet it appears to occur randomly and is very dependent on individuals taking a large responsibility.

The findings in the examined cases indicate that owners, who do not use the general strategic insight outlined in our theory section, will often leave relevant value creation to chance. A formal project governance body, with a well functioning project sponsor, will improve the necessary two-way communication between the strategic and operational level in projects.

The project governance body then needs to be able to 1) define requirements in an (internal) value proposition, 2) choose the supplier team that is capable of meeting the (internal) value proposition, and 3) monitor that the process is carried out according to plan.

5.3.2 Measure 2: The project governance body needs to define an (internal) value proposition

Based on the concept of value creation, an idealised representation of value creation in projects emerges. Prior to project execution, the project owner states what use value is expected to deliver (owner value proposition). The response as expressed in the supplier's tender is a description of how the output will align with the owner's priorities and requirements (this is often referred to in the literature as the customer value proposition). The owner value proposition is in most aspects equivalent to the reasoning behind the project initiation, the business case. To simplify and to clarify the relationship with the supplier value proposition, we have replaced the term "business case" with "owner value proposition" in this discussion.

Between a problem and a competitive business solution, there may be a construction project. Success at the end will firstly depend on the problem owner's ability to define both the problem and the preferable outcome of the project. Secondly, it will depend on the supplier's ability to understand the causality between the intended outcome and the physical design and technical solutions as well as economical limitations. Without those two conditions, the project will probably be left to chance. To secure the outcome, those two activities should continuously be aligned with corporate strategy throughout the implementation process.

The absence of a clearly defined internal value proposition or business case is found in 5 of the 12 cases in paper 5. The projects' contribution to fulfilment of the owner strategy was, except for the case where the supplier compensated for this, in the customer value proposition. A similar situation was a major finding in the NIH case in paper 7.

5.3.3 Measure 3: The project governance body needs choosing suppliers that can meet the requirements of the (internal) value proposition

As outlined in the theory chapter, the customer value proposition is a useful tool in securing alignment of a unified project strategy with owner needs. This is due to the proposition's explicit statement of how the supplier will solve the client's problem. The proposition will state how the project will deliver the strategic benefits and by which means and resources and is understood as the supplier's specific project business model.

The response on the internal value proposition is the customer value proposition. In all aspects, the customer value proposition has the same characteristic as a business model. Ideally, the supplier states how the project output will align with the project owner's need for value creation. Establishing a viable business model (Morris et al., 2005) is not possible until the firm knows what is needed and what the customer values are. Thus, the business model of the supplier (the project design team) is incomplete until the moment a customer is identified.

In this perspective, the maturity of the business model in project-based design firms depends on the extent to which it has the ability to translate the customer's need into functional design. The resources, capabilities and the value proposition must be visualised in the actual project to be meaningful to the customer (Morris et al., 2005; Zott and Amit, 2010; Demil and Lecocq, 2010; McGrath, 2010).

While almost everyone in a design team typically is conscious of the fact that the project represents some kind of value, fewer are familiar with how to maximise and manage value creation in an organisational perspective. The core business of architects and engineers in a design team is delivering customer value through design. Their ability to do so depends on an understanding of the needs of the customer and users. Next in importance, is their ability to design a building that supports the user's value creation in the core business.

The general business model of the design team on the other hand is typically more diffused and weak regarding which value is going to be created. However, it tends to be strong regarding how to utilise skills, capacity and knowledge (Holt et al., 1985).

The somewhat limited research literature on design processes in construction projects seems to identify the main challenge as being that the design typically has to be performed by external resources whose knowledge of success factors related to the project owner's goal is limited. Thus, we maintain that:

- 1) The risk of failure increases when engaging external design teams without ensuring that a set of common goals is established. These common goals should be governed by performance indicators established when commencing design.
- 2) It is our assumption that if the business model of the design team is clearly focused on meeting customer requirements and delivering customer value within a governance framework; project success is then more likely to be achievable.

The cases surveyed in paper 5 revealed that the supplier in 7 out of 12 projects did not have a customer value proposition that corresponded with the owner's business case. Six of the cases failed regarding the strategic outcome. The 7th was declared a success, but this was due to a defined business case and a robust project governance body.

In paper 7, a similar situation was found in the Statoil case. Even if the customer value proposition missed the target, a robust business case and a strong project governance body secured the success. Statoil commented that this situation had some economic consequences.

The findings listed above indicate a correlation between the project outcome and a procurement of the supplier (project management and design team) based on their documented ability to understand the client's business case.

5.3.4 Measure 4: The project governance body needs to monitor the process

As shown in papers 2, 5 and 7, a well-functioning governance structure is the foundation of project success. More specifically, the follow-up during project implementation will compensate for weaknesses in the suppliers business models. On the other hand, an absence of project governance has, in all the examined cases, had a negative effect for the strategic outcome. The findings are in accordance with the underlying theories of project governance.

UN, OECD and the European Commission have endorsed five criteria for what projects ought to strive for: efficiency, effectiveness, relevance, impact and sustainability. Delivering efficiently and successfully a well-defined, pre-specified project within a clearly defined, constant environment is usually considered as meeting the efficiency requirement. According to Samset (2010), efficiency represents only the immediate indication of a project's success in delivering the outputs.

There are many projects that score highly on efficiency, but prove to be disastrous in terms of their impact and utility in the short and long run. The IMEC study by Miller and Lessard (2001) distinguishes between efficiency and effectiveness of project success, where the latter points to the value generated by the project. Samset (2010) distinguishes between a project's strategic and tactical performance. Success in tactical terms means meeting short-term performance targets, such as producing agreed outputs within budget and on time. These are essentially project management issues. Strategic performance includes broader and longer-term considerations as to whether the project should have sustainable impact and remain relevant and effective over its lifespan.

Strategic project performance is what should be strived for in order to create value for the project owner. In this context, it is paramount to define those measurements, which will assure that the supplier at any moment is on track regarding the strategic performance of the project. Further, it is important to decompose the overall strategic performance criteria (project effects) into manageable design criteria, focusing on user time horizon as well as organizational level. According to this line of thought, both Shenhar (2012) and Maltz et al. (2012) suggest that project success ought to be assessed according to five dimensions. These range from short time project efficiency to future strategic impact. The project success measurement is based on the same line of thought as found in the balanced scorecard model of Kaplan and Norton (2004). A study based on Shenhar's success dimensions (Maltz et al., 2012) maintains that top-level management's vision needs to be translated into specific goals and measures at the project team levels. *By better understanding the overall organizational goals and by being required to achieve specific business goals, project teams will be better equipped to do their job both effectively as well as efficiently effectiveness and the long term effectiveness goals.*

6 Main conclusion – The generic governance framework model

The main research question governing this work has been *how can AEC-projects better align to business strategies from an owner perspective?* The main approach has been to analyse common practice within this industry with the recommendations and frameworks presented in the general management literature going from a theoretical to a practical approach.

As outlined in the description above and in the discussion in the previous chapter, the discrepancy between the general needs of the organization and the projects carried out to improve performance consists mainly of a lack of project objectives grounded in general strategy, a lack of alignment between clients and suppliers, a lack of understanding of success (project management success vs. project success) and a lack of project strategy definition.

The fundamental reasons underlying these challenges are a lack of competence on the owner side, a lack of competence on the supplier side and a lack of competence on measuring probability for project success.

In order to address these challenges, then, it is proposed to appoint a project governance body. It is further essential that the project governance body defines an (internal) value proposition (business case).

Equally, the project governance body needs to choose suppliers that can meet the requirements of the (internal) value proposition. Finally, the project governance body needs to monitor the process.

A study of conceptual relations between corporate governance, project governance and business models led us to develop a new governance design framework to support this research. The framework is shown in Figure 15. It serves as a theoretical framework for understanding what hampers and/or enhances value creation in projects. It is deliberately made more explicit in the front-end phase. This is where the most critical problems are found and the basis for success is developed (Klakegg, 2009a). The framework's theoretical ambition is to put into operation the ideas incorporated in Figure 14 with the concept of business models (paper 7).

Based on the owners' conception of the users' needs and the strategic business outcomes, project governance should secure alignment between the project goals stemming from corporate governance on one hand and the suppliers' goals on the other hand. Business models and corresponding value proposals are the tools to achieve this.

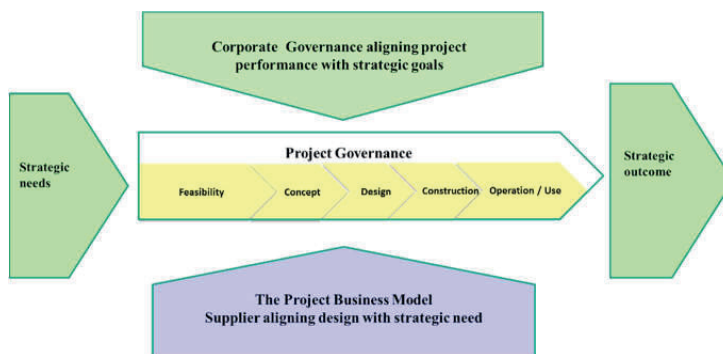


Figure 14 The basic elements of value creation in projects, seen from the owners' perspective

The suggested project governance model is based upon a generic stage-gate decision model and governance functions as described in the theory section. The stage-gate process (Cooper, 2008) is widely used in organisations in order to help secure the strategic effects of projects through structured decision-

making. Similar processes with decision gates are used in a variety of businesses to secure and improve project effectiveness and efficiency. Success factors typically assessed at each gate are strategic fit and importance, project competitive advantage and financial reward versus risk. Project evaluation in decision gates may also be executed using specific success criteria relevant to each stage and defined for each project. The process thus links project management success with project success and corporate success.

A central element in the business model is defining the key performance criteria, which are the foundation of the design. Throughout the design process, development and deliverables (decision gate packages) are assessed according to these criteria in decision gates. This governance function runs parallel with the project management.

The Generic Governance Framework Model is based on a project governance function, which communicates with the project in the initial phase (the value proposition) by clarifying the needs and in the project execution phase through the decision gates. The suppliers, based on their value proposition, deliver strategic capability to the client through a joint project business model. Performance is monitored by the project governance body in the projects milestones (M) and is assessed in the decision gates (DG) at the beginning of each phase/sub-phase.

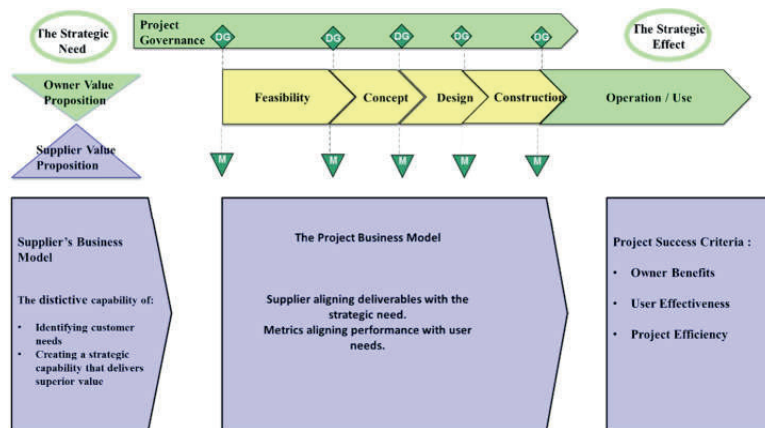


Figure 15 The Generic Governance Framework Model

The key components of the Governance Framework Model are described in paper 7:

Strategic Need: Why-questions: The need for change and the specific user needs that should be satisfied, which problems should be solved as well as why a specific value creation should benefit the client.

Strategic Effect: What-questions: Business perspective, what are the final benefits to be captured.

Project Success Criteria: What-questions: Intended outcome-user effectiveness and project efficiency

Suppliers Project Business Model: How-questions: The organizational structure of the design team, their capabilities and the distinct plan for how to align the outcome with the owner's needs (the design team).

Project Business Model: How-questions: What metrics (KPIs) are being used to align the design with the owner's strategy throughout the design phase.

The proposed model utilizes the concept of value proposition to secure alignment of a unified project strategy with owner needs. The supplier's value proposition, as an important part of their project business model, is an explicit statement of how the supplier (e.g. a design team) will meet the owner's value

proposition. The project business model should be developed through dialogue between client and supplier(s) to secure its consistency with strategic objectives, understanding of values, and priorities.

The generic governance framework model was tested in two cases and illustrated the challenges identified in the thesis, and the pattern was confirmed in three workshops with groups of experienced industry professionals.

The workshops with the industry (paper 7) confirmed that the findings revealed in the case studies are valid. The value creation in building projects depends on the robustness of the owner's business case. The workshops, with executives from the industry, also confirmed that the industry in itself is not mature enough to respond to the owner's value proposition with a strategically aligned supplier value proposition. The workshops also concluded that the industry tends to focus on operational process factors and not on strategic issues and goals. Lack of corporate governance as well as project governance will result in a focus on project goals related to cost, time and quality.

The participants in the workshops viewed it as a relevant tool for a structured approach and analysis of construction projects. It will be a useful tool in securing alignment between owners' strategic objectives and suppliers' tactical dispositions in specific projects. This research has focused on a context where the suppliers, i.e. the design team, are external to the owner organisation. We expect the model to be valid also in a general case, but it will require additional research to test this.

This model for developing a project governance framework adapted to the actual situation allows any choice of execution strategy. A main point is that the project's business model is developed in accordance with the owner's defined needs and intended user effect. In line with the conclusion of Samset (2003), this opens up success in the perspectives of the owner, user and executing party. The model proposed explains the main function of the owner in governing the project from the identification of the strategic need to the capture of the strategic effect. As illustrated in the empirical research presented in the different papers of this thesis, if the owner is not aware of these functions, the likelihood of project success decreases sharply. Two of the main components expressed (from the owner perspective) are the need for articulation of goals that can be realised through the project and assuring a process that provides sufficient support and governance from the owner to the supplier. On the supply side, the model underlines the need for a proper understanding of the business objectives of the owner throughout the process, and organises the process accordingly.

Our research reveals a poor comprehension of the business context of projects within architectural and engineering companies. Implications for practice is that architect and engineering firms need to create and deliver value, and a good starting point is to work more intensively with the client's business objectives and to understand the causal relation between design and client's benefits.

Further research

Additional research should focus on the preparatory project management practices – e.g. the strategic approach to project success. As this thesis concludes with a possible communication problem between the client and supplier regarding which problem is to be solved and how to it, a starting point is to give some attention to roles and responsibility on the client side of the project. The main issue in the AEC context is the client's ability to formulate goals and give direction at the initiation stage and further research should focus on methods on translating the client's objectives into metrics to align the design process with the strategic need.

7. References

- Andersen, E. S. (2012), “*Illuminating the role of the project owner*”, *International Journal of Managing Projects in Business*, Vol. 5 No. 1, pp. 67-85.
- Anderson, J.C., Narus, J.A and van Rossum, W., (2006), *Customer Value Proposition in Business Markets*, Harvard Business Review, March 2006.
- APM (2011), *A Guide to Governance of Project management*, 2nd ed., Association for Project Management, Princes Risborough.
- Bach, GL; Flanagan, J; Levy, F; and Lima A., (1987) *Microeconomics* (11th edition) Prentice Hall, Englewood, NJ.
- Baden-Fuller, C. and Morgan, M.S. (2010), *Business models as models*, Long Range Planning, Vol. 43, pp. 156-171.
- Bloomberg, B., Cooper, D. R., & Schindler, P. S. (2011). *Business Research Methods* (3 ed.). London: McGraw-Hill Higher Education.
- Blyth, A. and Worthington, J., (2010), *Managing the Brief for Better Design*. Second Edition. Ruthledge, Taylor & Francis Group, London
- Bowman, C. and Ambrosini, V., (2010), *How value is created and destroyed*. European Business Review. Vol. 22, No. 5, pp 479-495.
- Bowman, C. & Ambrosini, V. (2000), *Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy*. British Journal of Management, Vol. 11, pp.1-15.
- Casadesus-Masanell, R. and Ricart, J.E. (2010), *From strategy to business models and onto tactics*, Long Range Planning, Vol. 43, pp. 195-215.
- Collins, J.C. & Porras, J.I. (1998), *Built to Last: Successful Habits of Visionary Companies*. London Random House Business Books.
- Cooke-Davies, T. (2004), *Project Management Maturity Models*. In P.Morris & J.K. Pinto (Eds.) *The Wiley Guide to Managing Projects*. Hoboken, New Jersey: John Wiley and Sons.
- Cooper, D.R & Schindler, P.S, (2008), *Business Research Methods*, International Edition, McGraw Hill, Singapore.
- Cooke-Davies, T. (2002), *The ‘real’ success factors on projects*, *International Journal of Project Management*, Vol. 20 No. 3, pp. 185-190.
- Cooper, R.G. (2008), *The stage-gate® idea-to launch process-update, what’s new, and NexGen systems*, *The Journal of Product Innovation Management*, Vol. 25, pp. 213-232.
- Cooper, R.G., Edgett, S.J. and Kleinschmidt, E.J. (2002), *Optimizing the Stage-Gate Process: What Best-Practice Companies Do – II*, *Research Technology Management*, Vol. 45 No. 6, pp. 43-49.

- Crawford, L., Cooke-Davies, T., Hobbs, B., Labuschagne, L., Remington, K. and Chen, P. (2008a), *Situational Sponsorship of Projects and Programmes: An Empirical Review*, Project Management Institute, Newtown Square, PA.
- Crawford, L., Cooke-Davies, T., Hobbs, B., Labuschagne, L. Remington, K. and Chen, P. (2008b), *Governance and Support in the Sponsoring of Projects and Programs*, Project Management Journal, Vol. 39 No. S1, pp. 43-55.
- Dalton, D.R., Daily, C.M., Ellstrand, A.E. and Johnson, J.L. (1998), *Meta-analytic reviews of board composition, leadership structure, and financial performance*, Strategic Management Journal, Vol. 19 No. 3, pp. 269-290.
- Demil, B. and Lecocq, X. (2010), *In search of dynamic consistency*, Long Range Planning, Vol. 43, pp. 227-246.
- de Wit, A. (1988). *Measurement of project success*. International Journal of Project Management. 6 (3), 164-170.
- Dinsmore Paul C. and Cooke-Davies, Terence J. (2006), *The Right Projects Done Right* Jossey-Bass San Francisco CA
- Driver, Phil (2014), *Validating Strategies: Linking Projects and Results to Uses and Benefits*. Gower publishing
- Fellows, R.F. & Liu, A. (2015), *Research Methods in Construction*, John Wiley & Sons,
- Flyvbjerg, B., *Five Misunderstandings About Case-Study Research*, Quality Inquiry, Volume 12, Number 12, April 2006, 219-245.
- Gadamer, H.G. (1960), *Wahrheit und Methode: Grundzüge einer philosophischen Hermeneutik*, Mohr Siebeck Verlag, Tuebingen
- Hjelmbrekke, Hallgrim, Lædre, Ola and Lohne, Jardar (2014), *The need for a project governance body*, International Journal of Managing Projects in Business, Vol 7, No 4, 2014 pp.661-677
- Hjelmbrekke, H., & Klakegg, O.J. (2013), *The New Common Ground: Understanding Value*. Paper presented at the 7th Nordic Conference on Construction Economics, Procedia Economics and Finance, pp 269-281
- Hoezen, M., Voordijk, H. and Dewulf, G. (2012), *Contracting dynamics in the competitive dialogue procedure*, Build Environment Project and Asset Management, Vol. 2 No. 1, pp. 6-24.
- Hoezen, M., Van Rutten, J., Voordijk, H. and Dewulf, G. (2010), *Towards better customized service-led contracts through the competitive dialogue procedure*, Construction Management and Economics, Vol. 28, pp. 1177-1186.
- Holt, Radcliffe and Schoorl (1985), *Design or problem solving – a critical choice for the engineering profession*, Viewpoint, Vol. 6 No. 2.
- Ittner, Christopher D. and Larcker, David F (2003), *Coming Up Short on Nonfinancial Performance*
- Kaplan, Robert S. and Norton, David P. (2004), *Strategy Maps. Converting Intangible Assets Into Tangible Outcomes*. Harvard Business School Press. Boston Massachusetts.
- Klakegg, O.J. and Shannon, D. (2013), *5th Board of directors' responsibility for construction projects*, 7th Nordic Conference on Construction Economics and Organization, 12-14 June, Trondheim.

- Klakegg, O. J. (2010), *Governance of Major Public Investment Projects*, Thesis for the degree of philosophia doctor, Norwegian University of Science and Technology, Trondheim.
- Klakegg, O.J. (2009a) *Pursuing Relevance and Sustainability: Improvement Strategies for Major Public Projects*. International Journal of Managing Projects in Business. Vol. 2, No. 4. pp 499-518
- Klakegg, O.J. (2009b), *Challenging the Interface between Governance and Management in Construction Projects*. 5th Nordic Conference on Construction Economics and Organization. 10.-12. June 2009. Reykjavik, Iceland
- Kujala, S., Arto, K., Aaltonen, P. and Turkulainen, V. (2010), *Business models in project based firms: towards a typology of solution-specific business models*, International Journal of Project Management, Vol. 28, pp. 96-106.
- Lindkvist, L. (2004), *Governing project-based firms: promoting market-like processes within hierarchies*, Journal of Management and Governance, Vol. 8, pp. 3-25.
- Maltz, A. C, Shenhar, A. J., Dvir, D. and Poli, M., (2012), *Integrating Success Scorecards Across Corporate Organizational Levels*, The Open Business Journal, 2012, 5, 8-19
- Mankins, Michael C. and Steele, Richard (2011). *Turning Great Strategy into Great Performance*, *On Strategy*. Harvard Business Review July-August, pp209- 228
- Mankins, M.C. and Steele, R. (2005), *Turning great strategy into great performance*, Harvard Business Review, July-August.
- McGrath, R.G. (2010), *Business models: a discovery driven approach*, Long Range Planning, Vol. 43, pp. 247-261.
- Miller, R., & Lessard, D. (2001), *The strategic management of large engineering projects: Shaping institutions, risks and governance*. Cambridge, MA: MIT Press.
- Morris, M.; Schindehutte, M., and Allen, J. (2005), *The entrepreneur's business model: toward a unified perspective*. Syracuse Univ USA; Miami Univ, USA; Univ of Central Florida, USA
- Müller, R. and Jugdev, K. (2012), *Critical success factors in projects*, International Journal of Managing Projects in Business, Vol. 5 No. 4, pp. 757-775.
- Müller, R. (2009), *Project governance (Fundamentals of Project Management)*, London, UK: Gower
- Mutka, Sanna and Aaltonen, Pertti (2012), *The impact of a delivery projects's business model in a project-based firm*. *International journal of Project Management*, august 2012.
- Murray, A. (2011), *PRINCE2 and Governance*, White Paper, Best Management Practice, The Stationary Office, London.
- Narayanan and DeFillippi (2012), *The Influence of Strategic Context on Project Management Systems: A Senior Management Perspective*. In: Williams , T.M., Samset, K.(Eds.), *Project Governance: Getting Investments Right*. Palgrave Macmillan, pp 19-76
- OECD (2004), *Principles of Corporate Governance 2004*, Organisation for Economic Co-operation and Development, Paris, available at: www.oecd.org
- OGC (2007), *Managing Successful Programs*: Office of Government Commerce, TSO, London.

- Olsson, N.O.E. (2015) *Scope Reductions as Tool for Cost Control in Construction Projects: An Ex-Post Analysis of Scope Reduction Options*, International Journal of Risk and Contingency Management, 4 (4)
- Olsson, N.O.E. (2006), *Project Flexibility in Large Engineering Projects*, Thesis for the degree of philosophia doctor, Norwegian University of Science and Technology, Trondheim
- Olsson, N.O.E. (2004) Up-front conjecture of anticipated effects of major public investment projects, Concept report series No 7. Available at <http://www.ntnu.edu/web/concept/concept-report-series>
- Peteraf, MA (1994) *The Two Schools of Thought in Resource-Based Theory: Definitions and Implications for Research*. In Shrivasta, P.; Huff, A.; and Dutton, F. eds. (1994) *Advances in Strategic Management*. 10A, pp 153-158. Jai, Connecticut
- Pierre, J. and Peters, B.G. (2000), *Governance, Politics and the State*, Macmillan, London.
- Pinto, J.K. and Prescott, J.E. (1988), *Variations in critical success factors over the stages in the project life cycle*, Journal of Management, Vol. 14 No. 1, pp. 15-18.
- Pinto, J.K. and Slevin, D.P. (1987), *Critical success factors in effective project implementation*, IEEE transactions on engineering management, 1987 pp22-27
- Porter M.E. and Kramer M.R. (2006), *The Link Between Competitive Advantage and Corporate Social Responsibility*. Harvard Business Review.
- Porter, Michael E (1996) *What is Strategy*, Harvard Business Review, November- December
- Porter, Michael E (1991) *Towards a Dynamic Theory of Strategy*. Strategic Management Journal. 12, pp 95-117.
- Reading, C. (2002), *Strategic Business Planning*, Kogan Page Limited, London.
- Samset, K. (2003) *Project Evaluation; Making Investments Succeed*. Trondheim. Tapir Academic Press.
- Samset, K. (2010) *Early Project Appraisal. Making the initial choices*. Basingstoke, UK: Palgrave MacMillan.
- Shafer, S.M., Smith, H.J. and Linder, J.C. (2005), "The power of business models".
- Shenhar, Aaron (2012), *Introducing the Next Generation of Project Management*. Strategic Leadership. www.splwin.com, downloaded March 2013
- Shenhar, A. (2012), *What is Strategic Project Leadership*, SPL Group, available at: www.splwin.com (accessed 23th February 2013).
- Shenhar, A. (2004), *Strategic Project Leadership®: Toward a strategic approach to project management*, R&D Management, Vol. 34 No. 5, pp. 569-578.
- Shenhar, Aaron J. and Dvir, Dov (2007), *Reinventing Project Management*, Harvard Business School Publishing, Boston, MA
- Shenhar, Aaron J., Dvir, Dov, Levy, Ofer and Maltz, Alan C. (2001), *Project Success: A Multidimensional Strategic Concept*, Long Range Planning 35 p 699-725

- Shenhar, Aaron J. and Patanakul, Peerasit (2012) *What Project Strategy Really is: The Fundamental Building Block in Strategic Project Management*, Project Management Journal February 2012.
- Slevin, Dennis P and Pinto, Jeffrey, K (1987), *Balancing Strategy and Tactics in Project Implementation*, Sloan Management Review, Fall 1987
- Smith, Adam (1776), *The wealth of nations. Book I-III*, Penguin Books, Ltd, London, 1999
- The Standish Group (2001) *The Chaos Report*, West Yarmouth, MA, the Standish Group International Inv, 2001.
- Teece, D.J. (2010), *Business models, business strategy and innovation*, Long Range Planning, Vol. 43.
- Thomson, D.S., Austin, S.A., Devine-Wright, H. and Mills, G.R. (2003), *Managing value and quality in design*, Building Research & Information, pp. 1466-4321.
- Turner, J.Rodney (2014), *The Handbook of Project-Based Management*, Fourth Edition, McGraw-Hill Education
- Turner, J. Rodney and Müller Ralf (2003), *On the nature of the project as temporary organization*, International Journal of Project Management, Vol.21 1-8
- Vuori, Elisa, Mutka, Sanna, Aaltonen, Pertti and Artto, Karlos (2013), *That is not how we brought you up: how is the strategy of a project formed?*, International Journal of Managing Projects in Business, Vol 6No. 1, 2013 pp. 88-105
- Welde, M. and Odeck, J. *cost escalation in the front-end of projects- empirical evidence from Norwegian road projects*. Transport Reviews, published online 13 Jan 2017, pages 1-19
- Windeler, A. and Sydow, J. (2001), *Project networks and changing industry practices: collaborative content production in the German television industry*, Organization studies, Vol. 22 No. 6, pp. 1035-1060.
- Zott, C. and Amit, R. (2010), *Business model design: an activity system perspective*, Long Range Planning, Vol. 43, pp. 216-226
- Yoshimori, M. (2005), *Does Corporate Governance Matter? Why the Corporate Performance of Toyota and Canon is Superior to GM and Xerox*, Corporate Governance: An International review, 13 pp 447-457
- Yin, R.K. (2009), *Case Study Research – Design and Methods Fourth Edition*, Applied Social Research Methods Series, Vol. 5, Sage Publications

8. APENDIX - PAPERS

- 8.1 Paper 1: PROJECT GOALS IN CONSTRUCTION PROJECTS – DEFINITION AND USE
- 8.2 Paper 2 : VALUE ENHANCING PROCESSES IN BUILDING AND REAL ESTATE
- 8.3 Paper 3: ON THE DIFFERENCE BETWEEN PROJECT MANAGEMENT SUCCESS AND PROJECT SUCCESS
- 8.4 Paper 4: THE NEW COMMON GROUND: UNDERSTANDING VALUE
- 8.5 Paper 5 : THE NEED FOR A PROJECT GOVERNANCE BODY
- 8.6 Paper 6 : A MOTHERLESS CHILD -WHY DO CONSTRUCTION PROJECTS FAIL?
- 8.7 Paper 7 : GOVERNING VALUE CREATION IN CONSTRUCTION PROJECTS – A NEW MODEL
- 8.8 Paper 8: LEAN DESIGN VERSUS TRADITIONAL DESIGN

8.1

PROJECT GOALS IN CONSTRUCTION PROJECTS – DEFINITION AND USE

PROJECT GOALS IN CONSTRUCTION PROJECTS – DEFINITION AND USE

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ABSTRACT

The purpose of the study was to investigate to what extent project owners:

- Formulate project goals in the front-end phase
- Communicate their goals to contractors
- Use their goals actively during planning and construction.
- Benefit from active use of goals.

In this paper goals are related to the effectiveness and satisfaction of actual user needs in the operational phase. This is a wider approach than just focusing on traditional project objectives relating to cost, time, quality, and scope.

Empirical material was collected through semi-structured interviews with the project managers of three building projects. The projects and respondents were selected on a strategic basis. The projects had professional owners, and based on experience from earlier collaboration it was anticipated that they had put a lot of effort into formulating and communicating their goals. A literature survey was conducted, with special focus on sources which stress the importance that project goals have for project success. Ideally, a project owner should formulate goals during the front-end phase so that it can form a basis for the programming phase.

The three case studies indicate that project owners focus on project objectives, and there is a lack of formal goal formulation processes. Owners do not formulate clear project goals from the users' perspective. As a consequence, there are no clear goals to communicate to the project organization. When confronted, the respondents were aware that a stronger focus on goals and the bigger picture in the front-end can contribute to improved projects. If buildings are adapted to actual needs, the users' business potential will be higher than if owners only focus on project objectives. Hence, owners have to shift their focus from project objectives to project goals.

Both private and public owners tend to emphasize relatively narrow project objectives instead of user needs. This paper argues that more focus on project goals is required. The study presented here will be continued as part of the study towards a PhD, and will try to give an answer as how to follow-up effectiveness during front-end, the planning phase, the execution phase, and the operational phase in building projects. The results will be used to give a description of best practice for following-up effectiveness.

Keywords

effectiveness, efficiency, project goals, project objectives, user needs

1. INTRODUCTION

Unlike other large material procurements, a construction project has a limited period of time for defining success which is not related to its usage in terms of real objectives. It is the degree of success during the procurement process that receives the greatest focus (efficiency–price ratio, delivery date, quality, and scope). Theory states (for example Norad, 1999) that in addition to efficiency the success of an investment is the result of the following factors:

- Effectiveness
- Impact
- Relevance
- Sustainability

These factors form the basis for the satisfaction of actual user needs.

General operating parameters for companies and organizations change continuously, implying great demands on the flexibility and usefulness of buildings. In order to increase the probability of achieving commercial long-term objectives, theory states that it is necessary to establish clear goals as supplemental requirements to technical standards and spatial needs.

In a project's early phase, the premises are set for the project strategy through the choice of approach to project development. This may be architect-focused, with the main emphasis on decisions based on proposed solutions with regard to framework demands, or it may be analytical engineer focused, where the solution comes as a result of a worked out concept in which unambiguous goals are presented hierarchically in relation to the owner's business expectations in terms of the project's results and its importance for their own operations.

The risky approaches are when one person alone, generally the architect, attempts to interpret the requirements from the users' expressed wishes and initiates a process that locks the choice of concept. The correct approaches are those in which all stakeholders, project owners, users, consultant engineers, architects, and prospective contractors join forces in order to define the real needs in terms of business sense and use this as a basis for a solution.

In an ideal project a multi-perspective hierarchy for goals is established up-front, and any subsequent decisions may also be related to these goals. A project's success will result from the ability to maintain an overall perspective and continually evaluate degrees of attainment of goals in the development phase, execution phase and operational phase. The overall perspective approach also carries an expectation concerning taking up project changes that arise as a result of changing market conditions. Contractors that succeed in establishing a multi-perspective goal hierarchy will benefit from such a hierarchy.

The general awareness of the importance of concept development and strategic processes in a project's front-end will increase though documentation of how goal-oriented management processes lead to measurable business effects for users. It is in the projects owners' and users' interests to ensure that the project attains its overall goals. Goal attainment linked to quality, time and cost are only indicators that individual activities in the process as a whole have succeeded. Contractors who continually evaluate degrees of multi-perspective goal attainment in their projects will benefit greatly.

2. STATE OF THE ART IN LITERATURE

It is worth reflecting on the extent to which project owners perform the following:

- Formulate project goals in the front-end phase
- Communicate their goals to contractors
- Use their goals actively during planning and construction

The objective of this investigation is to map out the extent to which goals are formally included in a project's goal-setting processes, and to determine whether a logically compiled structure for the goals of a construction process exists to support a project's long-term profitability, from the initiation of a project to development and execution, and ultimately to completion.

A project arises from a need. Based on this need, the project will have a final objective or vision to follow in order to solve a problem – allowing expansion – higher earnings – to create more flexibility and room for change. The project will be considered a success according to the extent to which these goals are able to be met over time.

Primarily, a need arises as a consequence of a business question: How will the enterprise meet new demands relating to productivity and increase competitiveness? In the studied context, what is state of the art and to what degree have theories been developed that systematize processes for the definition of goals and goal attainment with regard to the impact for users?

The superior objective or vision alone will not be sufficient to lead a project to successful completion, as the latter also depends on establishing a set of goals that cover the project's many phases from start to finish. According to Næss (2004): “The ability to formulate, intermediate and follow up on one's goals is a useful management tool”.

The basic goals of a project will differ depending on the viewer's perspective. Samset (2001) has defined three main perspectives or ways of viewing a project, with different goals (see Table 1).

PERSPECTIVE	GOAL	ROLE	COMMENTS
The perspective of the empor (the owner)	Societal goals	First order user of the project's services or result	Value-creation on behalf of society by achieving success
The user's perspective	Goals	Initiating party Interest in results	Benefit for users by achieving results
The supplier's perspective	Goals relating to results	Responsible for execution In terms of contracts or on own behalf	Achieving defined target figures.

Table 1: Three perspectives from which to view a project and its goals in a state-run project (based on Samset, 2001).

Klakegg (2006) formulates the purpose of goals as follows:

We formulate goals as instruments to help us achieve what people are expected to do. The purpose of formulating goals is to transmit them, which means communicating these within an organization. A decisive premise of any goal is that it gives the results intended for it.

Blyth and Worthington (2001) describe implementation of programming processes and their need for continual management and communication with regard to meeting the business goals in relation to the results for users. The project owners' goals are formulated in a strategic program where overall goals are established with regard to the building project's expected results from the owners' and users' perspectives. A strategic program includes quality assurance of processes in order to reduce uncertainty with regard to goal attainment and to establish collaboration between a company's (business) goals and the project team's goals. The program will present the company's priorities, define essential demands relating to the project, and communicate these to the project team.

The purpose of strategic planning is to achieve structured and effective goal-oriented management whereby decision makers in a project relate to the common goals and constructively develop the project towards this end.

Blyth and Worthington (2001) identify significant challenges to establishing cooperation between a company (its goals) and a project team (its goals). The strategic programme should present the company's priorities and goals, define essential requirements for the building in question, and communicate these to the project team so that the programming material has a robust structure which can be applied to the later developmental and constructional phases. Communication between owner and the project team can be characterized as a meeting point between two different programmes: the commercial and the strategic programme from the owner's side and the technically-oriented building programme. On this basis, an evaluation of significant success criteria depends on defining a common language during the programming process to avoid misinterpretation of ambiguous or confusing statements.

Determining the extent to which a project is successful or not will depend upon which interests are affected by the project and the perspectives from which the project is considered. Due to the temporary structure of projects, most often evaluation will occur at the end of the implementation phase. As a rule, at this stage it is not possible to ascertain whether a project has been successful from a user's or society perspective. However, Samset (2001) has documented a positive correlation between high costs during the early phases of a project and a higher degree of achievement in terms of desired results.

After benchmarking investment projects, Andersen (1999) reached the following conclusions with regard to successful projects:

1. The preliminary phase(s) lasts a long time
2. The concept undergoes a number of revisions
3. Problem-solving is systematic and comprehensive

The overall perspective is greatest in a project's early phases and gradually reduces throughout the project's lifetime. If this is missing at the highest levels, there is no reason to believe that it will emerge later. The building program should convey a clear and unambiguous overview of the project strategy. This is important with regard to being able to evaluate the relevance of changes for a project's end results at any point in time. At the very least it will provide input for whoever is responsible for implementation, enabling them to react appropriately and strategically.

3. RESEARCH PROJECT

A case study was made of three recently completed building projects, for which documentation still existed and the interviewed respondents still had a close relationship with the projects. In the case study it was decided to focus on three professional project owners' perceptions of the development and execution processes. This was based on the fact that it was the owners' organization that had to initiate project-specific as well as user-related goal formulation processes and prepared strategies.

Based on Samset's (2001) perspective analyses and the fundamental management question of how to increase productivity and competitiveness, it is appropriate to evaluate the extent to which the expectation that achieving results will benefit users is common in the development and production phases.

In the case study it was decided to focus on investigating the project owners' perceptions of strategy and goal processes in the early phase, the communication of these goals in the implementation phase, and their relations to real objectives.

Empirical material was collected through in-depth semi-structured interviews with the owners' project managers. The three projects and respective respondents were chosen on a strategic basis. These three cases were a university building, a culture building and an administration building. These projects had professional owners, and based on experience from previous collaboration, it was anticipated that they had put a lot of effort into formulating and communicating their goals. A literature survey was conducted in advance, with special focus on sources that dealt with project goals. Some of the sources focused on the physical buildings while others focused on organizational structure when formulating project goals.

The university building

This was a public works project for the university, where most of the area was intended to be used for student study space and a smaller share of the space was allotted for use by the University library. Construction was completed in 2006.

The culture building

This was a private construction project that created a space for cultural and educational activities. This building was meant to attract citizens and increase activity in an urban development area in the neighbourhood. The project was a rebuild and extension of a historical building worthy of preservation, located in a former shipyard in Trondheim, and where the users were allowed to participate in the final aspects of the project development. The building was completed in 2006.

The administration building

This building was specially adapted for public agencies. It was a non-governmental project with a public tenant who had a 20-year lease contract, with option for a 10-year contract extension. The user prepared a specification of requirements that formed the basis for a project bidding competition, for which the winning criteria comprised location, price, architecture, and solutions. Construction was finished in 2003.

4. RESEARCH RESULTS AND INDUSTRIAL IMPACT

The building profession has four clearly defined roles: approval of decision-making, decision-making, decision-making formulations, and influence. These are important in relation to understanding what mandate is given and what is expected in terms of results among the different stakeholders. If the administrative management (decision-makers) and committee (those who approve the decision-making) are not aware of what the objectives are then a lack of goal formulation and/or decisions will be a very limiting factor for the project. A lack of description of goals beyond quality, time and cost will result in the implementation stage only delivering what was actually decided, namely a given number of square metres, ready on time, and at the agreed price. Thus, success is dependent upon decisions, but highly uncertain with regard to the objectives and returns in a lifelong perspective.

Accordingly, the formulation of decisions is largely a matter of preparing and clarifying project resolutions and thereby gives the necessary scope for action in the implementation phase. This also comprises an instructive and pedagogical process with regard to making decision-makers aware of need to shift focus from individual project goals to the project's results in terms of its own operations and for

users. When such processes are difficult and complex they may prove demanding for contractors. Ideally, one should not underestimate the wishes of traditional project management to be valued according to the completion of a building in terms of time, cost and quality by using traditional project goals.

In the investigated cases, all commissions from the owner in principle were based on specific project goals. This is clearly apparent with regard to the university case, but also for the administrative building. The culture building stands apart through a somewhat more open commission due to a society goal defined through the owner's holistic approach and that desire that the project should contribute to developing the area as a whole.

The projects have had varying consequences, although these have been the greatest for the university which carried out a project with documented deviation to some extent regarding to the overall goals. In the other two cases, there is no evidence of a lack of functionality in the buildings. The fact that there was awareness that the process clearly had shortcomings as a consequence of a lack of objectives confirms that the potential existed for a better building.

In the studied cases there was an explicit lack of formulation of objectives and it became apparent in the investigation that project managers understand that clear objectives would have contributed to improved processes. Even though the respective projects were regarded as well executed, to a greater or lesser degree it was considered problematic that there were no overall and visible objectives which the different project goals could have adapted to. It is of vital importance that owners give such authority to their organization in the initial stages and that this is specifically formulated in addition to traditional objectives.

No deliberate strategy for the communication of results goals was found in the researched case studies. In the administration building project, the process linked to the communication of project goals in the implementation phase is regarded as having been successful. The project owners' awareness that the use of communication of goals is a strategic means for ensuring good processes proved to be significant.

In the case of the culture building, the objectives were in focus in the development phase and were known to the project members as a consequence of the project's 'intimacy' and relatively small scale.

On the basis of the three case studies, it is concluded that the lack of established objectives was a hindrance to optimal processes and hence optimal solutions. All of the studied projects were regarded as 'good' by their respective owners, while simultaneously the project owners' expressed that the fact the overall objectives were not visible or governing in processes was a problem. It was also concluded that a stronger focus on objectives and communication of these by owners would have improved the development process. First and foremost, this would have been of importance with regard to giving priority to customizing the design for the users instead of responding to the technical requirement specifications. The study also found that project evaluation was primarily directed towards attaining project-related performance goals and that only basic and unsystematic investigations were carried out in relation to users.

As owners, all three organizations had high-level visions and strategies. These were not brought forward to the project organizations and the three investigated projects each lacked a formulated concept with goals and strategies.

The three projects reviewed concept-formulating processes, but the reviews were related to project objectives. All orders from the owners in principle were based on the specific project objectives, and as a consequence all of the projects had strictly defined objectives for final results in the form of established budgets, time schedules and thorough specification requirements with stipulated standards for quality. This is readily apparent in the case of the university and administration buildings. The culture building project had a somewhat more open ordering process, due to of an expressed project purpose and that the

project should contribute to development of an entire neighbourhood. However, the culture building project only communicated the project objectives to the contractors.

In the case of the university building, there was limited time during the project development phase because of an unalterable completion date. Consequently, the formulation of any goals was limited to preparing the budget and making a progress plan. The developer was of the opinion that the lack of a clear definition of goals did not have any significance regarding the execution of the project. However, one investigation that was conducted after completion concluded that on average only 10% of the student study space was used, which indicates low utilization in relation to the cost of the project. The developer later realized that the front-end phase had been used to solve problems relating to project goals and conflicts with the contractor instead of finding solutions that would be beneficial to the university's strategic goals.

The cultural building had a basic requirement of non-commercial activity through public planning regulations. The developer had not defined which activity was most desirable for the culture building, but there still was a distinct relationship between activity there and development of the area around the building. The proper form of activity in the culture building would have given the developer more rental income from surrounding areas. The developer of the cultural centre considered the project to be successful in terms of economic project goals and the area's attractiveness, but later realized that greater awareness of desired goals would have been a suitable tool for keeping the focus on the superior quality of the delivery. The tenant's success had an even greater significance for the developer's earnings than successful project execution.

The users of the administration building defined their own requirements for the building in the form of technical specification of requirements. The specification of requirements did not give the developer insight into which problems the users needed to solve. Based on the specification of requirements, the users were not involved in the planning of the front-end phase. The developer later thought that achieving goals would have been more likely if there had been more user influence, based on mutual participation. The developer understood that it would have been desirable to have had clearly defined goals from the users, beyond the technical specifications, so that the actual user needs would have been more clearly communicated to the project organization. Such clarification could have contributed to a strategy for achieving such goals.

The three building projects examined were all characterized by an explicit absence of formulation of goals, and the investigation showed that the project managers believed that clear goals would have contributed to improving the processes. Even if the projects were individually perceived as well-executed, to a greater degree it was considered a problem that no superior and visible goals existed. To what extent the final projects and buildings investigated actually would have changed if a concept had been developed early on is hard to be certain. The fact that the owners were aware of deficiencies in processing when actual goals were clearly lacking is a confirmation that the potential existed to make better buildings.

No conscious strategy was found for how goals should be communicated in the projects examined. The culture building project had its goals in sight during the developmental phase, and project participants were conscious of these goals because of the limited number of persons involved, and the project's small scale. Such communication was absent from both the administration building project and university building project. The respondents that were interviewed characterized this as a very limiting situation regarding the utilization of the opportunities existent in the projects.

The developers of the examined projects assessed the execution processes as good, even if the project managers considered it problematic that processes for visible overall goals were not for guiding the projects. The owners understood that a greater focus on the communication of goals would have improved the development process. This would first of all be significant for prioritizing designs adapted to user needs instead of simply responding to technical specification requirements. Project evaluations

subsequently were mainly directed toward the project objectives, while users were only informally concerned and in general the owners only made unsystematic investigations of effects.

5. CONCLUSIONS

In summary, the case studies revealed that the researched projects did not implement systematic processes with the purpose of describing the main business goals or objectives, communicate these from the decision-makers and owners to the implementation organization, or undertake evaluation of goals in the operational phase. Theory and literature clearly indicate that objectives are of large significance for a project's success, and that contractors must place great emphasis on both formulating them and following them up.

The research gives a clear indication that project goals and objectives are controlling in building projects. A project's success is evaluated in terms of its ultimate quality, timeliness and cost. It was recorded that the question of objectives was very central in the development phase of one of the projects. In that particular project the project goals were moderated in the processes and the owner had no special requirements in terms of returns.

From the study it can be concluded that the lack of formulation of objectives in the management perspective in general and in the end results in particular, was a hindrance to optimal processes. Project goals were highly controlling in the case of both the university building and the administrative building.

In all projects it was found that a stronger focus on objectives on the part the owner would have improved the development process and formed the basis for dimensioning in the operational phase.

In the case of the university building, real user goals were not formulated, and hence could not be followed up in the process. In the case of the administrative building basic measures were found which in principal were not communicated to the project. The objectives were formulated, but were not used in the process and hence had significantly less impact for the project's end result. In the case of the culture building awareness of the multi-perspective goal was made active participation by the users and owners throughout the whole process. The goals were governed informally and they resulted in benefit for users and hence for project owners. A formalized application of a multi-perspective goal hierarchy would have improved the project considerably.

Based on the conducted interviews and pilot study it has been found that an owner who commissions a project (the business owner) must be made aware of the business potential that lies in having a structured process wherein the main focus is on establishing real objectives relating to the user and also on the effect of the project on the organization's core activities.

Communication and follow-up of project owners' objectives in the building profession constitute a little focused area. With the exception of large state-run projects established general systems which should control the quality of this process do not exist to any great extent.

Project owners and/or users are also partly unaware of the importance of implementing a process involving the preparation of a strategic program for the project and thereby controlling the quality of the end result and long-term profitability.

6. IMPLEMENTATION AND EXPLOITATION

This work will be continued with a PhD study, which will aim to determine how to follow up effectiveness during the front end, planning, execution, and operational phases in building projects. The results will be used to provide project owners with a description of best practice for following up effectiveness.

7. REFERENCES

Andersen, Bjørn, Benchmarking av store prosjekter, NTNU, 1999, PS 2000 rapport, Department of Production and Quality Engineering, Trondheim, Norge

Alistair Blyth and John Worthington, Managing the brief for better design, Spon press, 2001, New York

Klakegg, Ole Jonny, Concept rapport Nr. 6, Målformuleringer i store statlige investeringsprosjekter, NTNU 2006, www.concept.ntnu.no

Næss, Petter, Concept rapport Nr.9, Bedre utforming av store offentlige investeringsprosjekter, NTNU 2004, www.concept.ntnu.no

Norwegian Agency for Development Cooperation (Norad), The Logical Framework Approach (LFA) – Handbook for Objectives – Oriented Planning, 4th edition, ISBN 82-7548-170-8, Norad Information Centre 1999

Samset, Knut, Prosjektvurdering i tidligfasen, Tapir Akademisk Forlag, 2001, Trondheim, Norway

8.2

VALUE ENHANCING PROCESSES IN BUILDING AND REAL ESTATE

Paper II

VALUE ENHANCING PROCESSES IN BUILDING AND REAL ESTATE

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ValPro (value driven procurement of buildings and real estate) is a case based R&D project in an Eracobuild network with participants from Norway, Denmark, Sweden, Finland, France and Cyprus. The R&D project aims at defining frameworks and business scenarios for a value driven vision, based on state of art and trends, barriers and drivers that can be identified in case studies. This paper discusses barriers and drivers related to value creation in case study of a new office building project procured by a large oil and gas company. The case study shows that despite the clearly defined strategic goals aimed at creating use value for the end user in the procurement documents, the project delivery organizations' value and business models are focused at project efficiency goals and quality as defined by their own discipline. In the paper we argue that in order for an end user organization to make sure the end product will deliver value in use, the organization must exert governance throughout the project, related to strategic business goals and concrete success criteria. Our main thesis is that understanding building projects as critical enablers for realizing operational goals in the short run and sustainable values in the long run is essential to consolidate strategic value creation related to project goals. Establishing a business model for a project means establishing a building project context where corporate strategies and long term value creation are emphasized. In the paper we present a Governance Model framework that may enable both the demand and the supply side to focus on both effectiveness and efficiency related project goals.

Keywords: value enhancement, business model, project governance

INTRODUCTION

ValPro (Value driven procurement of buildings and real estate) is a case based R&D project in the Eracobuildii network with participants from Norway, Denmark, Sweden, Finland, France and Cyprus. ValPro aims at defining frameworks and business scenarios for a value driven vision related to building projects; based on state of art and trends, barriers and drivers that can be identified in case studies.

An important objective of the Norwegian ValPro project is to investigate what hampers and what enhances the delivery organization's ability and possibility to create value for the society, user and owner in the initial and pre design phases of building projects. This paper presents the results of one case study in the Norwegian research project. The case is a new office building project procured by a large oil and gas company.

By delivery organization we mean the project team that is responsible for the delivery of the project and includes consultants, designers, contractors, evaluators and managers (Blyth and Worthington, 2010). By initial and pre-design phases we mean all project related activities executed before detailed design and construction. They may be called by different names, but usually include feasibility studies, strategic and detailed briefing, concept development and choice, and scheme or pre-project design.

The concept of value is important in projects. Samset (2003) concludes that three perspectives are needed to have successful projects: the owner perspective focusing on the long-term outcomes of the project; the user perspective focusing on the effects related to using the product i.e. the finished building; and the building delivery organization's perspective focusing on the deliverables or outputs from the project. Satisfying the goals of these three perspectives results in project success and business value for the project owner, but does not necessarily include societal issues and concerns. Therefore the five requirements or success factors endorsed by OECD (as well as by UN and the European Commission) in project evaluations: efficiency, effectiveness, relevance, impact and sustainability (OECD 2010) are the most appropriate criteria against which project value or success should be measured.

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ii. ERA-Net Eracobuild is a network of national R&D programs focusing on construction and sustainable built environments and aims to develop synergies between national programs by sharing strategies and establishing joint programs and projects. Eracobuild has so far defined two thematic frameworks for transnational cooperation: "Sustainable Renovation" and "Value Driven Processes".

International experts conclude however that the biggest challenges in large investment projects are (Klakegg 2009:1):

- User needs unknown, misunderstood or ignored
- Project goals unknown or misunderstood
- Missing commitment from key stakeholders
- Conflicts about goals and/or strategies in the project
- Low economical/financial benefit against investment and cost in use and operation
- Business perspective changes between initial phase and delivery phases

The assertions in the R&D project reported in this paper therefore are two-fold:

In order to make sure that value for the project owner, user and society are fulfilled in building projects:

- A project framework ensuring corporate governance must be in place
- The project owner's business model must be reflected in the delivery organization's business models

VALUE CREATION – VALUE CAPTURE

Value can be defined in different ways. The common definition is linked to financial measurements of how much a customer is willing to pay for a specified product. However, it is individuals and groups that create the product value. Therefore it is necessary to look at drivers for innovation and creativity as well as how to create value for the client or buyer as well as for the company that develops the product or a building. And how does the management empower the delivery organization and build an ideology that supports and directs an organizational behaviour which will be able to meet the client's needs.

HUMAN RESOURCE AS A VALUE

Bowman and Ambrosi (2000) define resources as a value when it enables customer needs to be satisfied. In the construction industry resources in this perspective are mainly human resources which are crucial to enable a firm to conceive of or implement strategies that improve its efficiency and effectiveness. Ind (2003) maintains that "using the brain power and creativity" of employees needs to achieve a balance of what the economist Ernst Schumacher called freedom and order. If the organization has a clear ideology, it provides a focus for employees. This is the element of order, and it allows employees to deliver customer focused products and services in the most appropriate way."

USE VALUE AND EXCHANGE VALUE

Bowman and Ambrosi (2000) distinguish between value creation and capture of value. They focus on the fact that literature tends to use the term "value" to refer to different phenomena. This leads them to a question of how value is measured by the customer. Does the product meet their needs and how do the customers make judgements about the value of the product. The classical first order effect for users may be difficult to measure in financial terms and at the moment, but will provide value through the use and operation. The use value regarding to Bowman and Ambrosini (2000) refers to specific qualities of the product (building) perceived by customers in relation to their needs, e.g. a hospital building which supports efficient health care, an office building which stimulate and inspires the employees or the acceleration of a car, the texture of the apple etc. Judgements of use value are subjective and individual. Use value is what is perceived by the customer. Customers choose the good that will confer on them the largest consumer surplus (the difference between the customers' valuation of the product and the price paid). The chosen product must therefore be differentiated in ways which are valued by the customer; it must deliver more customer surplus than the alternatives (Bowman and Ambrosini 2000).

Exchange value on the other hand refers to price. The processes which lead to a completion of a building are the result of processes inside the participating companies which create use value and subsequently realize exchange value. In operation the building owner and user capture and realize use value in the building. The amount of the benefits or value depends on to which extent user needs are satisfied. The building in itself still has an exchange value depending on its quality and ability to satisfy future demands. This value depends on to which extent the building is flexible and adaptable, and may adapt to new legislation as well as be transformed to a different use.

If the use value perception applies to all kinds of purchases, as Bowman and Ambrosini (2000) say, the same type of use value judgement should be made by a company when procuring a new building. The belief is that a new building better suited to the core

business is likely to create profit through use value. This requires that the company understands the cause-effect linkage between the use value of the purchased resource and the ultimate delivery of profit. In building design the interventions and skills of consultants and architects are vital to value creation provided they are able to understand the needs of the customer and design a building that are capable of supporting the users value (profit) creation in operation.

The exchange value is normally realized first time at project completion and should be considered as a process throughout the lifecycle. The exchange value at any moment in time will then be dependent of the buildings capability of adapting to changes and subsequently the transformed use value.

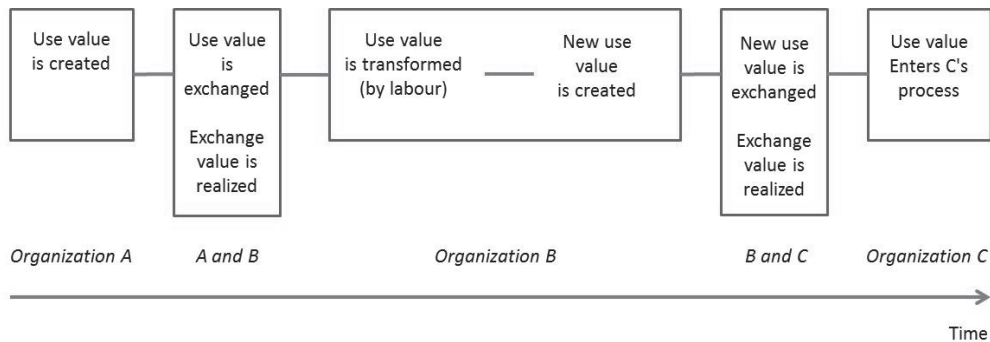


Figure 1: The process of value creation (based on Bowman & Ambrosini, 2000)

TWO DIFFERENT ORGANIZATIONAL PERSPECTIVES: OUTSIDE IN VERSUS INSIDE OUT

Porter and Kramer (2006) claim that in order to improve a company's competitive edge you need an "Outside-In linkage" that affects its ability to improve productivity and execute strategy. The Outside In strategy takes customer value as its starting and end point. Companies using this approach are focused on creating and nurturing their customers by providing high calibre customer value. They put themselves in the position of their customers, and look at the services or products they are going to deliver from their customer's perspective. The Outside In strategy is also about having a business vision that is forward looking and not looking backwardsⁱⁱⁱ. In contrast, the Inside Out perspective only focuses on the company's own capabilities and strengths. With this approach a company will give a customer an account of the company's resources and aim at providing them in the most efficient way. The problem with the Inside Out approach is that by nature it is limiting organizational development and demonstrates lack of agility towards adapting to changes in the market place. Comparing the two approaches suggests a conflict between two fundamental stakeholders which a company needs to deliver to: its customers and its shareholders. If incorporated appropriately, pleasing and keeping customers will increase profits, which then will secure shareholder returns. However, this does suggest a shift in emphasis away from directly trying to deliver to shareholders. Keeping the main focus on shareholder value can easily lead to short-term thinking and an Inside Out approach to business.

The key is to understand that the customer is the source of value, and the market will reward the best value proposition. This is a realignment of values that places shareholder value as an outcome of customer value. Customer value should always be the primary focus.

Outside In strategy focuses on customer value and is based on the belief that the ability to compete is dependent on market insight and ensuring that every part of the company puts customer value first.

iii. <http://www.brandmatters.com.au/outside-in-and-inside-out-strategy/>

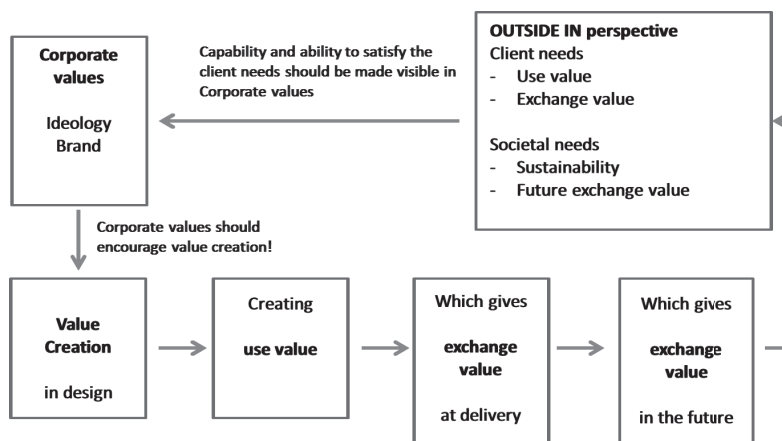


Figure 2: Model illustrating Outside-In perspective on value creation

Collins and Porras (1998) studied eighteen visionary and long-established companies and concluded that throughout the history most of the visionary companies had a core ideology that transcended purely economic considerations. And – this is the key point – they had to a greater degree than the comparison companies in their study a core ideology. Core ideology consists of core values and core purposes. Core purpose is a *raison d'être*, not a goal or business strategy, according to Collins and Porras (1996). They define core ideology as the enduring character of an organization – a consistent identity that transcends product or market life cycles, technological breakthroughs, management fads and individual leaders. The core ideology provides the glue that holds an organization together through time. And they continue saying that the ideology consists of two distinct parts: Core Values – a system for guiding principles and tenets; and Core Purpose, the organization's most fundamental reasons for existence.

This core ideology according to Ind (2003), reminds one that the purpose of building employee commitment is to deliver value to customers. Collins and Porras (1998) argue that the content of the core values does not matter, any words will do. The important thing is to have the values and to integrate them into the organization.

While the “outside-in linkage” tells you what is expected from customers and society and reflects a market driven strategy, the “inside-out linkage” focuses on the company's resources and capabilities of creating value. The inside out- focus is limiting the company's ability to adapt to changes in market conditions and reflects a strategy relying on internal capabilities such as processes, technology and design. Typically an inside-out driven company focuses on systems and planning and a belief that this is what the market asks for.

A VALUE MODEL

A value model is the systematic approach to a value creation culture. In diagnosing and changing organizational culture Cameron and Quinn (1999) state that organizational culture is reflected by what is valued by the organization, the dominant managerial and leadership styles, the language and symbols, the procedures and routines and the definitions of success that make an organization unique.

A value model should thus reflect client's expectations of value creation and how the delivery organizations are expected to solve the problems for internal and external benefits. The focus on use value and the outside in market strategy underline the importance of an alignment of production and design strategy with the customers' expectation of created value. The model of creating values should clarify the usefulness of the delivery team's resources in the use value creation process.

The project owner's value models are vital for value creation in projects –as a basis for defining the performance criteria governing the project success, and for guiding the procurement and execution process. Likewise the project delivery organizations' value models are important as a basis for composing projects teams that are able to answer in an intelligent way the project owner's value quest for value creation in a project.

A FRAMEWORK FOR CREATING VALUE IN BUILDING AND REAL ESTATE PROJECTS

A literature survey has been conducted related to governance and business models aimed at building a theoretical framework for creating value in building and real estate projects. The framework created is presented in the next chapter.

GOVERNANCE

Projects must have their reason based on organizations' business strategy. Governance also includes structures which make it possible to establish goals and choose instruments for achieving the goals. In accordance with this principle, the project organization must establish a strategy and define long-term goals, aligned with the project owner's strategy. A model must be established showing how the relationship between the permanent owner-user organization and the temporary project organization shall be handled. The model must secure the strategic goals of the owner, i.e. the project success, and at the same time avoid reducing the scope and productivity of the project, i.e. the project management success.

Cooke-Davis (2004) points to the fact that factors for project management success does not necessarily lead to project success. While factors for project management success are often directed at time- and cost measures, project success is related to the project owner's major goals. In a professional project delivery organization put together and managed according to project management success factors, the probability for achieving goals related to success criteria like time and cost are high. The project delivery organization are expected to deliver the project in accordance with the given input; while effect related goals and benefits realization are normally left to the owner organization, who by operations management must realize organizational success (Cooke-Davis, 2004).

A critical success factor for project success therefore is the existence of an effective benefits delivery and management process that involves the mutual co-operation of project management and client organization line management functions.

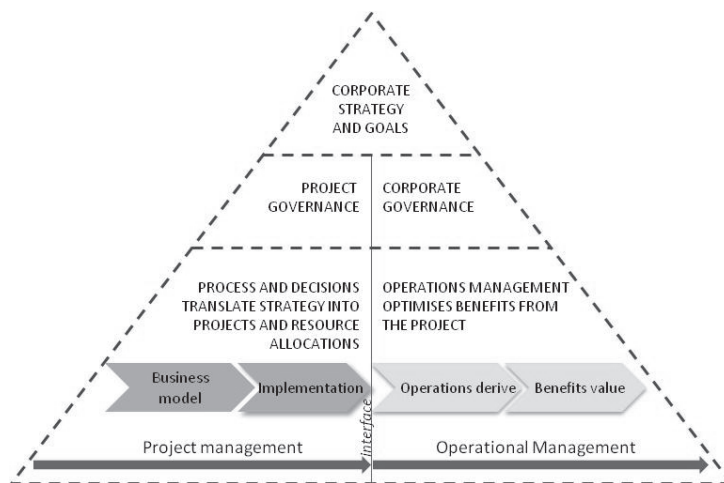


Figure 3: Cooperation between Project and Operations Management in a strategic perspective (based on Cook-Davis 2004)

Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined (Müller, 2009).

Project Governance involves the same basic structure as Corporate Governance and is the responsibility of the organization's board of directors. Their main task is to establish definitions and goals for the project. A major governance activity is to put in place the means to achieve these goals. While the corporate governance handles the way benefits are realised in operation, the project governance is dealing with how to deliver the capability to realize benefits or values in operation (OGC, 2007).

STAGE GATE PROCESS™ MODEL

The so called Stage–Gate Process Model™ (Cooper, 1988) is regarded by several organizations to be an appropriate tool for developing not only project management success, but also project success. The model is characterized by an efficient cross-disciplinary teamwork towards decision points, with set deliveries and related demands and a continuous interaction with the project owner. This process aims at optimizing the dialogue between the project owner and the project, and decisions aimed at value creation. Attention to project success factors and coordination against project management success factors occurs by interaction between the project owner and the project execution organization in a stage- gate model. Typical features in a stage-gate model are:

- Clearer definition of roles than in conventional Project Models
- Corporate Management/project owner is the ultimate decision level, at the decision gates
- Project manager and project management team are responsible for the progress, and project performance, including generation of decision facts and material at the decision gates (DG)

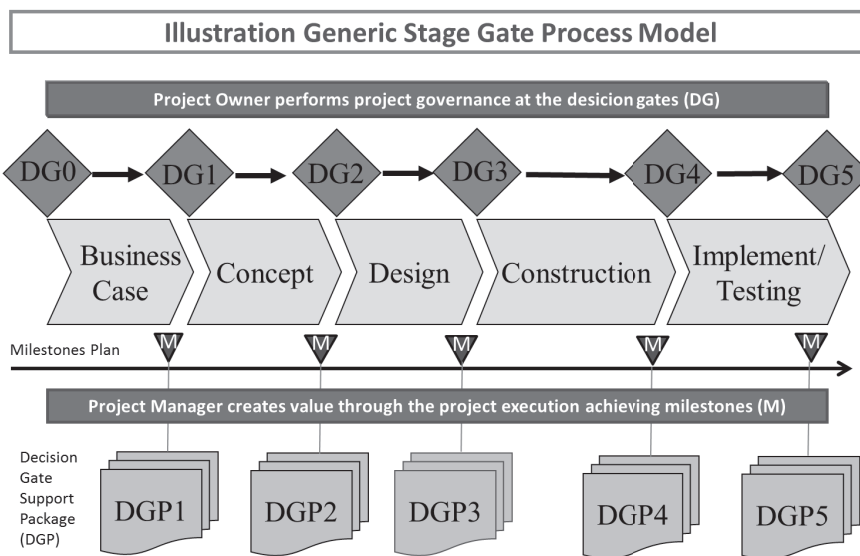


Figure 4 Generic Stage Gate Process Model (source: Jon Lereim 2010)

BUSINESS MODELS

As said before, the building sector is mainly focused on reducing investment costs, rather than applying more comprehensive approaches for optimizing total facility life cycle values for the benefit of owners, users, and the society. This is of course due to several factors, among which current business models that do not provide for innovation and value creation are assessed by the R&D project as one of the most important.

No generally accepted definition of the term business model has emerged till now, and there is also confusion about terminology (Morris et al. 2005; Shafer et al. 2005; Zott et al. 2010). Wikipedia's definition of Business Model is general and easy to understand: "a business model describes the rationale of how an organization creates, delivers, and captures value – be that economic, social or other forms of value". In theory and practice, according to the same reference (Wikipedia 2011), the term business model is used for a broad range of informal and formal descriptions to represent core aspects of a business, including purpose, offerings, strategies, infrastructure, organizational structures, trading practices, and operational processes and policies.

Shafer et al. (2005), after reviewing relevant literature, concluded that business is fundamentally concerned with creating value and capturing returns from that value, and a model is simply a representation of reality. They also concluded that neither value creation nor value capture occurs in a vacuum. Referring to Hamel (2000) both value creation and capture occur within a network which can include suppliers, partners, distribution channels and coalitions that extend the company's own resources.

Morris et al. (2005) claim that a standard framework for characterizing a business model must be reasonably simple, logical, measurable, comprehensive, and operationally meaningful. They suggest a framework that consists of three increasingly specific levels of decision making: Foundation level; Proprietary level; and Rules level. The three levels reflect the different managerial purposes of a model.

While the foundation level is adequate to capture the essence of a model for many firms, sustainable advantage ultimately depends on the ability of the firm to apply unique approaches to one or more of the foundation components. The proprietary level entails innovation unique to a particular venture. Where the foundation level is generic, the proprietary level becomes strategy specific. Where the foundation level is fairly simple to replicate by competitors, the proprietary is not. Once implemented, a model's success can be tied to a basic set of operating rules or guiding principles. These guidelines ensure that the model's foundation and proprietary elements are reflected in on-going strategic actions.

A well-formulated business model must address six key questions on each of the above levels:

- How do we create value?
- Who do we create value for?
- What is our source of competence?
- How do we competitively position ourselves?
- How do we make money?
- What are our time, scope, and size ambitions?

The Morris et al.'s (2005) business model framework is a tool for both checking and securing compatibility between the different stakeholders' business models in projects.

PROJECT RELATED PERFORMANCE CRITERIA

UN, OECD and the European Commission have endorsed five criteria for what projects ought to strive for: efficiency, effectiveness, relevance, impact and sustainability. Delivering efficiently and successfully a well-defined, pre-specified project within a clearly defined constant environment are usually considered to be correspondent to the efficiency requirement. According to Samset (2010) efficiency represents only the immediate indications of a project's success in delivering the outputs. There are many projects that score highly on efficiency, but prove to be disastrous in terms of their impact and utility in the short and long run. The IMEC study by Miller and Lessard (2001) distinguish between efficiency and effectiveness of project success, where the latter points to the value generated by the project. Samset (2010) distinguish between a project's strategic and tactical performance. Success in tactical terms means meeting short-term performance targets, such as producing agreed outputs within budget and on time. These are essentially project management issues. Strategic performance includes broader and longer-term considerations as to whether the project should have sustainable impact and remain relevant and effective over its lifespan.

Strategic project performance is what should be strived for in order to create value for the project owner. In the Governance model presented in this paper we have divided strategic performance criteria in two groups: User effectiveness and Long term effectiveness goals. They can be concretized in different ways by project owners. Here we have concretized User effectiveness goals as Life cycle costs, Quality (functionality), Flexibility and Usability, and Long term effectiveness goals as Adaptability, Transformability and Environmental impact.

A FRAMEWORK FOR CREATING VALUE IN BUILDING AND REAL ESTATE PROJECTS

The study of theory related to cooperation between corporate governance and project governance (see Figure 1) and business models has led us to develop a framework shown in Figure 3. Named a Governance model, it serves as a theoretical framework for understanding what hampers and/or enhances value creation in the early phases of building projects.

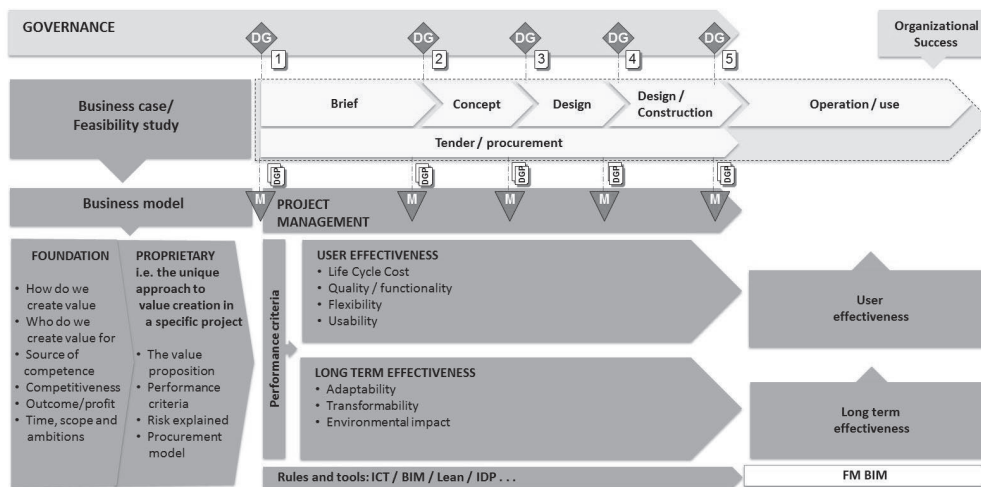


Figure 5 Outline for a Governance framework. SINTEF (source: Byggforsk & Rambøll Norge 2011)

RESEARCH DESIGN AND METHOD

References to the use of theory usually involve the formation of hypothesis of cause-effect relationships. These theories would therefore be considered relevant to explanatory case studies. Theories however also can be important for descriptive case studies. A descriptive theory is not an expression of a cause effect relationship. Rather, a descriptive theory covers the scope and depth of the object (case) being described (Yin 2003). This theory, Yin continues, should be openly stated ahead of time, should be subject to review and debate, and will later serve as the design for a descriptive case study. In our situation, a rich literature and debate about the limitations of project management and delivery organizations to deliver strategic project value, allowed us to create the theoretical model for value creation in building projects – the Governance model described in the previous chapter. The assertions behind the model as described earlier in the paper are:

In order to make sure that user effectiveness and long term effectiveness for owner and society goals are fulfilled in building projects:

- Project governance (the use of governing mechanisms) on behalf of the project owner and user organization is needed
- The delivery organization's business model must reflect the project owner's business model

The study is a descriptive case study (Yin 2003) where the theoretical model has been used as a framework for analyzing two project cases, focusing on two elements:

- the project owner's governance model
- the main stakeholders' value and business models

The cases are two major projects, one private and one public, chosen by the project owners who are participating in the R&D project. The logic for the selection of the cases is based on the relevance of the cases being test-sites for the theory (Denscombe 2003), the theory being the Value theory explained and the Governance model developed in the project.

The empirical data have been collected by document studies and interviews with the main stakeholders in the project delivery organizations and project owner and user organizations. The theoretical model and empirical findings have been presented and discussed in workshops with the main case stakeholders. In late 2011 the findings and preliminary conclusions will be presented and discussed in a wider audience with invited stakeholders from real estate and building organizations. One of the case studies constitutes the empirical basis for conclusions presented in this paper. However, the empirical findings in the other case study confirm this paper's conclusions.

CASE DESCRIPTION

The project case, here called FBO, is the new international headquarter of one of the world's leading oil companies, for 2500 employees. It encompasses approximately 65.500 m² and the company will start moving into the HQ in September 2012. The project was procured by the oil company in a competition where they received 40 different real estate proposals from developers in the region. Among the forty proposals the oil company chose five for further development and negotiations about cost and functional and other building qualities. Four months later they chose the winning concept and started the final contract negotiations with the developer. In the contract the company had an option to either buy or rent the finished building. They eventually decided to rent the building on a 15-year lease contract. The company is named the project owner in this paper, while the real estate developer is seen as part of the delivery organization.

THE PROJECT OWNER'S VALUE AND BUSINESS MODEL

On the foundation level, the oil company's business model is of course to create value through up-, mid- and downstream activities related to oil & gas, and pursuing business opportunities for renewable energy production and carbon structure. They position themselves competitively by using their core expertise, competence and capabilities to create profitable business in their existing positions and develop new opportunities for value creation. They make money by finding and/or getting access to national and international oil- and gas resources. What does the oil company do on the proprietary level of their business model in order to attract and retain their core expertise and create profitable business in new and existing positions? Merging with another company in 2007 is one action. Co-locating new and existing employees in a common building is one element in the integration process. Creating a workplace which enhances the integration of and collaboration between employees is another. "Value is created through collaboration" says the oil company's Handbook 2010. The company's work space design model shall enhance collaboration and their vision for the new headquarter is that "FBO will be an exceptional place to perform and develop". In the contract documents they explain what their business model implies for the design of the building and the work space:

- Arrange for future ways of working by
 - Architecture and technology that support new ways of working
 - Stimulate new work processes
 - Integrate collaborating partners in our work processes
- Support collaboration, communication and learning
 - Company adapted work space solutions that are robust for change
 - Flexible work space solutions with ample opportunities for meeting spaces
 - Functional and reliable ICT solutions
- Express well-being, solidity and safety related to company goals to be a
 - Leading organization related to EHS
 - Preferred organization to work for employees and an attractive and innovative workplace when recruiting

CORPORATE GOVERNANCE BY THE PROJECT OWNER

The oil company's governance philosophy and model is based upon procurement of large off-shore and on-shore oil & gas installations. The company's project director and the director for procurement underline two important factors behind governance success in projects:

- Using substantial resources up-front
- "Preparing is everything"
- "It's the up front preparations which determine the results and value creation for the company".
- Using the right resources in the project
- "Very competent persons designing and negotiating the contract"
- "Everything is based on knowledge and competence... in important project functions"

The company has a risk-based approach to governance. Three elements are fundamental in their governance model:

- The preparations done up front embodied in the contract and specifications. The contract is comprehensive and detailed and gives the oil company all rights reserved regarding design or other changes in the project
- Risk assessment of own and delivery organization's competence and complementing where necessary. The oil company's focus on knowledge and competence implies that their building projects are too important for them to be left to chance
- Continuous quality and risk management and control throughout from the start to the end of the project process – including the warranty period

The company's governance function and quality and risk management and control are organized in two internal sub-projects:

- Quality assurance and risk management of the building project – including enhancing building elements and products innovation
- Quality assurance and risk management of the work space/interior space project – including piloting collaborative workplace solutions and technologies as well as products

Decisions are taken on two levels, depending on the time/cost effects of the issue:

- Project director
- Governing committee representing the tenant i.e. the oil company's top management

The oil company both want and expect suppliers to innovate in this project, and their right to push innovation is stated in the contract with the real estate developer.

THE REAL ESTATE DEVELOPER'S BUSINESS MODEL

The real estate developer is a small business organization, in charge of developing a large former airport site into a knowledge based industrial area including housing and services. For project development and execution the developer contracts with a project management firm as well as with architects, engineers and other consultants. The developer practiced two different business models in this project case, one initially, in the competition phase, and one after the contract was signed.

Phase one

Winning the competition and capturing the oil company as a customer was important for the developer. The oil company is a large and well-known organization which may also attract other companies to the site. The business question raised on proprietary level was "how do we competitively position ourselves" and create a unique proposal. The developer used extensive resources in the competition and concept development phase. They were uncertain about the oil company's architectural preferences and project cost expectations. Therefore they developed two competition proposals on two different sites, by two different architects firms. The proposal situated on the sea site and characterized by a more spectacular architectural design than the other one and was chosen by the oil company for further development in the competition. Subsequently this proposal was also the winner of the final competition. The developer and the team of the project manager and the architects worked hard to develop a concept scheme and a video presentation that eventually would convince the oil company to choose them, which they did. According to the developer "the video really convinced them".

Phase two

Having won the competition, the real estate developer's business model no longer dealt with winning a competition. Their business model in phase two was about design and execution of the building project, as it was defined in the contract, project brief and specifications.

The relatively young architects firm who developed the winning concept was regarded as strong on concept design, but as a potential risk by the project manager because of their lack of design management experience. The project manager therefore contracted another architects firm to supplement them. The oil company likewise contracted an architect on their team to advise them on functional and usability issues related to the building design.

There is nothing in the developer or the project manager's business model that indicates any unique approaches on how to create value in phase two of the project. As the real estate developer says: "The value was created in the competition phase". The project is managed according to well known project management rules, except for one thing; the procurement of the office building contractor. In the contract, the oil company has a right to influence the choice of main contractor for the office building. The reason why the company was concerned about which main contractor was chosen is that the company's brand may be damaged if anything happens in the execution phase. The bidders' key personnel for project management in the construction phase was interviewed by an experienced head hunter firm as part of the decision process, and was an influencing factor on the choice of the bidder who is constructing the office building.

THE DESIGN GROUP'S VALUE AND BUSINESS MODEL

The architects

The architects firm behind the winning concept was founded in 2000. Their business model is "to work with big scale projects, to

effectively merge the commercial potential with conceptual value in architecture^{iv}”. During the past 10 years they have participated in a large number of architectural competitions and position themselves competitively by “exploring conceptual and technical processes and navigating between experimental fields and methods”. They try to “challenge established processes, and involve the key decision makers from the very early stages of the projects. They question different alternatives, finding synergies and curating the different interests involved in the projects”^v.

The oil company’s office building is one of two big scale commercial office building projects that the architects are designing at the moment. One important success criteria for the architects has been that the oil company would choose their architectural concept in the competition and not alter it much during the following process. The concept with five similar lamellas crossing above each other is genial according to the architects. Not only is the buildings’ footprint small compared to the total size of the building, but the concept is such that a person can only see three lamellas at the same time. The concept and the fact that the oil company was the user were the reasons why the municipality accepted rezoning of the site from housing to business purposes. The real estate developer understood this early in the process according to the architect.

The architects’ goal was to “create an architectural landmark” and “an integrated technical solution while retaining the initiative in the design process”. They perceive the office building as “a machine, where white steel and glass in the facade contrast the outdoor park area”. The architects see the oil company as being focused on functional and technical issues, their corporate image more related to interiors than architecture. Inside the building the architects believed it right to reflect the park using wood as a main material on the floors, communication towers etc. This however was turned down by the oil company for use and maintenance reasons.

The architects have found it challenging to deal with “two clients” i.e. the developer and the oil company in the pre-design phase. The governance model in the project does not resemble models used in “speculative” commercial development projects. They find it challenging to deal with the oil company’s own architect advisor, receiving user requirements presented in the shape of a design lay-out for the common areas which are the architects’ responsibility. The oil company has responsibility for the lay-out of the work space areas and furniture.

The civil engineers

The company contracted for almost all the civil engineering disciplines in the case project is one of five large engineering companies in the country, but had never worked for the real estate company before. Their business service concept (business model) is to “improve the client’s operations and secure his investments. The expected results of a project, as perceived by the client, shall form the basis for their activities, secured by:

- Clarifying the client’s needs and challenges initially
- Offering the client what he actually wants, not what we would like to provide
- Focusing on results and profitable solutions, not just by providing our “efforts”
- Carrying out projects as mutual learning processes for all the people involved
- Facilitating a good working relationship with the client, by ensuring that the project is carried out in an open, timely and effective manner and that the output from the project meets client expectations^{vi}

The company wants to position themselves competitively by being front runners regarding innovation. A PhD candidate is hired to develop a work shop methodology for developing new ideas and solutions and a system for sorting out the best solutions to proceed with. Innovation groups are assembled across disciplines. Innovation prizes are awarded once a month. It has proven difficult to sell this service to customers however.

The engineering goal in the office building project case has been to create the “best possible solutions in all disciplines”. They perceive the goals related to environmental and low energy solutions as being the most important for the oil company and after that functionality.

The engineering consultants did not have direct contact with the oil company, but the company has influenced the design of the support construction in the office lamellas. The engineers had designed 3 trusses in each lamella and 4 in the top lamella plus columns. Columns and mid trusses were removed by the oil company to improve the functionality and usability of the work space

iv. www.a-lab.no

v. Ibid

vi. www.norconsult.com/aid=9033572

areas. The engineers' warned about risk for uncomfortable vibrations. Also the HVAC system solutions have been a challenge for the engineering consultants because of the lamella construction and no room for central conduits.

THE PROJECT GOVERNANCE MODEL

The oil company's only contract in the project is with the real estate developer. Consequently the company formally only relates to the developer throughout the process. The real estate developer contracted the project management firm, the designers and other consultants, and the contractors.

During the pre-design phase, so-called professional meetings were held every second week, where the developer, the project manager and the managers of the architectural and engineering teams reported their work progress, and decisions needed to the oil company's project group. However, the internal decision making procedures in the oil company were such that at a later stage they might contradict the "signals" given at the meetings, or the decisions taken by the developer on behalf of the oil company. This malfunction of the decision procedures as seen from the design group's point of view resulted in substantial redesign during the pre-design process.

While the oil company embraces all the elements in the governance framework presented in figure 3, the project governance function is not safeguarded by the developer's project organization, but by the oil company's project organization. This creates of course a double decker in the communication process, and a less fluid information flow. The construction contracts are turnkey contracts. The architects' design contracts are transported as part of the turnkey contracts in the detail design and construction phase. The civil engineers are kept as advisors in the developer's project organization, but are also advising and doing design work for the turnkey contractor. In this phase the oil company cannot and will not rule works, which relieves the architects. A problem concerning communication and decision making may occur in the construction phase as well according to the developer's project manager, due to great time pressure. He anticipates issues which have to be discussed and decided upon by the oil company in this phase too.

SUMMARY CASE FBO

VALUE AND BUSINESS MODELS

The oil company's value and business model regarding the new office building is of course aimed at strategic business related visions and goals. For the oil company the building is a tool to help secure their business competitiveness and success. Their functional demands for the use value of the building reflect their strategic business goals. The company also wants the building to brand their corporate responsibility identity by asking for environmentally friendly and energy saving solutions. Because of time pressures the oil company put an advertisement in the papers saying that the oil company looked for a new office building to let or to buy, when it should be delivered, total m2, and a brief list of overall qualitative objectives for the building. They got 40 proposals, chose 5 for parallel development and negotiations and after four months picked the winner.

The real estate developer's value and business model regarding this project was at first geared at winning the competition. They safeguarded in the first round delivering two very different concepts. Being pre-qualified for the second round with one of the concepts, they used extensive resources on further development of the concept and on a spectacular video presentation, to convince the oil company that they were delivering the highest value among the competitors.

Having won the competition and starting the pre-design and specification phase for a turn key tender, the developer's value and business model turned into a classic project management model, geared at controlling that the design and construction deliveries were in accordance with the tight time schedule and the project budget. They also had to control that the oil company's quality and functional demands during the pre-design phase were in accordance with the contract or additional requirements.

The architects' value and business model for the office building is first and foremost about creating an architectural landmark which can win them praise in architectural journals and architectural prizes – of which the building already got one^{vii}. Of course they wish for the oil company to praise their architectural solutions too. They find the oil company too focused on functionality and operational issues, i.e. use value, and more interested in branding the company by interior design than architecture, as the architects see it.

The engineering consultant firm's value and business model is in general geared at understanding and solving clients' problems.

vii. WAF awards 2009

However, in the office-building project they were overrun by the oil company's project organization regarding their proposed construction solution. The issue was what they as engineering consultants considered important, i.e. use comfort (fear of swinging due to construction solution) versus use value as seen by the client, i.e. office space use quality and flexibility, which were one of the important business related goals of the oil company.

Analysing the real estate developer and their project organization's business models in this case, they seem to be far from supporting the oil company's value and business model related to their new office building. What could have hampered value creation for the oil company in this case is the Inside – out disciplinary value focus of the designers, the architects and engineering consultants alike, and the classic operational project management focus of the real estate developer's project organization. What helped enhance value creation in this case was the client's, i.e. the oil company's corporate governance function.

GOVERNANCE

The oil company is a multiple client of large projects, both on-shore and off-shore. Their experience is that regardless of delivery organization and project, they have to complement with own or hired competence as part of their corporate governance function. They believe in strong corporate governance in projects and a clear division of roles between delivery organization and client. They are not in favour of partnering models. An important part of their governance is the up front contract work which regulates the work of the delivery organization and the absolute rights of the oil company regarding project specifications and qualities.

The oil company embraces the governance framework or model presented in this paper. Their project governance organization includes the project management part in the model, overlapping or shadowing the real estate developer's project management function. The oil company's project organization exercise continuous quality and risk management throughout the project process. The case analysis shows that without the corporate governance function in this project most probably use value related to effectiveness in use and operation would have been lost on behalf of the oil company.

The question is why a complementation of the developer's project management organization in order to safeguard use value creation on behalf of the client, i.e. the oil company, is necessary. The answer in this case rests with the delivery organizations and their Inside – Out perspective on value creation for the client.

CONCLUSIONS

The assertion in this paper is that in order to make sure that value for the project owner, user and society are fulfilled in building projects:

- A project framework ensuring corporate governance must be in place
- The project owner's business model must be reflected in the delivery organization's business models – i.e. the delivery organizations must have an Outside – In perspective on value creation.

A comprehensive governance framework or model that mirrors our assertion has been developed and tested in two project cases, one private and one public. Our conclusions so far are based on the case study presented in this paper. The empirical findings in the other case study however confirm our conclusions in the paper. Analysing the real estate developer and their project organization's business models in this case, their models are geared at classic commercial real estate and operational project management success criteria. The business models of the architects and engineering consultants on the other hand are geared at disciplinary and professional success criteria. None of the companies involved on the delivery side seems to have delved into and really understood how important use and operations effectiveness is as an element of value creation for the oil company.

The results suggest that project delivery agents' i.e. the real estate developer and their project manager's focus are on the scope of work needed to fulfill time, cost and quality requirements, i.e. goals on the operative level. Despite paying lip service to customer satisfaction as a major project goal, architects' and engineers' business and value models in this case did not embed goals related to user effectiveness. Disciplinary and not customer related usability and operability needs dominated the designers' agenda. Therefore we conclude that corporate project governance is vital for value creation on behalf of project owners and users in building projects.

The aim of the R&D project reported in this paper is to identify barriers and drivers influencing value creation in building projects, focusing on the early phases of projects. The case study shows that even if strategic goals aimed at creating long term effect and use value for the client and user organization are clearly defined in procurement documents, the project delivery organizations' business models are focused at project efficiency goals and project qualities as defined by their own discipline.

Of course a single case study does not provide enough evidence to conclude that an important barrier for value creation aimed at clients and users, i.e. project success, is the project delivery organization's business and value models. However, the second case in this study also confirms this finding. The findings will be tested in workshops with representatives from the delivery industry in November 2011. Stories from practice and literature on effectiveness and efficiency in the building and construction sector also confirm that the delivery organizations in buildings and real estate in general^{viii} still have some way to go before they are able to create value as defined in this paper.

The case study shows that corporate project governance is a necessary driver in order to create value for the client and user organization in projects. In the case study reported here corporate project governance was exercised. This case study's client argued that in order for an end user organization to make sure the end product will deliver value in use, he must exert governance throughout the project, based on strategic business goals and concrete success criteria. That was their practice regardless of being an owner-occupier or renting the building. The case analysis confirms this argument.

Our main thesis therefore is that understanding building projects as critical enablers for realizing operational goals in the short run and creating corporate success and sustainable values in the long run is essential to consolidate strategic value creation related project goals. Establishing a business and value model for a building project means establishing a project context where corporate strategies and long term value creation are emphasized.

REFERENCES

- Barney, J.B. (1986) Organizational Culture: Can it be a Source of Sustained Competitive Advantage? *Academy of Management Review*, Vol. 11, No. 3, pp. 656-665.
- Blyth, A. and Worthington, J. (2010) *Managing the Brief for Better Design*. London, New York. Routledge.
- Bowman, C. & Ambrosini, V. (2000) Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy. *British Journal of Management*, Vol. 11, pp.1-15.
- Collins, J.C. & Porras, J.I. (1998) *Built to Last: Successful Habits of Visionary Companies*. London. Random House Business Books.
- Cooke-Davies, T. (2004) Project Management Maturity Models. In P.Morris & J.K. Pinto (Eds.) *The Wiley Guide to Managing Projects*. Hoboken, New Jersey: John Wiley and Sons.
- Hamel, G. (2000) *Leading the Revolution*. New York: Plume.
- Ind, N. (2003) Inside out: How employees build value. Practice paper. *Brand Management*. Vol. 10, No. 6, pp.393-403. Henry Stewart Publications.
- Klakegg, O.J. (2009a) Pursuing Relevance and Sustainability: Improvement Strategies for Major Public Projects. *International Journal of Managing Projects in Business*. Vol. 2, No. 4. Emerald
- Klakegg, O.J. (2009b) Challenging the Interface between Governance and Management in Construction Projects. 5th Nordic Conference on Construction Economics and Organization. 10.-12. June 2009. Reykjavik, Iceland.
- Klakegg, O.J. (2010) På sporet av relevans og levedyktighet. Concept Temahefte nr. 2. NTNU, Trondheim, Norge.
- Marr, B. (2007) Measuring and managing intangible value drivers. Business Strategy Series. Vol. 8 No. 3, pp.172-178. Emerald Group Publishing Limited.
- Miller, R., & Lessard, D. (2001) *The strategic management of large engineering projects: Shaping institutions, risks and governance*. Cambridge, MA: MIT Press.
- Miller, R., & Hobbs, B. (2009) The complexity of decision-making in large projects with multiple partners: Be prepared to change. In T. Williams, K. Samsset, & K. Sunnevåg (eds.) *Making essential choices with scant information* (pp 375-389). Basingstoke, UK: Palgrave MacMillan
- Morris, M.; Schindehutte, M., and Allen, J. (2005) *The entrepreneur's business model: toward a unified perspective*. Syracuse Univ USA; Miami Univ, USA; Univ of Central Florida, USA.
- Morris, P. (2009) Implementing strategy through project management: The importance of managing the project front-end. In T. Williams, K. Samsset & K. Sunnevåg (eds) *Making essential choices with scant information*. Basingstoke, UK: Palgrave MacMillan.
- Müller, R. (2009) *Project governance (Fundamentals of Project Management)*, London, UK: Gower
- OECD (2010) *Evaluating Development Co-Operation*. Summary of key norms and standards. 2. Edition. www.oecd.org/dac/evaluationnetwork.
- OGC (2007) *Managing successful programs*. Office of Government Commerce. London UK. TSO.
- Porter M.E. and Kramer M.R. (2006) The Link Between Competitive Advantage and Corporate Social Responsibility. *Harvard Business Review*.
- Samsset, K. (2003) *Project Evaluation; Making Investments Succeed*. Trondheim. Tapir Academic Press.
- Samsset, K. (2010) *Early Project Appraisal. Making the initial choices*. Basingstoke, UK: Palgrave MacMillan.
- Shafer, S.M., Smith, H.J., Linder, J.C. (2005) *The Power of Business Models*. Wake Forest Univ. Babcock Graduate School of Management USA, Accenture Institute of Strategic Change, Cambridge, USA.
- Sintef Byggeforsk & Ramboll Norge (2011) Business Models for Value Driven Building and Real Estate. WP3 report. Value Driven Procurement in Building and Real Estate. Eracobuild VDP1
- Williams, T. & Samsset, K. (2010) Issues in front-end decision making on projects. In *Project Management Journal*, Vol. 41, No.2, 38-49.
- World Bank. (1996) *Evaluation results 1994*. Washington DC: International Bank of Reconstruction and Development. Available at: <http://en.wikipedia.org/wiki/Businessmodel> (2011-01-26)

viii. There are of course exceptions!

8.3

ON THE DIFFERENCE BETWEEN PROJECT MANAGEMENT
SUCCESS AND PROJECT SUCCESS

Paper III

ON THE DIFFERENCE BETWEEN PROJECT MANAGEMENT SUCCESS AND PROJECT SUCCESS

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Abstract. *In construction projects, the perspective of the supply side (as represented by the design team) should converge with the business logics directing the demand side. Project management success is measured against the traditional efficiency factors cost, time and scope. Project success from the demand side is on the other hand measured as effectiveness according to a strategic perspective. It is acknowledged that project management success is important during project execution, and that professional clients will evaluate the probability of project success before they start execution. We have examined four cases, and analysed how the clients followed up efficiency and effectiveness in the front-end and during execution.*

In our cases, we found that the efficiency factors seemed to be followed-up continuously, from the early front-end and into the operational phase. When examining the follow-up of effectiveness from the early front-end and into the operational phase, we found a more varied situation. In one of the cases the client did not follow up the effectiveness in neither the front-end nor in the execution phase. In the next case the client followed up effectiveness only in the front-end. In the third case the client followed up effectiveness in only the execution phase. In the fourth case the client had a continuous follow-up of effectiveness, from the early front-end and into the operational phase.

According to our analysis of the clients' assessment of project effectiveness according to a strategic perspective (governance), we identified a correlation between this assessment and the project success. The more follow-up of the effectiveness, the more project success the clients experienced. Our conclusion is that in order to achieve project success, the client has to continuously follow up the effectiveness.

KEYWORDS: Project success, Project management success, Efficiency, Effectiveness

1 INTRODUCTION

Success is not always used as a definite term, and a project management success does not necessarily imply business success (and vice versa). A project manager will claim that if the project is finished within budget, on schedule, within scope and with the specified quality it is a success. A project's client will hopefully operate with a broader perspective, and evaluate how the project impacts the business. If the project has positive impacts on client business

that exceeds the negative impacts, it should be perceived as a project success. Stakeholders' interpretations of the term success vary, and a project can be a success in one way while being a failure in another way. Even though a project is finished with specified scope within budget and schedule, it can have negative impacts on the customer.

It is acknowledged that project management success is important regarding project execution and that professional clients will evaluate the probability of project success before they initiate the detail design and later the construction works. Measuring project management success on the efficiency factors cost, time and scope can be quite straightforward, while evaluating the degree of project success as achieving business goals may be complex. On the other hand, in the test of time of success, a failure in reaching the time and cost objectives is less memorable than an overall business success.

In order to analyse how clients follow up efficiency and effectiveness in the front-end and during execution, we have examined:

1. Do clients focus on project efficiency before and after decision of project execution?
2. Do clients focus on project effectiveness before and after decision of project execution?

And:

3. To what degree does project management success correspond to project success?

Measuring project management success can be perceived as simple (the units of measurement and thereby the measurement itself being quite straight-forward), while measuring project success can be more complex. Clients should balance the efforts on follow-up of both efficiency and effectiveness, even though it may be easier to focus on the tangible rather than on the intangible. In the clients perspective the major concern is the business success, project efficiency is of interest only as long as the causality between these and business objectives are strong.

2 THEORETICAL FRAMEWORK

The question of what defines whether a project can be considered a success or not, has been debated in the project management literature, at least for the last decade. Relative widespread consensus seems to have been reached on that an one-dimensional answer to this question does not exist.

On one side, while defining project success and success indicators in front phases may be a complex process it is far easier to assess what is a project failure. OGC (2005) listed eight common causes of project failure which give an indication of where efforts should have been taken on improving success rates. Out of the eight causes one is dealing with project management skills, while the rest is concerning clients activities. OGC lists client activities as lack of strategic links between the project and the organisation's strategic priorities, lack of clear senior management and leadership, lack of engagement with stakeholders, too little attention to breaking development, evaluation of project proposals driven by initial price rather than long term value for money, and lack of understanding and lack of contact with the supply industry. The last cause was lack of effective integration between clients, the supplier team and the supply chain.

Harold Kerzner (2009) assumes that traditional project management works well when the

direction of the project is clearly understood, the scope is well defined, all key stakeholders agree on the objectives, risk have been assessed and understood – and last – the probability of success is considered to be very high. This is a favourable situation. Though, projects have in the last decades become highly complex, with greater risk and a higher uncertainty regarding outcome while they are pressed for speed-to-market. Traditional project management may, due to those challenges, not work.

The assessment of project success is only possible if there is a clearly stated end situation which is perceived as favourable, and there is a foundation for realizing benefits. Artto et al. (2008) notice that current project management literature mainly considers project strategy as a matter of goals and plans.

According to OGC (2007) and their *Managing Successful Programmes*, success is related to realisation of end benefits in a broader perspective. OGC outlines the importance of having a clear vision for a project or programme, but this is insufficient without the clear and consistent communication of it towards gaining commitment and buy-in from a range of stakeholders. OGC concludes that the likelihood of success will be reduced if not the future intent and vision is communicated to all stakeholders.

Turning to the client's point of view, the picture is that the project management should work together with the operations management in a company in order to deliver benefits. Each project's strategy and goals should be aligned with the overall corporate strategy and goals (Cooke-Davies, 2002). The project exists because it shall deliver benefits to the company. In other words, the project should reflect the parent organization's strategy, and thus act as an obedient servant. In the perspective of Shenhar et al. (2004) this includes the design team as well as the project management team.

Torp et al. (2004: 3) studied cost overruns in large public investment projects, and identified critical success factors and potential pitfalls. In their study, they found a shift in literature where focus has moved from purely technical issues towards organizational and management issues. As Morris and Pinto (2004) points out, already in 1987 Morris and Hough showed that "while traditional management skills are important, they are often not sufficient to assure project success. What is needed is to broaden the focus to cover the management of external and front-end issues" (2004: xvii).

Based on de Wit (1988) and others, Cooke-Davies (2002:185) draws a fundamental distinction between project success and project management success. Project success is measured against the overall objectives of the project. Project management success is measured against the widespread and traditional measures of performance against cost, time and scope. The point is seemingly commonplace. Projects are carried out in order to satisfy the overall objectives of the commanding client organization, and the project manager must deliver the end product with specified quality within budget and schedule.

The following figure (from Shenhar et al., 2001) expresses the hierarchy of success dimensions. At the bottom is project efficiency (which we have denoted as project management success), then impact on customer (as we have denoted as project success), then the project's contribution to business success and on top the impact on preparing the future. These are declined over time in order to illustrate that projects can be evaluated according to different dimensions over different time-frames.

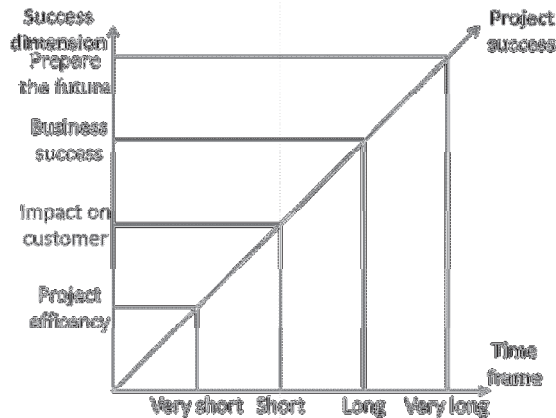


Figure 1: Time frame and hierarchy of success dimensions (Shenhar et. al, 2001).

The concern of this paper is to analyse project success in the light of the first two of these dimensions. We examine the relationship between the project management success (efficiency) and the project success (the impact on customer). The figure serves to illustrate two main points. First, it illustrates that assessment of project management success does not immediately correspond to the assessment of project success. Secondly, it illustrates that the importance of the four success dimensions will differ with the time frames.

In addition to draw the distinction between project management success and project success, Cooke-Davies (2002) also describe the difference between success criteria and success factors. Success criteria are the measures by which success or failure of a project or business will be judged. Success factors are those inputs to the management system that lead directly or indirectly to the success of the project or business. In light of the above distinction concerning the difference between project management success (efficiency) and project success (the impact on customer), we can establish that the hierarchically separated dimensions have their separate success criteria and success factors.

The traditional success criteria related to efficiency are time, cost and scope. To achieve project efficiency both time consumption, cost frame and obtained scope should be within the agreed upon frames. Project management success is relatively easy to measure. This is what is regarded as the operational perspective of the project. To measure project success, Shenhar et al. (2001) have identified six measures of effectual impact on customer. These indicators measure whether or not the project meets functional performance, meets technical specifications, fulfills customer needs, solves a customer problem, has delivered a product the customer is using and satisfies the customer. The criteria of measuring project success are vaguer than those for measuring project management success. Therefore we claim that it is easier to decide if a project has achieved project management success (efficiency) than to decide if it has achieved project success (effectiveness).

Ittner and Larcker (2003) point out several advantages related to nonfinancial performance measurement. Most of the companies in their survey made little attempt to identify areas of nonfinancial performance that might advance the chosen strategy. Nor have they demonstrated a cause-and-effect link between improvements in those nonfinancial areas and in cash flow, profit or stock price. They do of course measure the financial performance. As a

result, self-serving managers are able to choose and manipulate (financial) measures solely for the purpose of making themselves look good and earning nice bonuses.

Project efficiency is easy to measure due to tangible success criteria. It is more difficult to establish tangible criteria for measuring impact on customer (and effectiveness), and that may be a reason why the companies in Ittner's and Larcker's (2003) survey made little attempt to identify areas of nonfinancial performance.

Freely based on de Wit (1988), we will now identify two success factors that can assure project success. Firstly, the client must understand the needs that initiated the project, and how these are to be satisfied. This first success factor can thus be that the client follows up strategy before decision on project execution. Secondly, the client has to supervise that what is produced in the execution phase is in accordance with these needs. This second success factor can thus be said to be that the client follows up strategy after decision of project execution. To illustrate what we mean, we include the following simplified figure:

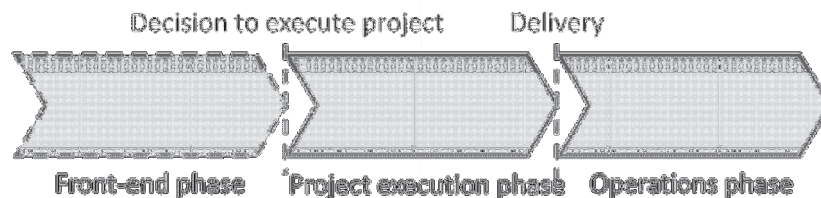


Figure 2: The project phases with the two milestones final decision on execution and product delivery

Figure 2 illustrates the differentiation in temporality between project management success (project efficiency) and project success (impact on customer) in figure 1. The project management success is usually determined by the project performance at the date of the commissioning, whilst project success must be assessed according to impact on customer. Both in the front-end phase and in the project execution phase, the client can monitor and adjust the strategy implementation in order to maximize the positive impacts.

When evaluating whether a project is successful or not, the perspective of the supply side (as represented by the design team) and the business logics governing the demand side should converge. It is important to achieve both project management success (in the operational perspective) and project success (in the strategic perspective). Even if this perspective in every aspect seems to be reasonable, the interaction between the supply and demand side can prove to be bumpy. This is observable on a practical as well as on a purely theoretical level. It is common knowledge in the construction industry that the language – references, preoccupations, vocabulary – of the supply side is not equivalent to the language of the demand side. The supply side (represented by the design team) use a language typically based on models, specifications, rent values etc. The demand side (dominated by business/organisation technocrats) use a language dominated by flowcharts, financial reports, business cases, mission statements etc (Blyth and Worthington, 2010: 63).

3 RESEARCH METHODS

In order to answer the research questions, we examined four construction projects, three of which are completed and one which is under completion. The specific cases were analysed with a qualitative approach, using semi-structured in-depth interviews for data collection. The interviews were based on a detailed questionnaire. The interviews took place in a face-to-face manner at the respondent's premises, something that helped us to get their evaluation of the project management success and the project success.

The respondents in all four cases provided documentation from each project respectively. The documentation gave information about both efficiency and effectiveness. Our documentation study supplemented the interviews, both up front and afterwards.

Through the literature study, we aligned our terminology with what seem to be most common. Success is a term that for example can describe both project management success and project success, which is not the same. The literature study supplemented the interviews and the documentation study.

The evaluations of project management success in the examined cases are quite verifiable, since they are based on the efficiency factors cost, time and scope. A critic can question the reliability of the evaluations of project success. Such evaluations will always be colored by the evaluator's subjective comprehension, and here our evaluations are based on the respondent's answers in the interviews. We have made rough categorizations, but they serve to illustrate our conclusions.

More cases could have helped us with a more definite identification of to what degree project management success corresponds to project success, but the limits to the number of cases examined stem from the time-consuming data collection procedures. At this stage we have prioritized to go in depth in relatively few cases instead of carrying out a superficial examination of many. We have ensured a varied case portfolio regarding their clients, size, degree of project success etc. A next stage will be to investigate a larger number of cases, in order to be able to give more definite categorizations of project success.

4 FINDINGS

4.1 The university building

The case was a public construction project for the Norwegian University of Science and Technology (NTNU), of which the main objective was to supply space for student workplaces. In addition, a minor section of the building serves as a service area for the University library. The project was completed in 2003. The front-end phase of the project was characterized by a lack of time for concept studies, due to a set date for delivery. The articulation of goals was narrowed down to contain a budget and a time schedule.

The project client's in-house project manager argued that the lacking definition of goals and user requirements did have a consequence for the success of the project. The client, represented by the rector, did not respond to any other approach to the project than time, cost and scope. A subsequent analysis of the use of the building carried out by the client indicated that in average, only 10% of the area is in use at any time of its opening hours, indicating a low use/cost-ratio. In hindsight, the client acknowledged that a significant part of the

available front-end phase was used to resolving conflicts with the contractor rather than at analyzing the needs of future users.

4.2 Dokkhuset – house of culture

A private sector project, Dokkhuset – house of culture was intended to provide area for cultural and educational activities. The project involved the transformation of a historic building, in a former shipyard in Trondheim, which was transformed to a new urban district, where users were actively involved in the concluding parts of the front-end planning phase. It was completed in 2006. The project was restricted by public regulations to non-commercial activities. Before the involvement of the potential user groups, the client had not clearly defined exactly what activities that could be desirable in the resulting building, since the users were not actively included in the early stages of the front-end planning process. The client recognized in the interview that more user involvement in the very early stages would have further increased the achievement of the goals. The general framework for its use was, on the other hand, clearly established, being a structure intended to increase the value of the surrounding development project, consisting in upmarket flats, a shopping mall and offices.

4.3 The police headquarter of Trondheim

A public sector project, the new police headquarter in Trondheim, constitute our third case. The project concerned a special purpose building, equipped mainly with office structures, but also with short-term prison cells, emergency vehicles and public areas. A lease agreement with a private enterprise with 20 years duration was established at the very early stages of the front-end phase, with an optional extension of 10 years. The client elaborated a thorough specification of demands that formed the framework for a project competition, where the award criteria were location, price, architecture and user-friendly solutions. This specification of demands did not provide the project manager with a clear description of what impact the police headquarter was intended to have on the customer.

4.4 Institute of Public Health

The Norwegian Institute of Public Health will, according to their goal, improve public health through promotion of good health and prevention of disease. Statsbygg, the Norwegian government's property, developer is given the assignment to develop a preliminary project which includes refurbishment as well as new constructions. The main objective of the project, according to Statsbygg, is to co-locate the institute's academic environment in modern and functional premises. An additional goal was to prepare the institute for future progress. The tender documents consisted of Statsbygg's standard package of documents and did not in particular mirror the institute's objectives, except from the idea of co-location. The competitive tendering was set up as a two-step exercise. The first step was a pre-qualification, where understanding of the tasks in the project was one of the selection criteria. This was followed by a tendering competition, where the award criteria were price, QA-systems, BIM-competencies and technical skills within all disciplines. The selection of the winning team was based upon their ability of QA- efficiency and skills in using BIM as a working tool in design. The new facility's capability to support the goal of the Institute of Public Health was not an issue in the assessment of tenders.

5 DISCUSSION

In all of the examined cases, the clients governed the project regarding cost, time and scope. This was carried out in the front-end phase as well as the design and construction phase. Furthermore, the specifications of scope, budgets and schedules were continuously communicated to the design teams and to the project managers.

The intended impacts on users are not clearly articulated in none of the examined cases. This does not imply, however, that project strategies were not to a certain extent developed. The case of Dokkhuset is the most distinctive representative concerning the requisite involvement of users in the front-end phase, and initiatives regarding new requirements were implemented in the project during the project design phase. Such focus on the strategy during the project design- and execution phase was non-existing, as far as we have found, in the other cases. In the case of the new police headquarter, the follow-up of strategy in the front-end resulted in an identification of the user needs, and a specification of requirements was articulated. The passage to the project design- and execution phase, however, was characterized by abandonment of these requirements, and almost free hands were given to the project manager to complete the project according to traditional project management criteria.

The clients did not establish a strategy for communication of the goals (intended impact on customer) in any of the examined projects. What characterizes Dokkhuset-House of culture is that the strategy was governed by the client in the front-end phase, and thereafter clearly communicated to the project manager in the execution phase. This was most probably made possible due to the limited extent of the project. We have not found that such goals (intended impact on customer) were communicated to the project manager in the other projects.

All project clients in our cases have visions and strategies for their organisations. What is observable in our cases is that these strategies and visions do not seem to be fully communicated to the supply side in the projects. This is particularly evident within the university reading room case. It is also clear in the police headquarter case, where the project manager did not get the description of the intended impacts on customer. Dokkhuset differs from the other projects, in that the client was very clear on the intent that the particular project should stimulate to the success of the greater property development area.

The findings can be assembled in the following two figures based on our subjective interpretations of the respondents' answers, which illustrate the success in the project management perspective and in the client perspective:

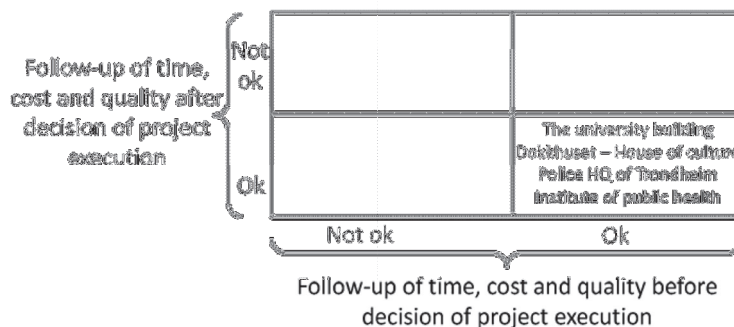


Figure 3: Matrix with the four projects sorted after whether they have been followed up on the traditional project management criteria time, cost and scope. As the matrix shows, all four projects were followed up before and after decision of project execution.

As we can observe from the above figure 3, the clients followed up the projects on the criteria time, cost and scope. The following figure 4, however, clearly illustrates that follow-up on the project management criteria does not necessarily imply a follow-up of strategy:

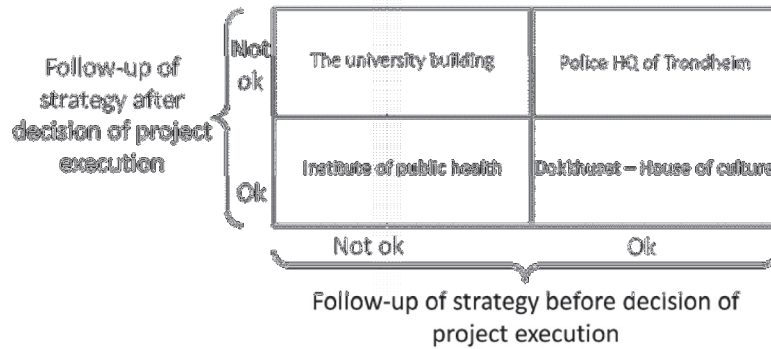


Figure 4: Matrix placing the four projects according to their following-up of strategy before and after the decision on project execution (based on the respondents' answers in the interviews).

Equally, we can visualise the outcome of the projects according to their relative project management success (efficiency) and project success (effectiveness):

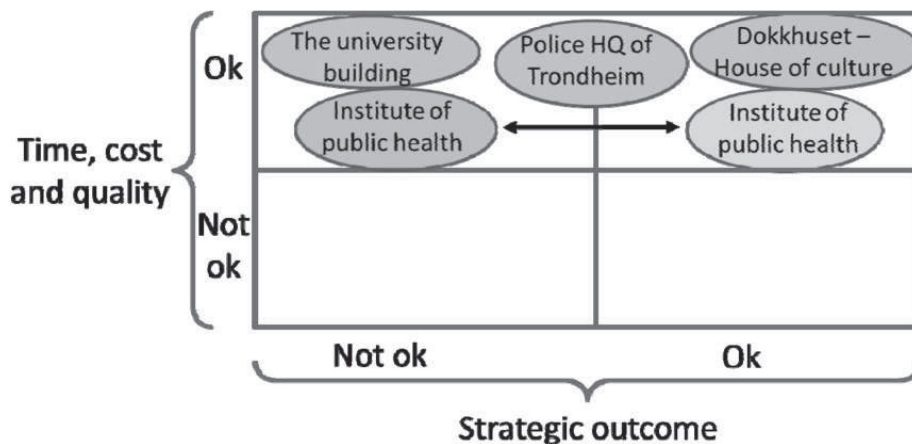


Figure 5: Outcome of the projects according to project management success (project efficiency) and project success (impact on customer). The representation is sketchy and coarse, but serves to illustrate that success is not always used as a definite term.

The outcome of the fourth project is not finally determined, given it not being finished. As far as we have established, no follow-up of strategy have been carried out in the project execution phase, and in our opinion this leaves the strategic outcome of the Institute for public health much to chance. The technical capacities and excellent track-record of the supplier (Statsbygg) convinces us, however, that the project management success will be secured.

The main interest of these examples is that they illustrate the possible clash of the supply side (understood as the design team) perspective and the business logics we intend to examine in this paper. From the above figures, we conclude that there exists a discrepancy between the judgments of whether or not the project can be considered a success.

6 CONCLUSION

It is acknowledged that both project efficiency and impact on customer are important success dimensions (effectiveness). The project manager is responsible for project efficiency. The client is the one that should be interested in impact on customer. When it comes to achieving project success, we have described two main success factors:

1. A proper follow-up of strategy before decision of project execution (aligning the project with the organisation's strategy).
2. A proper follow-up of the strategy after the decision of project execution (assuring that the project actually executed in fact is aligned with the organisation's strategy).

From the matrix concerning the follow-up of strategy before and after the decision on project execution, we can observe how these two success factors are or are not acknowledged in the individual cases. On the operational level, all of the four projects must be considered to have succeeded. They were all designed and built with the specified scope within budget and schedule. When it comes to project success, in terms of delivering impact on customer, only one of the projects were successful in the strategic perspective.

Interestingly, the analysis shows a correlation between the observance of the success factors and the outcome of the project according to a strategic perspective. The project where both success factors were observed, Dokkhuset – house of culture, was successful according to the project management perspective (project efficiency) and according to the strategic perspective (impact on customer). The projects where none of the two success factors were observed, the NTNU reading room, proved successful according to a project management perspective (project efficiency), but highly unsuccessful in the strategic perspective (impact on customer).

This correlation is weak in the sense that the cases are few, and that the conclusion is based on subjective interpretations of the respondents' answers. Though, our impression is that the clients paid less attention to project success in the strategic perspective during project execution than they paid to the project management success (time, cost and scope).

This is not to say that the project manager focusing on the traditional success criteria time, cost and scope is unimportant; they are in fact crucial to the efficiency of the project. What we do maintain is that the client must follow-up effectiveness and project success in the strategic perspective after the decision on project execution.

REFERENCES

- Artto, K., Kujala, J., Dietrich, P., Martinsuo, M. (2008). What is project strategy? *International Journal of Project Management*. 26 (1), 4-12.
- Blyth, A. & Worthington, J. (2010). *Managing the brief for better design*. 2nd Edition. London, Routledge.
- Cooke-Davies, T. (2002). The “real” success factors on projects. *International Journal of Project Management*. 20 (3), 185-190.
- de Wit, A. (1988). Measurement of project success. *International Journal of Project Management*. 6 (3), 164-170.
- Ittner, C.D. & Larcker, D.F. (2003). Coming Up Short on Nonfinancial Measurement. *Harvard Business Review*. November 2003.
- Kerzner, H. & Saladis, F.P. (2009). *Value-Driven Project Management*. New Jersey, John Wiley & Sons.
- Morris, P.W.G. & Pinto, J.K. (2004). *The Wiley Guide to Managing Projects*. Introduction. New Jersey, John Wiley & Sons.
- OGC (2007). *Managing Successful Programmes*. 2nd Edition. Norwich UK, The Stationary Office (TSO), Office of Government Commerce.
- OGC (2005). *Common Causes of Project Failure*. OGC Best Practices. London, Office of Government Commerce.
- Shenhar, A.J., Dvir, D., Levy, O., Maltz, A.C. (2001). Project success: A Multidimensional Strategic Concept. *Long Range Planning*. 34(6), 699-725.
- Torp, O., Austeng, K., Wubishet, M.J. (2004). Critical Success Factors for Project Performance: A Study from Front-End Assessments of Large Public Projects in Norway. Helsinki, Nordnet Conference.

8.4

THE NEW COMMON GROUND: UNDERSTANDING VALUE

Paper IV

THE NEW COMMON GROUND: UNDERSTANDING VALUE

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Abstract: *Literature refers to projects as having a terrible track record of failure. Especially large engineering projects and other investment projects like IT-systems have been notoriously reported as less than successful. They sometimes seem to destroy value instead of creating the value they intended to. Some projects are not the right ones and should never have been started. Others have good potential, but it seems to be lost in the process somehow. This conceptual paper suggests a new starting point for developing successful projects in a client – supplier relationship. We need to strengthen the fundament for designing a project process and setting up a project organization that is able to create intended value and long term benefits. A successful project is impossible unless it supports the client’s business idea and strategy. Literature discusses this in terms of alignment with strategy and relevance in a changing environment. The question we discuss is whether the supplier understands the clients business well enough to understand the consequences of this alignment. The necessary prerequisite for a really successful project is that both the client and the supplier understand the business which the project is supposed to support. Many suppliers tend to focus productivity as their competitive advantage. We suggest this is not a viable business strategy for suppliers. Increasing customer value is the main building block in any growth strategy. Any procurement should be based upon a judgment of which supplier has the ability to deliver the expected outcome in terms of use value. This paper explains the need for and consequences of developing a new common ground for systematically creating successful projects.*

Keywords: Strategy, Value Creation, Value Propositions, Business Models, Building Projects

1 INTRODUCTION

The reported success-rate of projects in literature does not explain why this is the preferred way of organizing change initiatives and investments. Authors like Miller and Lessard (2000), Flyvbjerg et al. (2003) has questioned why projects fail based on an extensive body of evidence from large engineering and infrastructure projects. The Standish group is famous for their contribution to such discussions on IT-projects through their annual report analyzing a large number of cases following the 1995 “Chaos report” (Standish Group, 2012). Still project activity grows every year. We would like to see more successful building projects.

In this paper we will look at the balance between the three most fundamental roles in a project: The project owner, the user of the resulting asset and the executing party. These three perspectives have to be carefully considered in order to assess to what degree a project is successful. In all these three perspectives the project has to deliver value. The owner require return on investment, the user needs some sort of use value, and the executing party needs to obtain results that support their long term uphold. A highly successful project delivers value in all these perspectives. If success is threatened in one or more of these perspectives, problems start to pile up.

Some practical examples: If the value of the investment to the owner is threatened, he will start reducing the access to resources by calling for reduced costs, demanding faster delivery etc. to keep up or increase the value in his own perspective. This may typically result in the users getting a less functional, more expensive to operate or less durable solution, and in some cases the executing party to loose money throughout the construction phase. If the value to the users is reduced, let's say because their needs change over time or due to reduced functionality of the solution, they will start requiring some sort of compensation from the owner or look for an alternative. The result is a shorter lifespan of the investment seen from the owner perspective and reduces the net present value of the project. The owner will normally respond by putting pressure on the executing party to change the solution or reduce costs etc. which in turn sets off a reduction in the value to the executing party due to disruption of production and other consequences. If the value to the executing party is reduced he will normally look for reasons to raise change claims, which increase the cost for the owner. The consequences might be transferred to the users by increased rent or reduction of functionality. We see a clear pattern of a downward spiral that in the end will threaten the success of the project, no matter what perspective the problems stem from. The more complex the project, the less predictable is the cause-effect relations, but the more probable is a strong negative effect of such development.

The building project is an arena where stakeholders with different visions and strategies meet. As shown above, the interests of these stakeholders or actors may be in conflict. To simplify the picture there are three main actors, the owner, the user and the supplier. Each of these actors holds a vision and strategy that in one way or another is founded in value creation for their respective customers and later for the shareholders and/or society.

Normally a building project is based on bilateral contracts between these three parties in a pattern that leaves one of these relations unsolved. A typical project organization leaves the users in a half-way excluded/partly included position - see Figure 1.

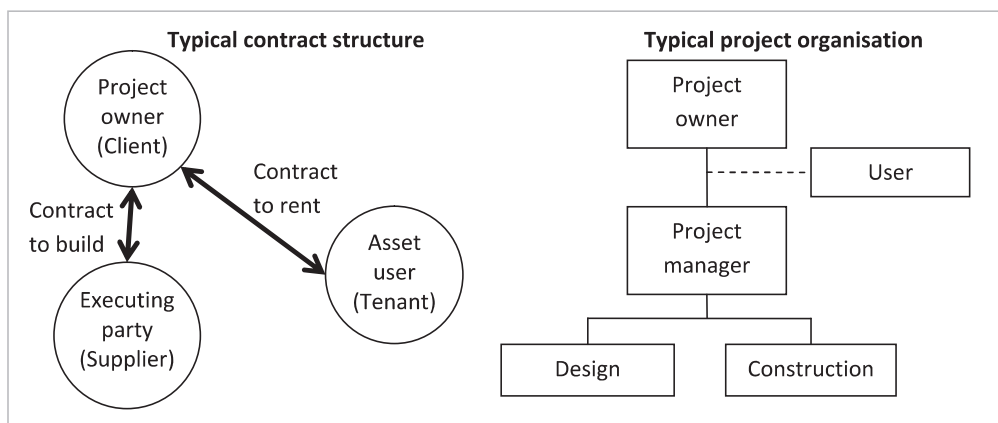


Figure 1 Typical contract structure and project organization of building project.

The symbolic representation of the relations in Figure 1 does not cover all aspects of relations between the parties and fundamental roles in the project. In addition one should look into e.g power relations (political perspective) and communication and trust etc. (network perspectives) on organizational and individual levels. However, with limited space we have to choose some important aspects in this paper and let others be.

In the language of agency-theory one can explain the traditional view/internal view; the agent (project organization) is expected to do what the principal (project owner) orders. This view of the project as obedient servant is a condition more likely to be found if executed with internal resources. When the project is classified as a building project resources normally have to be procured externally as a temporary organization with suppliers defined as project based organizations (PBO).

The paper is organized in five parts: the introduction presents the motivation for the paper and its objective. Then there is a brief look at the methodology used. The third part gives background theory to establish a language to discuss value creation in projects. Then comes a theoretical chapter that looks at strategy and competitive advantage. After the theory is established we present our suggestion for a new common ground: the basis for delivering more successful building projects. In the end we add some practical consequences and conclude our new basis for value creation.

2 RESEARCH METHOD

This is a conceptual paper, and as such the research methodology is referred to stay the background. The theory and discussions here are primarily based on literature. The literature study is conventional, based on seeking relevant contributions from several scientific databases with search terms connected to the concept of value: Value, Value creation, Value capture, Value proposition, Business models, Project value, User value, and combined with terms related to project management.

The ideas for this study came from practical experience the authors have gathered over many years in building design and project management. In practical situations the architects and design engineers are often criticized for not being able to develop solutions that meet the users' needs at a cost and time that project owners require. This unsolved problem was a motivator. Then we combined this with some theory contributions that highlight aspects of value creation. This contributed to define a language with which it is possible to discuss such problems more systematically. On this basis we decided to try to sort out some ongoing discussions and complex issues in the fundament of construction management.

The problems we have observed in theory and practice is highly recognizable in real life situations. Therefore the theories presented here were tested on key individuals in an ongoing major public project. The case project itself is not reported here due to space limitations. Finally, analysis and descriptions are formed by the authors in discussions where theory and empirical observations were combined and the paper formed.

3 BACKGROUND THEORY ON VALUE

The word value can have many meanings and are used for many different purposes. It is a challenge that value means different things to different people (Bowman and Ambrosini 2010). The context in this paper is the building project and the relations between the project owner, the asset user and the executing party. We need to establish an understanding of the concept of value in this context. The concept of value has been discussed by many contributors in general settings and other industries. Here are some fundamentals:

Bowman and Ambrosini (2000) points back to resource based theory (RBT) of the firm which in the 80-es and 90-es looked upon value as a function of the resources available to the firm. RBT argue that resources are valuable in relation to a specific market environment, it is valuable if it exploits opportunities, neutralizes threats, or enables customer needs to be better satisfied. Rare resources and resources that are hard to copy, imitate, or replace give sustainable competitive advantage (Porter 1991). However, Bowman and Ambrosini (2000,

2010) realized that there is a need to go deeper in this to understand why these resources are valuable. This led them to develop a theory of value, based on the following logic:

- A distinction has to be made between value creation and value capture.
- Value is only created by individual members of the organization as a combination of labor and use of other resources.
- Value capture is determined by perceived power relationships between economic actors.

A resource is not valuable in itself, only valuable through what you can use it for. As early as in 1959 Penrose argued that it is never the resources that are the input to the production process, only the services that the resources can render (Penrose 1959, referred in Bowman and Ambrosini 2010). **Value creation** is the result of human activity – this is the only source of new value. Not all value that is created is actually captured, and not necessarily by the same actors that create the value. This is very relevant to the construction context. One has to ask the extent to which customers (users) judge the product (solution) to meet their needs – how they consider the value to them. This points to value as being subjective and specifically points to **use value**. Use value is primarily perceived by the asset user. It may be translated into monetary terms as the price the user is prepared to pay for the product, given alternative use of the money and alternative solutions. Customer surplus is what the consumer refers to as “value for money” (Bach et al 1987). This expresses the difference between the value as the customer perceive it and the actual price. The actual price on the other hand is also an expression of value in itself: **exchange value**. Exchange value is perceived by both the client and the supplier and refers to a single point in time when the exchange of goods takes place. These aspects of value are relevant to all interfaces in the value chain.

The concept of **value capture** is necessary because exchange value does not necessarily reflect the use value and there is no guarantee that the exchange value ends up as profit to the one party that creates the value. Bowman and Ambrosini (2000) remind us that although most RBT contributors focus on value capture from the customer, one also needs to look at the problem of retaining value within the firm. Peteraf (1994) points out that there is no benefit for the firm if the value captured from customers is lost through resource suppliers bidding up the price of their resources and thus capture the differential value.

No party has a perfect view of the value creation and the use value. Thus there are limitations to the possibilities for an objective price setting. Bowman and Ambrosini (2000) points out that there is no relationship between the nature of the use value supplied by the resource supplier, the role of this use value in the production process and the amount of exchange value that the resource supplier captures.

Profit is value captured by the firm. Bowman and Ambrosini argue that value capture, the realization of exchange value, is determined by the bargaining relationships between buyers and sellers. The firm is in a position to bargain with resource suppliers (e.g employees and material suppliers) on one side and the customer on the other. Customers can only reward what they perceive. They often only perceive the final product, and if so they are not in a position to consciously reward the resources (labor, machines, capital etc.).

These basic concepts of value are easily recognized in construction projects and between the roles of project owner, asset user and executing party. Use value, exchange value and value capture can help us better understand the process and results of a building project, the shortcomings of our contract arrangements and organization models. For instance, the owner acts as an investor and do not contribute to the use value as such. Money is a store of value and a medium of exchange. It does not contribute to the value creation process. The owner exchanges money for the property rights and thereby the rights to capture a portion of the exchange value. The executing party obviously contributes resources to the process that

creates value in developing the asset, assumed to meet the needs of the users. The users themselves create new value in using the asset for its intended purpose. There are also activities that destroy value in every firm. They do not contribute to create the use value or capture use- or exchange value, they do not add revenue or reduce costs (Bowman and Ambrosini 2010). The construction industry, famous for its low rate of productivity may be a suspect to having more than its share of these value destroying activities. Poor management is indicated as a likely cause (ibid p 489).

Bowman and Ambrosini (2010) argues that as a firm, both the executing party (the supplier – f.ex a design firm or construction company) and the asset users (f.ex a company occupying an office building, a museum accommodated in a special function building) performs in the roles of customer and supplier for the ultimate purpose of returning an expanding stream of exchange value to investors (their own company owners - shareholders). This will implicitly give reason for conflict in the construction project. The one party that are best able to capture (exchange-) value will succeed in supporting their owners and sustainable uphold of the firm. Bowman and Ambrosini (2010) states that value to the supplier is the inverse of value to the customer: The supplier provides use value for exchange value in return. Directly translated to the building project this means that there is a fundamental conflict between the suppliers and users. Not only do they have very different perceptions of value, they will also try to optimize the ratio between exchange value paid for the use value delivered. In other words – when one party wins, the other loses. These perspectives will determine the positions and motivation of the parties. If these fundamental conflicts cannot be avoided – how can they best be handled? The answer to this will change the game. It will construct a new basis for the project where the supplier (executing party) and customer (project owner) can better handle their relations to the asset users (tenant) and thus achieve more successful projects.

Charles Smith and Mark Winter (2010) points out that traditional project management is preoccupied with the delivery of tangible outputs, but that from 2004 and up till today, the understanding of projects as vehicles for transformation (change) and a focus on value has been established. Traditional project management as expressed in the definition of a project as a unique task or as understood by Sauer and Reich (2009) is that the project manager should only focus on delivery because it is for others to “harvest” value by using the resulting delivery of the project – the asset. Just like Smith and Winter (2010), we do not agree to this view of project management. The project manager has an ongoing interest in the value of the project. Only by active shaping of the project and deliberately seeing the project from multiple perspectives can the project turn out to be a success. In complex situations exploring the flow of multiple insights and implications which flows from different perspectives is the only way to craft appropriate strategic actions (Smith and Winter 2010).

Helen Cooke (2009) points out that the definition of project success belongs to the initial project documentation and must be given attention by the professional project manager. One dominating aspect is the alignment with business strategy. If there is push-back from top management it can signal a hidden risk to the project which the project manager has to identify, analyze and plan for. It may be that there is a political aspect, different views among executive stakeholders etc. Much of the project decision making is dependent on a clear view of the project’s anticipated value proposition. The project manager should keep the value statements from executives for future reference when tradeoffs are needed. Not having such a clear statement is a primary risk that will have to be aggressively managed in the project’s risk plan. Project value is critical to project initiation, continuity and overall success. Therefore “defining project value” should be high on the chart of initial things to do (Cooke 2009).

4 STRATEGY

Nearly all firms and organizations have established a strategy with the purpose of explaining how their vision is going to be fulfilled. This envisioned future is, according to Collins and Porras (1996) what a firm aspires to become, to achieve, to create –something that will require significant change and progress to attain. In a changing world the strategy is the change formula that at any time has to adapt to the competitive battlefield.

According to Michael E. Porter (1996) the changing competitive environment has led companies from a static positioning strategy into a quest for productivity, quality and speed. The result is that management tools such as total-quality management, benchmarking, time based competition and outsourcing have taken the place of strategy. In a competitive context this may give immediate operational and financial improvements. The effect of increased productivity on viable competitive positions, however, is minor and the gained competitive advantage is temporary. Porter points out that the root of the problem is the failure to distinguish between operational effectiveness and strategy. Operational effectiveness is essential to superior performance, but will not be viable unless followed by a strategy based on achievement of sustainable competitive advantages. The only way to outperform rivals is, according to Porter, to deliver greater value to customer, or create comparable value at a lower cost or both, and to establish a difference from competitors that the company can preserve.

While the vision stands unchanged, the strategy is focusing on changes to improve the competitive advantages. The most visible changes in organizations is set up as projects, this may be new IT-solutions, re-organizations or new and suitable premises expected to deliver new capabilities. In short; projects are set up to create opportunities for the future. In the article *Project Success: A Multidimensional Strategic Concept*, Shenhar et al. (2001) discusses the projects as powerful strategic weapons and describe the projects as the engine that drives strategy into new directions. The projects are initiated to create value and competitive advantage. Defining and assessing project success is therefore a strategic management concept, the criteria against which projects should be assessed. It covers the project execution itself, the benefits for users, the financial outcome as well as the future competitive benefits. Shenhar et al. thus suggests that project success should be assessed in four dimensions, ranging from the short time project efficiency to future strategic impact.

According to Shenhar et al. (2001) most projects are conceived with a business perspective in mind and with goals reaching beyond efficiency in project execution. When project managers and a project team are engaged to set up a project organization they typically do not focus the business aspect, but the immediate task. Suppliers bring in their own strategy focusing on delivering efficient execution. Success is regarded as achieved when the project is delivered within time and cost and at a quality level pleasing the client. The project may in this perspective, be understood as an independent organization according to Mutka and Aaltonen (2012), with a lack of consciousness of the projects owner business and strategy.

This contradiction in behavior between the three parties, the user and owner on one side and the design team on other suppliers on the other hand, may have its origin in the respective managements' interpretation of which measures counts regarding customer satisfaction and achieving strategic goals. In the article "Coming Up Short on Nonfinancial Performance Measurements" Ittner and Larcker (2003) argues that successful companies have attacked the problem of not linking measures to strategy by choosing their performance measures on the basis of causal models, also called value driver maps. In this perspective, the project success as defined by Shanhar et al. (2001) ranks on top and all activities must have causality to a strategic goal of the project. *"Any strategy statement must begin with a definition of the ends*

that strategy is designed to achieve.” If this end is achieving uniqueness and competitive advantages, project efficiency as the only solution is not enough regarding to Porter (1996).

We need to understand the meaning of operational effectiveness (Porter, 1996) and which **value drivers** matters (Ittner and Larcker, 2003) and where client-, user- and supplier strategy converges in a project context (how separate strategies can work towards a common goal). Operational effectiveness is dealing with how a company utilizes its input to perform activities better than the rivals. It is evident that focusing on efficiency alone will not be the differentiator to superior operational effectiveness, just like Porter (1996) stated. Suppliers need to meet customer needs and have a strategic approach that is focusing on performing different activities from rivals is key to competitive advantage. Performing similar activities better is good, but easily copied by competitors.

Most firms’ strategic efforts aim at finding the strategic sweet spot, ref. Figure 2. Finding the way into the strategic sweet spot, according Ittner and Larcker (2003), you need to take a closer look at cause- and effect relationship that may exist between the chosen drivers of strategic success and outcomes. Ittner and Larcker (2003) suggest that doing it right is developing a causal model based on the hypotheses in the strategic plan. To find and track the activities that’s leads to improvements and strategic success is in itself a challenging activity, but once it has been proven and the final causal model chosen, it is hard to argue with and will be the source of a broad –based agreement about strategy.

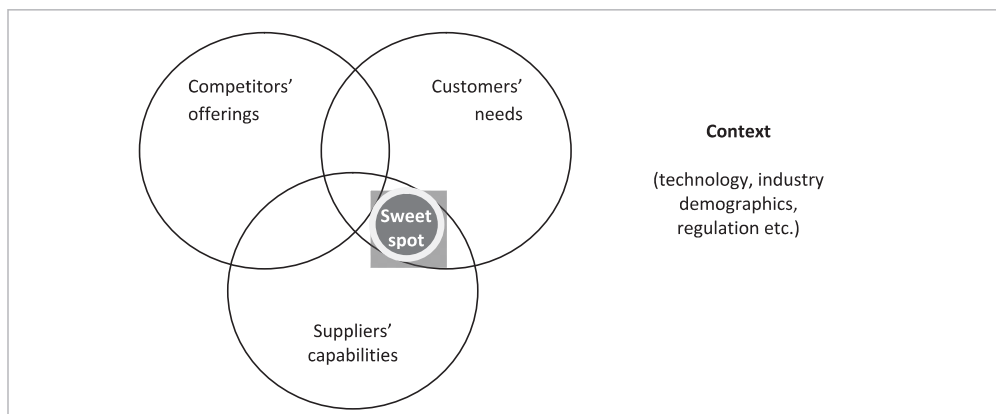


Figure 2 Can you say what your strategy is? Adapted from Collis and Rukstad (2008)

The effect will hopefully be as Collis and Rukstad (2008) predicts; a well understood statement of strategy that aligns behavior within the business. It allows everyone in the organization to make individual choices that reinforce one another. In the example of design approaches, a causal model will move the focus from efficiency to elevated success dimensions, linking design success to customer’s broader perspective of success.

Kaplan and Norton (2004) argues that a strategy map, describing how the organization creates value, based on five principles; strategy balances contradictory forces, strategy is based on a differentiated customer value proposition, value is created through internal business processes, strategy consists of simultaneous, complementary themes, strategic alignment determines the value of intangible assets.

Kaplan and Norton points out that value is potential. Intangible assets, like employees trained in statistic quality control and root cause analysis have potential value, but not market value. Internal processes such as design, production, delivery and customer service are

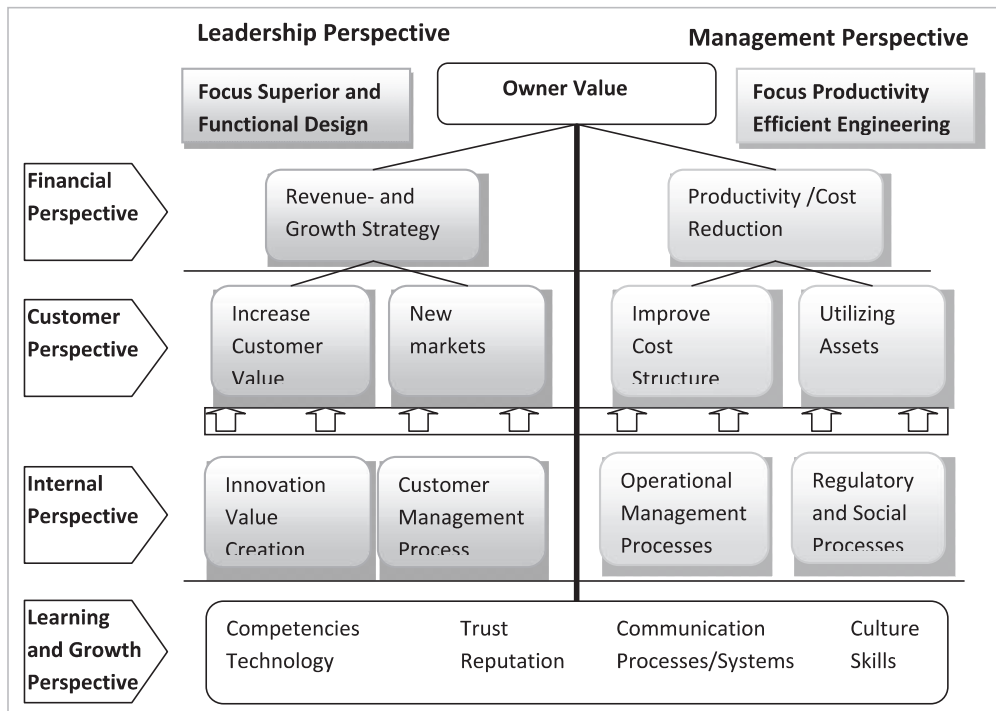
required to transform the potential value of intangible assets into tangible value. Kaplan and Norton's approach gives a comprehensive description of strategy, with a commitment to create long term sustainable values for the owner by securing growth as a result of combined efforts in doing things right and doing the right things.

In the book "The Right Projects Done Right", Dinsmore and Cooke Davies (2002) present the success formula: The right combination of the right projects done right. In the project context right projects are the customer value perspective and doing it right represents the productivity perspective. This is in accordance with Porter's (1996) theories of competitive advantages and Ittner and Larcker (2003) survey on causal models of value drivers.

According to Kaplan and Norton (2004) the strategy balances contradictory forces. This is reasoned in that investing in long-term revenue growth usually conflicts with cutting costs for short-term financial performance. This conflict is apparently visible in building projects, where on the supplier side – focusing the project management success is connected to efficiency and delivering on time and cost, while the user and owner (with some exceptions in highly speculative investments projects) are concerned with how to realize benefits from the value created.

The *strategy map* of Kaplan and Norton is shown in a modified version in Fig 3. The map divides and balances the contradicting forces of short term financial objective for cost reduction and the long term objective for profitable revenue and growth. This financial perspective mirrors what is the main focus in the project based company: creating value for the customers and users, and/or for their own shareholders. Productivity and value creation is cultivated in different internal processes. Long term growth strategy on one side indicates trying to increase customer value and win new markets by utilizing innovation and customer management. Short term productivity or cost reduction strategies build on operational management and regulatory and social processes. At the foundation level is the learning and growth perspective, the intangible assets which drive the strategy implementation.

This is in accordance with Porters' (1996) theories of competitive advantages as ability to deliver greater value or being more productive or a combination. The important aspect is that the long term objective for profitable revenue and growth is dependent on increased customer value on one hand – and being productive is connected to the company's ability to improve cost structures and efficient operational processes.



Figur 3 Strategy Map in a Building Project Context, Based on Kaplan and Norton (2004).

5 THE NEW COMMON GROUND

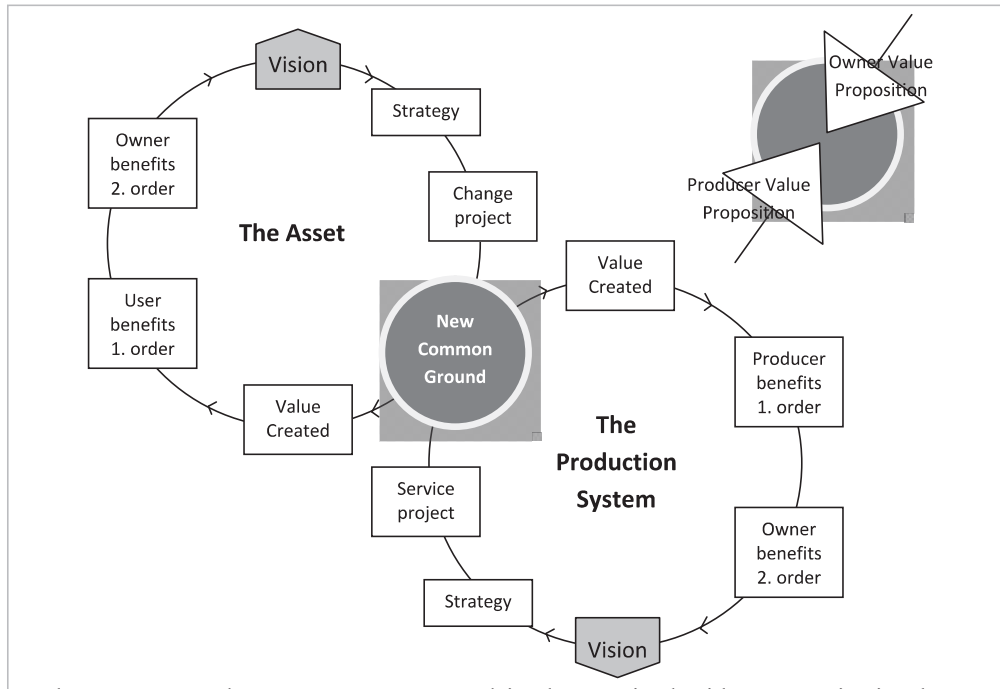
If used as a strategy map of a supplier in a building project the left hand side of Fig 3 represents the superior and functional design leading, whilst the right hand side represents proven solutions at low cost.

In a strategic perspective and in accordance with Shenhar et al. (2001) the competitive advantages regarding clients, the sweet spot (ref. Fig. 2) is situated the left hand side of Fig 3. A successful supplier provides clients with innovative and functional design giving a characteristic capability of realizing future benefits. While most suppliers is striving for maximal productivity, which regarding Porter (1996) is achieved by management tools, the challenging innovative and increased customer value creation is rooted in the capability of the learning and growth foundation.

The project is an ecosystem – where different actors has their meeting point and the four dimension of success (Shenhar et al., 2001) is dependent on mutual understanding and contribution. A successful project is more likely to result from situations where the different business models of supplier and user is aligning with clients' value chain. The sweet spot where the strategy maps of the actors are balanced, not only internally in each organization, but balanced with each other. In Figure 4 this ecosystem is illustrated as two value creating cycles with the key balancing act identified as the point where the value propositions of the owner on one side and the supplier on the other hand meet. We call this the new common ground.

In abstract terms this is a virtual place where opposite interests meet and either fight over who's winning, or collaborating to increase the value creation on both sides. In concrete terms this is an arena where two different descriptions/documents need to be synchronized. They

need to meet exactly in one spot. Any divergence will create tension and possibly conflict. Finding this spot where there is balance require a carefully arranged process and, as described above, several fundamental premises has to be in place.



The process on the new common ground is characterized with communication between
 Figur 4 New Common Ground: Where opposite interests meet.

bring together the client and users on one side (needs) and the suppliers and producers on the other side (solutions). Language is one of the challenges that have to be faced on this arena. It might be necessary to develop a new common language, or at least make sure the parties share sufficient language (conceptual understanding). Not only the language needs to be compatible, but also the strategies, as discussed above.

Value propositions: In general a Customer Value Proposition (CVP) is the statement by a firm that summarizes how it can provide value for a prospective customer (12Manage, 2012). In other words: why a consumer should buy its product or use its service. It is the total sum of benefits a customer is promised to receive in return for the customer's associated payment (or other value transfer). A sound value proposition is clear and concise and appeals to the customer's strongest decision-making drivers. Also, it should convince potential customers that the particular product or service will add more value than other similar offerings by other firms.

As seen from inside the production system: The two cycles in Fig. 4 represent the internal and external benefits. The internal benefits belong to the production system itself (including all parties involved in the execution of the project) – the lower cycle. The external benefits belong to the asset owner and user side – the upper cycle.

The complexity of the issues involved in the common ground is high due to many entangled technical, organizational and economic problems, complicated trade-offs between functionalities and costs, esthetics and robustness, time and quality etc. as well as conflicting

interests. The causality is often unclear and sometimes questionable. It is not uncommon that we need to accept that we deal with a “wicked problem” (Rittel and Webber, 1973).

In a quest for perfect decisions and sustainable results it is good to be reminded that there are no perfect solutions to “wicked problems” (Rittel and Webber, 1973). These problems are not clearly delineated, no clear indicators or criteria exist, no limited set of permissible solutions. Possible solutions are value-based (good, bad), not truth based (true, false) and there is no way of fully appreciating the possible consequences (du Plessis and Cole, 2011). They point out three major shifts in thinking that influence the model of sustainability in a whole/living systems paradigm. The shifts have been identified as; from complicated to complex systems, from an equilibrium model to a non-equilibrium model, and from an anthropocentric to an ecocentric world view. Du Plessis and Cole conclude that we need to accept that construction is an ongoing, dynamic process within an ever-changing environment. The value of a static tool like a rating system as an indicator of sustainability performance needs to be questioned. To live with the uncertainty such a dynamic development represent is a major challenge. We believe it is possible, but we also need some fixed points to navigate from, and the fundamental roles discussed in this paper are examples of such fixed points.

6 FINAL REMARKS AND CONCLUSION

There is no doubt of that the last decades research on effectiveness within the construction industry has led to an increased consciousness of the project outcome and user value. Despite this new attention, common procurement strategies as well as design teams are geared towards project efficiency and re-use of design solutions.

The central question when deciding to invest in a new building is of course what will be the return of investment. The big question in considering the potential value creation on the supplier side is whether this project will be performed with the building as an asset in mind or the business benefits from enhanced efficiency in use.

From an investors point of view property has for the last two or three decades been a safe and secure asset, with almost guaranteed profit. The value of the asset has increased steadily over time, more due to increasing demand for proper localization than the functionality of the building. In such a situation, with focus on the building as a physical asset, there has been no need for substantial changes of performance in the industry. Professional project management will grant the return of investment.

The market situation when firms operated within a protected and limited competitive environment is replaced with a global economy with international competitors within all fields. As a result, the focal point of nearly all organizations is improved effectiveness in operation to withstand a harsh competitive environment.

The picture changes radically when the value of the building comprises both the value as a physical asset and as an asset that exists to facilitate the customer’s objectives. The incorporation of both perspectives leads to the broader and more holistic definition of project success. This is a creation of a multi-dimensional value, with tangible value giving financial benefits and an intangible value of functional workplaces giving organizational benefits.

The day to day activity in most firms is carried out within buildings, in which the functionality obvious is an important factor for performance. This new consciousness concerning user efficiency in next turn leads to a need for change and new mindset within the construction industry. When productivity was the main success factor in earlier protected market environments, solutions was based on proven technical solutions and limited interaction with user. Now, delivering holistic solutions that offer competitive advantages to the customer through value creation in projects is the new success factor.

Two interdependent paths to success are described in the strategy map (ref. Fig. 3). This is the new challenge for the construction industry, which so far has tended to focus the management side – being productivity oriented, but still not successful. The classical inside-out thinking will solve the need for a building based on their competencies and routines as engineers. However, the new quest for business benefits from the functionality and perceived user value requires new mindsets as well as competencies.

To understand the clients' needs in a holistic perspective, new leadership is required to move from an inside-out perspective to the outside-in focus. The latter is approaching the project from the customer's perspective and proposed solutions are in accordance with what the customer perceives as value. The new challenge is to organize the project in order to effectively cooperate with the users/owner and translate their needs for tangible as well as intangible needs into functional buildings.

The sweet spot needs to be based on creativity and innovative functionality – this requires deep understanding of what the customer needs. The project is directed towards the customer success (long term value – competitive advantage). At the same time the supplier has his own success in mind and need to do so – it is legitimate. The supplier's long term competitive advantage lies in being able to create a specific advantage that competitors cannot. If they only compete on productivity they will end up delivering the same competitive advantage to the customer as all others. This in turn will make the client turn to substitutes.

The common ground includes the space where the customer and the supplier value creation loops/processes meet – where the value propositions meet – the transition point. If the propositions from each side are compatible/in harmony – this will create maximum value. When all parties understand what creates value. In other words, when the actors are able to find the sweet spot and develop the common ground. That is when the projects will tend to be more successful.

REFERENCES

- Artto, Karlos, Kujala, Jaakko, Dietrich, Perttu, Martinsuo, Miia (2008) What is project Strategy, *International Journal of Project Management* 26, 2008 4-12
- Bach, GL; Flanagan, J; Levy, F; and Lima A. (1987) *Microeconomics* (11th edition) Prentice Hall, Englewood, NJ.
- Blyth, Alastair and Worthington, John (2010) *Managing the Brief for Better Design*. Second Edition. Routledge, Taylor & Francis Group, London.
- Bowman, Cliff and Ambrosini, Véronique (2000) Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy. *British Journal of Management*. Vol. 11, 1-15.
- Bowman, Cliff and Ambrosini, Véronique (2010) How value is created and destroyed. *European Business Review*. Vol. 22, No. 5, pp 479-495.
- Cooke, Helen (2009) Financial Aspects of Project Launch: Clarifying Project Value. *PM World Today*. Vol, XI, Issue XII.
- Collins, James C. and Porras, Jerry I. (1996) Building Your Company's Vision, *Harvard Business Review*, September- October 1996
- Collis, David J. and Rukstad, Michael G (2008) Can You Say What Your Strategy Is? *Harvard Business Review*. April 2008
- Cooke-Davies, Terry (2002) The real success factors on projects, *International Journal of Project Management* 20, p 185-190
- Dinsmore Paul C. and Cooke-Davies, Terence J. (2006) *The Right Projects Done Right* Jossey-Bass San Francisco CA
- du Plessis, Chrisna and Cole, Raymond (2011) Motivating change: shifting the paradigm. *Building Research & Information*. 39:5 pp 436-449.
- Flyvbjerg, Bent, Bruzelius, Nils & Rothengatter, Werner. (2003). *Megaprojects and Risk: An Anatomy of Ambition*. Cambridge, UK; Cambridge University Press

- Ittner, Christopher D. and Larcker, David F (2003) *Coming Up Short on Nonfinancial Performance Measurement*. *Harvard Business Review*, November 2003
- Kaplan, Robert S. and Norton, David P. (2004) *Strategy Maps. Converting Intangible Assets Into Tangible Outcomes*. *Harvard Business School Press*. Boston Massachusetts.
- Miller, Roger & Lessard, Donald R. (2000) *The Strategic Management of Large Engineering Projects; Shaping Institutions, Risks and Governance*. MIT Press. Cambridge Massachusetts.
- Mutka, Sanna and Aaltonen, Pertti (2012) *The impact of a delivery projects' s business model in a project-based firm*. *International journal of Project Management*, august 2012.
- Peteraf, MA (1994) The Two Schools of Thought in Resource-Based Theory: Definitions and Implications for Research. In Shrivasta, P.; Huff, A.; and Dutton, F. eds. (1994) *Advances in Strategic Management*. 10A, pp 153-158. Jai, Connecticut
- Porter, Michael E (1991) Towards a Dynamic Theory of Strategy. *Strategic Management Journal*. 12, pp 95-117.
- Porter, Michael E (1996) What is Strategy, *Harvard Business Review*, November- December
- Porter, Michael E (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*, The Free Press. P37 and p 35.
- Rittel, HWJ and Webber, MM (1973) Dilemmas in general theory of planning. *Policy Sciences*. 4. Pp 155-169.
- Smith, Charles and Winter, Mark (2010) The craft of project shaping. *International Journal of Managing Projects in Business*. Vol. 3, No. 1, pp 46-60.
- Shenhar, Aaron J., Dvir, Dov, Levy, Ofer and Maltz, Alan C. (2001) Project Success: A Multidimensional Strategic Concept, *Long Range Planning* Vol 34 pp 699-725
- Standish Group (2012) *CHAOS manifesto 2012*. Standish Group. <http://blog.standishgroup.com/>. Last approached 28.11.2012.
- Turner, J. Rodney and Muller Ralf (2001) On the nature of the project as temporary organization, *International Journal of Project Management*, Vol.21 1-8
- 12Manage (2012) http://www.12manage.com/description_value_proposition.html, Last approached 2012.11.28

8.5

THE NEED FOR A PROJECT GOVERNANCE BODY

Paper V



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Derek Walker, Beverley Lloyd-Walker, (2014), "Client-side project management capabilities: dealing with ethical dilemmas", International Journal of Managing Projects in Business, Vol. 7 Iss 4 pp. 566-589 <http://dx.doi.org/10.1108/IJMPB-08-2013-0036>
Christophe Bredillet, (2014), "Ethics in project management: some Aristotelian insights", International Journal of Managing Projects in Business, Vol. 7 Iss 4 pp. 548-565 <http://dx.doi.org/10.1108/IJMPB-08-2013-0041>

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8.6

A MOTHERLESS CHILD -WHY DO CONSTRUCTION PROJECTS FAIL?

Paper VI



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A motherless child - Why do construction projects fail

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Abstract

A significant share of projects fails with respect to both producing the intended effect and achieving expected business results, in part due to organisational hierarchy and bureaucratic structures. These form obstructions to clients' demand for higher value. Within the field of real estate and infrastructure, most clients have to organise projects with external project organisations. Problems escalate when external suppliers are involved. This strategy-to-performance gap is attributed to poorly formulated plans, misapplied resources, breakdown in communication and limited accountability for results. In this paper, this challenge is assessed in the construction project perspective, focusing on what may be a missing link between strategic decisions and project outcomes. The challenge is double, i.e., it concerns clearly expressing the intention of projects and establishing organisations adaptive to project strategies. A major challenge for a design team is to balance functional expertise with a client's need for integrated teams focusing on solutions that enable users to create value. A functional organisation providing resources represented by design and engineering expertise is directed by a respective department's goals. On the other side, a project is directed by a client's goals, but affected by functional goals.

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Keywords: Construction industry; project strategy; project success criteria; project success factors; strategic planning

1. Introduction

A project is commonly understood to be a temporary organisation delivering an output to an organisation focusing on outcomes. According to the research within the general field of project management (PM), a significant share of

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projects fails with respect to both producing the intended effect and achieving the expected business results (Shenhar and Dvir, 2007); The Standish Group, 2001; Mankins & Steel, 2011). The prevailing explanation seems to be a combination of obstructions. Shenhar et al. (2001), Shenhar and Dvir (2007) and Turner (2014) share the assumption that traditional PM tools are not adequate to assure project success from a strategic perspective. Such problems typically escalate when external suppliers are involved in the project delivery (Muller & Judgev, 2010). The road to success becomes even more troublesome as organisational hierarchy and bureaucratic structures are regarded as general obstructions to clients' demand for higher value (Mankins & Steele, 2011; Driver 2014). These obstructions are present in client and supplier organisations, and goals become even more blurred. According to the conclusions of this series of the papers, this seems equally to be a valid claim in the context of the construction industry.

2. Research question

The aim of this paper is to address what approach is needed in the early phases of construction projects to make a change from delivering outputs to enabling benefits to clients, to understand front end efforts as well as to maximise project effectiveness and strategic success. The scope is limited to initial activities in design processes in the construction industry. The management theories from the strategy literature are used to compare the general theoretical challenges involved in aligning projects with strategy with the particularities of design processes in the construction industry. In accordance with this, we have formulated the following research question:

- What is a missing link between a strategy and a project outcome and what does this mean for the construction industry?

This question is addressed by firstly establishing a theoretical framework from the strategy literature. The key concepts organising the theoretical framework are *project success*, *strategy* and *project*. Secondly, we address the consequences of such an understanding to the construction industry.

3. Project success

Several scholars have been dealing with the term project success, among them Pinto and Slevin (1988), Shenhar (2001), Shenhar and Dvir (2007) and Turner (2014). The latter includes the most common definitions in the 4th edition of "Handbook of Project-based management" where he states the two components of project success as (i) *success criteria*, the dependent variables by which we will judge the successful outcome of the project and (ii) *success factors*, the independent variables that will influence the successful achievement of the success criteria. However, as Pinto and Prescott already in 1988 pointed out; "*it is likely*" they maintain, "*that the relative impact of the various critical factors of project success are subject to change at different points in the project*". This assumption was tested in a survey concerning the project life cycle. An important finding was that throughout the four stages of the project, the project mission and client consultation was identified as critical success factors. Client acceptance, as another success factor, was present in the planning and termination phase. If a project is having the client's acceptance in the termination phase, this most likely will be synonymous with achieving the success criteria. Technical tasks were, not surprisingly, only critical in the execution phase.

Pinto and Prescott (1988) concluded that "*the practicing project manager would be in a better position to assist in the implementation of a project*" if taking all tasks into concern, given an "*increased awareness of the factors most critical to success at specific life cycle stages*". In other words, the project manager and the design team would be better off if the planning process also emphasized additional factors to technical tasks. This still appears as a valid conclusion, both based on the authors' experience and on general findings from literature. Morris (2013) summarizes that managing projects is the discipline for the delivery of goals. The inward looking project delivery has to be replaced by teams delivering projects successfully to the requirements of the project customer.

Pinto and Slevin (1988) examined the challenges of the project manager. The main challenge was how to implement changes rooted in the corporate strategies, without sufficient power, budget, or people to handle all of the elements essential for project success. This may cause a PM dilemma. The success factors can be well known, but

projects are developed by a team of individuals with special expertise and concerned with solving complex technical tasks. This insight leads to the conclusion that the ability to transition successfully between early strategy (success factors) and later tactics (criteria) is an important characteristic for project managers to possess. Most organisations typically establish some kind of success criteria at the initial phase of projects. The most important is typically to identify the desired output meant to solve the problem and enabling a performance improvement as the project outcome. Shenhar et al. (2001) point out that the traditional success criteria based on financial indicators are insufficient to measure organisational success in a dynamic market. Projects must be regarded as engines that drive strategy into new directions and thus must deliver outcome for future benefits and competitive advantage in addition to immediate business results. The main problem thus resides in the absence of bringing the success factors to market. According to Shenhar et al. (2001), the project team engaged in a day-to-day project execution, are typically not focusing on the business aspects. Their attention is operational and “getting-the-job-done”. Successfully completed on time, budget and to specifications, but not necessarily to the customers satisfaction. The last decades of research on effectiveness within the construction industry has, according to Hjelmbrekke and Klakegg (2013), led to an increased consciousness of the strategic project outcome. They claim that despite this focus, design-teams still are geared towards project efficiency and re-use of design solutions. They further emphasize that to understand the clients’ needs in a holistic perspective, new leadership is required to move from an inside-out perspective to the outside-in focus. The latter is approaching the project from the customer’s perspective and proposed solutions are in accordance with what the customer perceives as success.

This understanding has considerable consequences for the understanding of projects and leads to a need for change and new mind-set within the construction industry. When productivity was considered being the main success factor in earlier protected market environments, solutions were based on proven technical solutions and limited interaction with user. Now, delivering holistic solutions that offer competitive advantages to the customer through value creation in projects is the new success factor, according to the findings from a case study within the field of real estate by Arge and Hjelmbrekke (2012). This study indicates that the business model of the external supplier/design team is directed toward functional and professional success criteria within their own organisations – and does not reflect clients’ strategic goal in any aspect. Not obliging to the insight of the general strategy literature seems to lead the construction industry to realizing projects that miss their objectives from a strategic perspective.

4. Strategy as looking forward and reasoning backwards

As already Steiner (1969) saw, planning is reasoning backwards, i.e., “*planning is a process which begins with objectives, defines strategies, policies and detailed plans to achieve them*”. Steiner is also precise on the subject of what constitute the basic problem of planning: “*It is not what should be done in the future but rather what should be done now to make desired things to happen in the uncertain future*”. To establish the strategic vision and goals is just a part of a planned change; what constitute the real difference concerning project success or not is what happens when a strategic decision is made. Is this followed by resources as well as top management support to secure the implementation? Nearly all firms and organisations have established a strategy with the purpose of explaining how their vision is going to be fulfilled. This envisioned future is, according to Collins and Porras (1996) what a firm aspires to become, something that will require significant change and progress to attain. In a changing world the strategy is the formula that at any time has to adapt to the competitive battlefield. The competitive edge is also the main issue in strategic thinking of Porter (1996). His starting point is that the changing competitive environment has led companies from a static positioning strategy into a quest for productivity, quality and speed. The result is that (tactical) management tools such as total-quality management, benchmarking, time based competition and outsourcing have taken the place of strategy. In a competitive context this may give immediate operational and financial improvements. The effect of increased productivity on viable competitive positions, however, is minor and the gained competitive advantage is temporary. Porter argues that the root of the problem is the failure to distinguish between operational effectiveness and strategy. Operational effectiveness is essential to superior performance, but will not be viable unless followed by a strategy based on achievement of sustainable competitive advantages. The only way to outperform rivals and establish a difference from competitors is, according to Porter, to deliver greater value to customer, or create comparable value at a lower cost or both.

Kaplan and Norton (2001, 2004) move such an argument further in operationalizing the strategy in their

balanced scorecard model to align the organisational performances to the strategy, thereby creating a strategy measurement system. They claim that the balanced scorecard system enables organisations to organize all their resources to focus intensively on implementing strategies. Mankins and Steel (2011) provide examples of how strategies are managed. According to their investigations, “most companies’ strategies deliver only 63 % of their promised financial value. This strategy-to-performance gap was undertaken in a survey by the authors to find out how successful companies translated their strategy into performance and the causes if failing. The problems revealed were troubling.

Most companies rarely track performance against long-term-plans and top Management don’t know whether their strategic initiatives will have the intended effect until the project is completed and in operation. The survey also addressed the causes for the performance loss. The main factors were inadequate or unavailable resources, poorly communicated strategy, actions required to execute not clearly defined and organisational silos and culture blocking execution. What Mankins and Steel (2011) also found was that many high performing companies focusing on realizing the strategic potential of projects are working on improving the planning and execution processes. To close the gap they are working on both sides of equation, raising standards for both processes simultaneously and creating links between them. This is also the focus of Driver (2014). His findings were even more discouraging. Fewer than 10 % of 100 strategies reviewed were identified as robust and useful. The rest were unclear on exactly what they were trying to achieve, why they were trying to achieve it, how they were going to achieve it and whether their strategy has been validated, is optimal and can actually be made to happen cost-effectively. Strategy fails, according to Driver, because people in the organisation do not know about or understand the strategy or how they should manage their roles within the organisation consistent with the strategy. Poor strategy semantics leads to few people understanding the strategy and what they are actually supposed to be doing.

Driver’s assumptions present a problem within the construction sector. According to Shenhar (2004), in most cases projects are identified as a tool for implementing strategy of mother organisation, under the constraints of time, budget and other resources. The typical configuration in the construction industry consists of an external project team (i.e. project manager, architects and engineering consultants) engaged in day-to-day project execution and are typically not focused on the business aspects of the project (Patanakul & Shenhar, 2012). The project will then be trapped in a “mixed zone” with a client organisation, according to Driver, without a robust strategy together with a supplier organisation participating without any knowledge about client’s strategy. Driver’s open strategies (2014) are focusing on the end result, the benefits. The project planning and the implementation is a continuous process, where the user, owner and design team’s main objective is to find the causality backwards from benefits to project design and to establish the success criteria connected to the different phases. His starting point, as illustrated in Fig.1, is that only end-users can realize or create benefits/outcomes. Thus end-users should have a key role in designing and implementing strategies. Organisations run **Projects** (a building or infrastructure) and create assets (the design). Organisations produce **Results** from these projects. Customers **Use** these results. And customers create **Benefits** from their use of this asset. Finally Driver asserts that these benefits encapsulate the reason for a strategy. Driver’s **PRUB** (project-results-use-benefit) strategy model is meant to constitute the core strategy building blocks since these blocks in fact represent the core functions of the organisation.

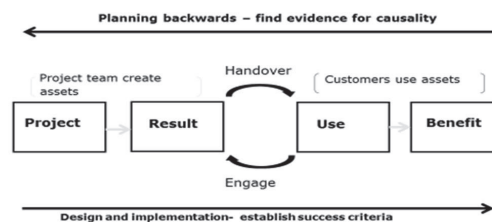


Fig. 1. PRUB (Driver, 2014)

Based on such an analysis, an effective strategy is to improve these core functions and will (1) define exactly

the organisations core functions in term of what project an organisation needs to do, what results they must produce, how these results will be used and how these uses will create benefits, (2) validate the sequences by cause-and-effect evidence that projects produce the desired results, results be used and this use creates benefits and (3) finally, validate a cost/benefit ratio.

In short, the general idea consists of measuring backwards to find what are the benefit indicators, the use indicators (how to use the results produced by the project), the result indicators what is the project actually delivering) and the project results (time, quality and cost). The strategy- to-performance gap in the PRUB model may occur in the handover/engage sequence, where Driver (2014) points out that the most valuable evidence is the cause-and-effect evidence that results actually be used.

5. Project strategy as outputs enabling benefits

Projects have for decades been managed by measuring the performance according to the so-called iron triangle of time, budgets and scope. The constraints implied by this have been directing the PM and project teams, focusing their activities on efficiency. To increase performance within such constraints, the industry and research institutions have provided the project managers with a steadily increasing amount of tools and frameworks. However, the project's link to the business case and the strategic motivation is rarely in concordance with the idea of the project manager as a success factor. Pinto and Slevin (1988) distinguish between tactical and strategic performance. They state that it is the rare project manager who is both a brilliant strategist and a skilled tactician. To manage projects successfully, however, both capabilities must be brought to bear. This is equally done by Cooke-Davies (2002), who analyzes the difference of PM success and project success. According to his view, the first one refers to the tactical level, dealing with the traditional PM measures of time, cost and quality, whilst the latter relates to when the owner can realize the benefits hopefully provided by the project. Most prominently, he links project success and corporate success. In this conception, benefits are not delivered by the project manager as such. Rather it is the close cooperation between project and the user which enables the future advantages/ benefits. This cooperation must be organized within the framework of the corporate strategy, processes and decisions to translate strategy into projects must be the corporate PM practice.

The project as integrated elements of a corporate strategy is also the main message from Shenhar (2007); *“the only way organisations can change, implement a strategy, innovate, or gain competitive advantages is through projects”*. The most visible changes in organisations are set up as projects like new IT-solutions, re-organisations or new premises expected to deliver new capabilities. Shenhar et al. (2001) discuss projects as powerful strategic weapons initiated to create value and competitive advantage and describe them as the engine that drive strategy into new directions. Defining and assessing project success correspondingly becomes a strategic management concept, the criteria against which projects should be assessed. It covers the project execution itself, the benefits for users, the financial outcome, as well as the future competitive benefits. According to this line of thought, both Shenhar (2012) and Maltz et al. (2012) suggest that project success ought to be assessed according to five dimensions (Fig.2).

Success Dimensions	1	2	4	5	6
Time Horizon	Very Short	Short	Mid-term	Long	Very long
Organizational Level:					
Project	Project Efficiency	Team Leadership/ People skills	Impact on Customer	Direct Business Success	Preparing the Future
Corporate	Financial Performance	Market/ Customer	Process	Human Capital	Creating the Future

Fig. 2. Success scorecards (Maltz et al. 2012).

The five dimensions range from short time project efficiency to future strategic impact. The project success measurement is based on the same thinking as found in the balanced scorecard model of Kaplan and Norton (2004).

Shenhar's model includes both corporate and project success measures within the five dimensions. A study based on Shenhar's success dimensions (Maltz et al., 2012) maintains that top-level management's vision needs being translated to specific goals and measures at the project team levels. *By better understanding the overall organisational goals and by being better required to achieve specific business goals, project teams will be better equipped to do their job both effectively as well as efficiently.*

The holistic approach outlined by Maltz et al. (2012) as well as by Cooke-Davies (2002) typically encounters challenges when the project is delivered by external suppliers. Of particular interest within the context of this paper is that this typically is the situation within a construction project context; The design team is configured as a matrix with input from different functional departments (Turner, 2014). It consists of members who are involved in the project for the duration of their work package. This might include part-time work. Instructions are normally given from the project manager, but with such work organisation there is a reasonable risk for influence of instructions from the functional manager.

Such a two-boss system typically have consequences regarding which goals are regarded as the most important; the project manager's objectives in alignment with the client's strategy, or the different functional managers with specific priorities or corporate goals of the project based organisation in itself. This seems, in effect, to be widespread in the construction industry, as the industry's organisations are typically heavily based on external expertise.

As Sauser et al. (2009) and Turner (2014) maintain, projects are rarely carried out in isolation and most consultants are involved in more than one project. Therefore, the design team and project management must adapt the management style and team organisation to the specific project type. To avoid split loyalties, Turner suggests a versatile project organisation, where team members keeps a process focus, focusing on the customer's requirements as well as team success and having only one boss. As concluded by Vuori et al. (2013), the project organisation needs to create a strategy that fits well with the external environment, rigged for prevailing market issues and with the internal environment of the client. Such a strategic formatting proves in fact crucial to gain acceptance and managerial support as well as resources to be effective. We need to understand the meaning of operational effectiveness (Porter, 1996), which "value drivers" matters (Ittner & Larcker, 2003) and where client-, user- and supplier strategy converges in a project context where separate strategies can work towards a common goal. Focusing on efficiency alone will not be the differentiator to superior operational effectiveness (Porter, 1996). Suppliers' need to meet customer needs and having a strategic approach to this is the key to competitive advantage. Performing similar activities better is good, but easily copied by competitors. Finding the way into such a strategic "sweet spot", according Ittner and Larcker (2003), it is important to take a closer look at cause- and effect relationship that may exist between the chosen drivers of strategic success and outcomes. They suggest that doing this right, needs developing a causal model based on the hypotheses in the strategic plan. To find and track the activities that leads to improvements and strategic success are in themselves challenging activities. Once it has been proven, however, and the final causal model chosen, it is hard to argue with and will be the source of a broad –based agreement on the subject of strategy.

6. Impacts on construction projects

What are the consequences of the above insights for our understanding of construction projects? According to Shenhar et al. (2001), most projects are conceived with a business perspective in mind and with goals reaching beyond efficiency in project execution. When project managers and project team are engaged to set up a project organisation they typically do not focus on the business aspect, but the immediate task. Suppliers bring in their own strategy focusing on delivering efficient execution. Success then typically is regarded as achieved when the project is delivered within time, cost and at a sufficient quality level. The project may in this perspective be understood as an independent organisation according to Mutka and Aaltonen (2012), with a lack of consciousness of the project owner's business and strategy. This contradiction in behavior between the parties, the user and owner on one side and the design team/suppliers on the other, may have its origin in the respective managements' interpretation of which measures counts regarding customer satisfaction and his strategic goals. Ittner and Larcker (2003) argue that successful companies have attacked the problem of not linking measures to strategy by choosing their performance measures on the basis of causal models, also called value driver maps. In this perspective, the project success as

defined by Shenhar (2012) ranks on top and all activities must relate to strategic goals of the project. Porter (1996) comments, “[a]ny strategy statement must begin with a definition of the ends that strategy is designed to achieve”. If this means uniqueness and competitive advantages, project efficiency as the only solution is not enough.

A construction project is normally based on bilateral contracts between three parties in a pattern that leaves one of these relations unsolved (Hjelmbrække & Klakegg, 2013; Hjelmbrække et al., 2014). The project delivery is typically an agreement between the supplier and the owner, leaving the users in a half-way excluded/partly included position. This will be a major obstruction to realize the benefits of any project according to Drivers (2014). One of his major conclusions is that project results in themselves never will provide any benefits. It is the use and the exploitation which creates benefits. The backwards strategic reasoning and identification of cause- effect evidences starts with the user, which is in accordance with Steiner’s (1969) statement that planning is a process which begins with the objectives and gradually moves into the task of making the detailed plans to achieve them.

In the language of agency theory one can explain the traditional/ suppliers defined as project based organisations (PBO). The external project organisation (PBO) within project design was traditionally organized as a matrix organisation (Turner, 2014). In such cases, the supplier may create a project organisation set up with a project manager and people from the functional organisation given project responsibilities for the duration of their involvement in the project. This matrix has according to Turner (2014) a fundamental weakness in having project participants given orders from either the project manager or the functional manager. Shenhar (2012) pinpoints a third major problem, the project team as supplier has their main focus on project efficiency rather than what are the viable project output for the user and the owner.

Drivers (2014) defines the core role of organisations to be creating assets and enabling people to use them to create benefits. To enable benefits from a project it is vital to have solid cause-and effect evidence that will confirm that the project output will increase benefits and enable the users to improve their performance. This is looking forward and planning backwards by articulating the project strategy, and then plan the project to implement it. According to the success scorecard matrix (Fig. 2) of Matz et al. (2012), the project team is engaged in a day-to-day project execution focusing on “getting the job done” and leave to the next. The project may be an economical success for the PBO in the short term, but also a failure for the client. The project success scorecard take into action all the client’s success factors – and includes what should have been the PBO’s success factors to achieve their strategic goals.

Many scholars have explored project strategy during the recent years. Turner (2014) has in his book “Handbook of Project-based Management” presented some of these studies. Project strategy, according to Shenhar and Patanakul (2012) is needed to guide an individual project in its planning and execution processes. Their suggested framework also begins with the end – the outcome – and defines the project strategy as: *the project perspective, position and guidelines for what to do and how to do it, to achieve the highest competitive advantage and the best value from the project outcome*. The framework sets up a roadmap which reasons backwards from the clients strategic objectives, to what should the outcome be to a guideline for how to do it.

internal view; the agent (project organisation) is expected to do what the principal (project owner) orders (Hjelmbrække & Klakegg, 2013). This view of the project as obedient servant is a condition more likely to be found if executed with internal resources. When the project is classified as a building project, resources normally have to be procured externally as a temporary organisation with

7. Conclusion

The management theories have identified project strategies as the main missing link in project planning and execution. The implication of this lack is that major strategic investments in projects turn out as failures. Such failures influence private corporations as well as public organisations and citizens in general in a negative manner. As we assume that most projects have strategic intents, failures will most probably have impacts on the competitiveness of owners, thereby reducing the quality of public services and the general welfare of citizens.

Scholars in management science have for years been trying to identify what may be the root causes of the fact that strategic investments fail. Which factors are prevailing, however, is dependent of a project context. Some success factors appear in most projects: an ability to communicate with a client, to understand a project mission, an ability to plan a project by finding cause and effect evidence from expected project benefits, to use a project output

and to set up a project to deliver this output. The construction industry has for years been focusing almost solely on project efficiency, as this success dimension is instantly measurable at project completion. When it comes to measurements beyond project efficiency i.e. success for an owner regarding business goals and future benefits, the evidence given in the literature tells us a story of an industry not capable of delivering excellence. In order to change this, consultants and architects ought to a greater extent acknowledge that planning is the first step in design, planning is backwards reasoning from ends and projects strategic goals and from that find cause and effect evidence that leads to the starting point of design.

This insight is in fact not new. Sir Wotton maintained in his *Elements of Architecture* of 1624, that: “*In Architecture, as in all other Operative Arts, the End must direct the Operation. The End is to Build Well. Well Building hath three principles; Firmness, Commodity and Delight*”. Nearly 50 % of strategic investments fails to satisfy the user and to give the intended benefits. It should be some concern regarded to the fact that most projects don't deliver the intended strategic output (if any at all) due to the industries lack of knowledge of the corporate strategy. The chances of having a project with no common genetics with the parent organisation is according to scholars definitely present. Projects do in fact seem to fail according to three perspectives, i.e., (a) a project owner does not arrive at translating a strategy into tangible project requirements, (b) a project team is torn between different loyalties and (c) user requirements rarely comes to prevail. This is in fact of crucial importance in the construction industry – more, in fact, than in most other industries – mainly due to the use of external project delivery organisations. A project with no clear strategic focus or ownership can easily end up as a motherless child.

References

- Arge, K., Hjelmbrække, H., 2012. Value Enhancing Processes in Building and Real Estate. In: Proceedings of the Cape Town 2012 Joint CIB W070, W092 & TG72. pp. 122-135.
- Collins, J. C. and Porras, J. I., 1996. Building Your Company's Vision, *Harvard Business Review* (Sep-Oct)
- Cooke-Davies, T., 2002. The “Real” Success Factors on Projects. *International Project Management* 20, 185-190.
- Driver, P., 2014. *Validating Strategies: Linking Projects and Results to Uses and Benefits*. Gower Publishing.
- Hjelmbrække, H., Klakegg, O. J., 2013. The New Common Ground: Understanding Value. In: Proceedings of the 7th Nordic Conference on Construction Economics and Organization. Trondheim, Norway. Akademika Forlag. pp 269-281.
- Hjelmbrække, H., Lædre, O., Lohne, J., 2014. The Need for a Project Governance Body. *International Journal of Managing Projects in Business* 7(4), 661-677.
- Ittner, C. D., Lareker, D. F., 2003. Coming Up Short on Nonfinancial Performance Measurement. *Harvard Business Review* (Nov).
- Kaplan, R. S., Norton, D. P., 2004. *Strategy Maps*. Harvard Business School Publishing Corp., Boston, MA.
- Kaplan, R. S., Norton, D. P., 2001. *Strategy-Focused Organization*. Harvard Business School Publishing Corp., Boston, MA.
- Maltz, A. C., Shenhar, A. J., Dvir, D., Poli, M., 2012. Integrating Success Scorecards across Corporate Organizational Levels. *The Open Business Journal* (5), 8-19.
- Mankins, M. C., Steele, R., 2011. Turning Great Strategy into Great Performance, *On Strategy*. Harvard Business School Publishing Corp., Boston, MA. pp. 209- 228.
- Morris, P., 2013). Reconstructing Project Management Revisited: A Knowledge Perspective. *Project Management Journal* 44(5), 6-23.
- Muller, R., Judgev, K., 2012. Critical Success Factors in Projects. *International Journal of Managing Projects in Business* 5(4), 757-775.
- Mutka, S., Aaltonen, P., 2012. The Impact of a Delivery Projects's Business Model in a Project-Based Firm. *International Journal of Project Management* (8).
- Patanakul P., Shenhar, A., 2012. What Project Strategy Really Is: The Fundamental Building Block in Strategic Project Management, *Project Management Journal* (2).
- Pinto, J. K., Prescott, J. E., 1988. Variations in Critical Success Factors over the Stages in the Project Life Cycle. *Journal of Management* 14(3), 1.
- Pinto, J. K., Slevin, D. P., 1988. Critical Success Factors in Effective Project Implementation. *Project Management Handbook*.
- Porter, M. E., 1996. What Is Strategy. *Harvard Business Review* (Nov-Dec).
- Sausser, B. J., Reilly, R. J., Shenhar, A. J., 2009. Why Projects Fail? *International Journal of Project Management* 2, 665-667.
- Shenhar, A., 2012. Introducing the Next Generation of Project Management. *Strategic Leadership*. Available at www.splwin.com. (Accessed on March 2013).
- Shenhar, A. J., Dvir, D., 2007. *Reinventing Project Management*. Harvard Business School Publishing Corp., Boston, MA.
- Shenhar, A. J., 2004. Strategic Project Leadership. Toward a Strategic Approach to Project Management. *R&D Management* 34(5), 569-578.
- Shenhar, A. J., Dvir, D., Levy, O., Maltz, A. C., 2001. Project Success: A Multidimensional Strategic Concept. *Long Range Planning* 35, 699-725.
- Slevin, D. P., Pinto, J. K., 1987. Balancing Strategy and Tactics in Project Implementation. *Sloan Management Review* (Fall).
- Steiner, G.A., 1969. *Top Management Planning*. Macmillan Publishing Co., New York, NY.
- The Standish Group, 2001. *The Chaos Report*. The Standish Group International, West Yarmouth, MA.
- Turner, J. R., 2014. *The Handbook of Project-Based Management*. 4th ed. McGraw-Hill Education.
- Vuori, E., Mutka, S., Aaltonen, P., Artto, K., 2013. That Is Not How We Brought You Up: How Is the Strategy of a Project Formed? *International Journal of Managing Projects in Business* 6(1), 88-105.

8.7

GOVERNING VALUE CREATION IN CONSTRUCTION PROJECTS – A NEW MODEL

Paper VII



International Journal of Managing Projects in Business

Governing value creation in construction project: a new model

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8.8

LEAN DESIGN VERSUS TRADITIONAL DESIGN

Paper VIII

LEAN DESIGN VERSUS TRADITIONAL DESIGN APPROACH

Thea S. Munthe-Kaas¹, Hallgrim Hjelmbrække², Jardar Lohne³ and Ola Lædre⁴

ABSTRACT

The purpose of this paper is to determine if lean design can enhance value for the customer in the construction industry based on an examination of the design phase. Recent research from Statistics Norway shows a reduction of 9 % in the Norwegian construction industry's productivity from 1992 to 2012. The paper also discusses if lean design can have an overall positive effect on the productivity. A case study has been carried out, comparing two projects using a qualitative approach. The projects use different methods in the design phase; lean design vs. traditional design approach.

Implementing lean design can increase value for the client. Lean design might enable a productivity growth in the Norwegian construction industry similar to the growth observed until the 1990s. Similarities are found between classic project execution and projects where lean design is implemented, particularly the focus on planning and control. The originality lies in comparison of the recently implemented lean design and the classic project execution model. This permits an in-depth analysis of the novelty and effects of certain lean design features. Lean design seems to have reduced waste in the process, but the total value concept was rarely considered.

KEYWORDS

Value, lean design, productivity, lean construction, waste.

INTRODUCTION

Project management have traditionally been concerned with cost, time and quality when measuring success in a project (Atkinson, 1999; Cooke-Davies, 2002; Hjelmbrække, et al., 2014). According to Fewings (2013) time, cost and quality are the three dimensions of control and represent the specific project efficiency factors. He further claims they are managed for the satisfaction of the customer's requirement, but are secondary to the customer's business needs. The prime concern for the project manager in a construction project is rather to create value for the customer.

Recent research from Statistics Norway shows a reduction of 9% of the productivity in the construction industry in Norway over a time period from 1992 to

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2012 (StatisticsNorway, 2015). The statistics also show an increase in the productivity in the manufacturing industry over the same period of time. Errasti, et al. (2007) claim that this increase results from integrated flows and processes in order to create value for the customer. They conclude that the construction industry has a lot to learn from this culture. This might also indicate that the construction industry has great potential for improvement.

In recent years, working methods such as lean construction have been introduced in the Norwegian construction industry. LCI (2015) defines lean construction as a production management based approach to project delivery. They further claim that the reliable release of work between specialists in design, supply and assembly assures value is delivered to the customer and waste is reduced. Emmitt and Ruikar (2013) argue that to ensure that maximum value is created and waste eliminated, the design phase must be managed effectively.

The literature review preceding this paper found a surprisingly small amount of studies devoted to the comparison of traditional and lean design approaches in light of value creation. To fill this knowledge gap, that is, to evaluate if lean assures added value is delivered to the client, it is essential to compare lean to the existing approach.

The study is based a comparative analysis of Bergen Academy of Art and Design (the Academy) and the New Norwegian National Museum of Art, Architecture and Design (the Museum). The Academy implements lean design while the Museum uses a traditional project execution approach. The ambition of this paper is to assess to which extent lean design can enhance value for the customer in the construction industry based on an examination of the design phase. It is examined how the distinctive stakeholders deal with the value specification as an outcome of the architectural competition. In order to address this issue, we attempt to answer the following two research questions.

- What are the characteristics of the two different design approaches?
- What are the advantages of the different approaches?

METHOD

The study leading up to this paper was based on a qualitative research method. A case study approach was chosen, in accordance with the procedures outlined by Yin (2013), examining two major construction projects in Norway. A literature study aiming to identify main features of project planning using lean design principles was carried out. The objective of the analysis was to compare these with design phase principles used in so-called traditional project planning within the Norwegian context. Several scientific databases were searched in order to identify papers bearing on lean design, value, value creation and design approaches to compare traditional and lean design in this context. A document study was executed on both projects. A pilot study of the Academy was conducted in the fall 2014, with three interviews. The pilot study was later used to shape the research questions in this article. The case study of the Museum and the Academy was carried out in the spring 2015. Five semi-structured open-ended interviews were carried out with the project manager in the Museum and senior design managers from the architects and the consultant engineers of both projects. The plan for future research is that this paper forms part of an on-going research of lean projects in the Norwegian context.

THEORETICAL FRAMEWORK

VALUE

The fundamental purpose of a project is to create value for the customer. Not surprisingly, value discussions constitute a major role within lean theory.

Several definitions of value with different perceptions exist. Kelly, et al. (2004) define value as function divided by cost. Bowman and Ambrosini (2007) on the other hand look at customer value as consumer surplus. Consumer surplus is defined as when a consumer derives more benefit (monetary value) from the good, than the price they have to pay. In this way it is distinguished between how the customer values the good and the actual price. Emmitt and Ruikar (2013) define value as a measure of the beneficial return gained from the consumption of resources.

Hjelmbrække and Klakegg (2013) define value creation as a result of human activity. Thyssen, et al. (2010) maintain that during the construction project the involvement of different stakeholders will change and also their values and perspectives. Due to the change process and the nature of human behaviour, the change of perspectives will be unpredictable. This makes value management in construction a difficult process. Hjelmbrække, et al. (2014) claim that in a construction project, value can be separated into the project output value and the use value. The project output value is the building measured on cost, time and quality. The use value is the effect of the project output on the core business. It reflects what the client is prepared to pay for the finished product when the various solutions are known. It is essential to consider how the customer evaluates the product to meet their needs (Hjelmbrække and Klakegg, 2013).

Value and lean

LCI (2015) defines value as what the customer wants from the process. Salvatierra-Garrido and Pasquire (2011) recognise that the lean construction perception of value has, to a great extent, been influenced by lean production as manifested in the manufacture industry.

Koskela (2000) identifies three main causes that decreased value for the project customer: value loss due to poor project management, value loss due to design and value loss due to construction. He further claims that customer requirements can be unclear concepts that need to be addressed through the whole life cycle in the construction project.

Hines, et al. (2004) highlights that lean construction has developed from a waste reduction focus to a focus on customer value. They maintain that value for the customer can be increased by reducing internal waste, develop customer value or both.

Emmitt, et al. (2005) define value as “*an output of the collective efforts of the parties contributing to the design and construction process; central to all productivity; and providing a comprehensive framework in which to work*”. They separate the perception of value into two conceptual phases: value design and value delivery. In value design it is established and reflected alternatives for conceptual design. By attaining agreements between participants and providing the best design solution, the uncertainty is reduced. In value delivery the chosen design alternative is transformed into a production design. The aim is to deliver the specified product in the best possible way, with minimum waste.

Salvatierra-Garrido, et al. (2012) found in their research of the value concept as commonly perceived within the IGLC community, most efforts have mainly been endeavoured to deliver value at project level, where waste reduction and planning and control of construction site activities have been key activities linked to value. Several efforts have endeavoured to fulfil particular customer's requirements. A reason for this might be that it is easier to consider and measure waste in a project that consider value, since value is a complex concept.

The client wishes to both increase the total value and reduce waste. In this paper value is assessed from two different perspectives; increased use value to maximise consumer surplus and increased consumer surplus by reducing waste.

PRODUCTIVITY

Productivity can be defined as a measure of the ratio between produced quantity (output) and input (Forbes and Ahmed, 2011). An increase in the productivity implies that a certain amount of input enables the production of more quantity than earlier. In the construction environment productivity may be represented as the constant-in-place value divided by inputs such as the cost value of labour and materials (Badiru, 2005; Forbes and Ahmed, 2011). Forbes and Ahmed (2011) state that recognizing the need for improvement through productivity measurements, performance improvement over time can be achieved. Oglesby, et al. (1989) maintain that traditional construction management tools do not address productivity, mainly just cost overruns and schedule slippage. Forbes and Ahmed (2011) maintain that performance is often measured in terms of completion on time, meeting construction codes and within budget. By just meeting the construction codes, the owner/client satisfaction is rarely considered.

In this paper productivity functions as the constant-in-place value divided by inputs. By reducing waste in the process, an increase in the productivity might be achieved. An increase in the productivity will thus affect the project output value.

DESIGN APPROACHES

Traditional design approach

PMI (2013) identifies tasks for the planning process group to develop a project management plan, plan scope management, collect requirements, define scope, create a Work Breakdown Structure (WBS), define and sequence activities, estimate activity resources and duration, develop schedule, plan cost management, estimate costs, determine budget, plan quality, develop human resource plan, plan communications, plan risk management, identify risk and perform risk analysis, plan risk responses, plan procurements and stakeholders management. According to Wysocki (2014), in traditional planning a central element is the Joint Project Planning Session (JPPS) where stakeholders up front develop the detailed plan. The end result is an agreement on how the project can be accomplished within the specified time frame, budget, resource availabilities, and according to client requirements. The deliverables from the JPPS are WBS, Activity Duration Estimate and Resource Requirements. A Project Network Schedule can be created from the WBS. It defines the sequence in which the project activities should be performed. The output of the activity schedule will be the assignment of specific resources to the project activities.

Lean design

Forbes and Ahmed (2011) maintain that in lean design constructability reviews and value engineering are continually integrated with decision-making. This is achieved with cross-functional design teams that include architects, engineers, contractors, and subcontractors among others. Emmitt, et al. (2004) found that through the use of creative workshops, which encourages open communication and knowledge shearing, the project participants claimed that the lean design process was contributory in delivering value and improving productivity.

Fewings (2013) claims that when front-loading the resources in design in order to eliminate waste efficiently in manufacture, success can be obtained. Such front-loading can be achieved by doing the planning ahead and arranging simultaneous working between the design, manufacture and supplier. To have a reliable database of products, systems and components is of importance in order to use learned systems for new products and design. Ballard (2008) highlights that it is central that the customer gets involved early in the process. The customer should be shown different alternatives for realization of their purposes and be helped to understand the effects of their requests.

Different tools often used in lean design are Target Value Design (TVD), Set Based Design (SBD) and Choosing by Advantages (CBA). The Last planner system (LPS) is a collaborative and commitment based planning system. Last planner system is based on the Should-Can-Will-Did principles (Ballard, 2000). According to our understanding, LPS can be divided into four levels of scheduling and planning notably master schedule, phase scheduling, look-ahead planning and weekly work plan (Ballard and Howell, 2003; Ballard, 2000). Learning is a significant part of LPS (Ballard, 1999; Ballard, et al., 2003; Ballard, 2000). Reasons for non-completion can be identified through Plan Percent Complete (PPC) (Ballard, 2000). PPC measures the percentage of task completed relative to the planned tasks. It is a measure on how well the planning system is working (LCI, 2015).

FINDINGS

There were only considered qualitative data in this comparison, due to the lack of available quantitative data.

Table 1: Overview of the distinctive projects

Facts	The National Museum of Art, Architecture and Design, Oslo	Bergen Academy of Art and Design
Design Approach	Traditional Approach	Pilot project in lean design (detail design)
Cost framework	5.327 billion NOK (01.07.2013)	1.065 billion NOK (01.07.2014)
Volume	Ca. 54,600 m ²	14,500 m ²
Construction start/end	2014/2019	2014/2017
Phase spring 2015	Detail design/construction	Detail design/construction
Client/Owner	Ministry of Culture/Statsbygg	Ministry of Education and Research/Statsbygg

BERGEN ACADEMY OF ART AND DESIGN

In the Academy, the design team consists of the architect Snohetta and the general engineering consultant Ramboll. Statsbygg decided to implement lean design in the detail design phase to improve the process. The design team was given intensive courses to be familiar with lean construction principles, but neither the course holder nor the design team had any experience with lean design. Statsbygg regarded the project as a pilot – and a specific model of how to implement lean design was established. The project was divided into four levels of planning:

- Level 1 it was the project level where there was prepared a Product-Creation-Process (PCP)-plan. This was a static model with sub-processes. The PCP-plan contains few milestones with wide timespans. Responsibility and rolls were defined at a general level.
- Level 2 was the sub-processes of the PCP-plan. An example of a sub-process is the designing. The design plan was divided into parallel and sequential task with milestones. In this level the responsibilities and rolls were distributed.
- Level 3 was a multidisciplinary theme. It described what the product was and when it was needed. One person was responsible for each theme and in charge of “pulling” in the information.
- Level 4 was a disciplinary activity.

Each phase in level 3 comprised a sequence of 14 days workload. The design team had a time-restricted co-location, where owner, consultant engineer and architect were located in the same office three days every 2nd week. The co-location included reserved time for the stakeholders and project team to report what they had done, what the issues were and what information was required. Visual planning was used. Meeting minutes were used sparingly – mainly theme logs with connecting deadlines.

There was a focus in the project to establish lean as a planning culture where mind-set, a course of action, a way of being or an attitude change, were essential aspects. TVD, SBD and CBA were not considered in the project, even though there were used some elements of these.

The breakdown structure in the detail design clarified the distribution of responsibility. This had a positive influence on keeping the right pace and flow in the project. The team kept up with deadlines. The decisions were made in plenary sections with the owner (Statsbygg) as the main responsible. The design team used a common BIM model for quality control and clash detection to obtain zero defects. The common BIM model ensured transparency, which created pull in the project. A good planning process and frontloading resulted in what was regarded as success. There was a mutual agreement that the use of lean methodology resulted in a good team spirit and teamwork. The time-restricted-co-location had a positive effect on collaboration. The introduction of new team members without lean experience resulted in waste due to the lack of adoption of the actual design method.

The mix of fixed price contract to Snohetta and pay by hour in Ramboll had positive effects. Architects focused on decision-making and efficiency and engineers feed resources to keep up with deadlines. The coordination within the team made an extensive utilisation of resources possible.

The design team had a focus on continuous improvement and learning from past experience, including regular assessment of on-going work and methods.

The project manager (PM) observed just minor cost deviation in the first package of tenders from contractors. This indicated that the deliverables of the design held the required quality. This was explained as a consequence of the use of lean methods. The design phase was going to be completed one month ahead of schedule. The PM has experienced that design is often more comprehensive than originally planned. The PM believes the process breakdown into time-restricted activities and focus on the flow in the detail design in the Academy project has contributed to a better product.

One major characteristic of the Academy was the intensive use of resources and knowledge in the design phase. This was expected and believed by the design team, to facilitate a more efficient construction phase with less errors and delays.

It proved impossible to obtain whether the lean process has resulted in a more effective construction phase and if it pays to invest in the design phase at the stage of our inquiry. Until now, the project has not undertaken any measurements regarding performance. The PM believes they have implemented lean in a right way so far. He considers they could probably have made more efforts to succeed, but that becomes a cost/benefit issue.

THE NEW NATIONAL MUSEUM OF ART, ARCHITECTURE AND DESIGN

The Museum project used Statsbygg's project execution model based on traditional project management models. The owner, the consultant engineer and the architect were located at a project office. The designers reported to Statsbygg every month. Originally they worked sequentially, but because of delays they started to work in two parallel plans to meet the project deadlines. The architects, Kleihues + Schuwerk as well as the consultant engineer, Ramboll had a paid-by-hour contract. The architects were organized in a hierarchy, with a few lead architects being responsible for general design. Their main working principle was to have all solutions ready before involving the engineers. The architects and the engineers stand as equal in the project.

The quality level of the planning was perceived to be high. The joint project team follows the main schedule and the functions and tasks of the different team members seem to be clear. To prevent misunderstanding, improve collaboration and encourage integrated solutions, a project office was established. This co-location was not regarded as a contributor to collaboration and value-in-use of the asset.

The architects as well as the engineers experienced that the personal relations within the project team were not optimal. They experienced a lack of an owner "decision maker" involved in the process, due to frequent situations where the design team was not able to get to consensus on an issue, but were still asked to solve it.

Statsbygg had an in-depth user survey in the front-end of the detailing phase, which required several modifications. This survey was initially scheduled to the initial phase, but due to formal problems the survey was postponed. The consequence was redesign in the detailing phase to align the solutions with user needs.

The available time frame for basic design was thought to be too limited. This resulted in what was regarded as superficial design, which in turn led to a need for an extensive rework and redesign in the detailing phase.

The consultant engineer experienced that the stakeholders in the project were not learning from experience and incidents earlier in the project. It was regarded as a general problem to provide the project with the required resources and competence, due to owner budget constraint as well as shortages in the project teams. From experience, in projects of this size, involved parties should have an organisational

capability of at any time supporting the project with the required resources to ensure quality of deliverables as well as being within the time schedule.

DISCUSSION

The Academy project was characterised by clear distribution of responsibility, front-loading and focus on planning. This has resulted in flow in the process and quality of the design. The team members had the ability to make decisions in accordance with the requirements and keep up the project pace. As a result, the project kept up with deadlines, completed the design phase earlier than expected and was able to avoid delays. Visual planning, co-location and common BIM model contributed to transparency. This resulted in a common understanding of all stakeholder’s objectives and superior collaboration.

In the Museum there were observed several conflicts between engineers and architects regarding design. The lack of a visible project governance and leadership was frequently mentioned as a problem. There was a general perception that more resources should have been deployed in the initial phases to avoid waste as a consequence of rework and redesign. In the Academy on the other hand, the stakeholders have been pleased with the amount of resources.

The Museum uses some of the same elements as in the Academy, such as having a project office. The collaboration in the Academy was perceived as very good, but not as good in the Museum. The lean approach and the collaboration to meet the project objectives appear to have given an improved process. The fact that the Museum was a lot larger and complicated project might be a source of error in the comparison.

The Museum and the Academy were both working on increasing productivity, with the idea that improved productivity would result in increased benefits for the client. The main driver of productivity was identified as early and good planning. Stakeholders in both projects were of the opinion that better planning and design should increase the performance – which in the end should deliver increased value. It seems that the Academy project to a greater extent has succeed at this.

Table 2: Advantages of the different approaches

Project	Advantages
Bergen Academy of Art and Design	<ol style="list-style-type: none"> 1. Dividing the project into levels and sequence of work loads 2. Good planning process, front-loading and high focus on the design phase in terms of available resources and time relative to project size 3. Team spirit, good team work and collaboration 4. The mix of fixed price contract and paid by the hour 5. Clear responsibility distribution and with owner decision-maker 6. Transparency, working in an common BIM model 7. Focus on learning from mistakes and continuous improvement
The National Museum of Art, Architecture and Design	<ol style="list-style-type: none"> 1. Measuring project performance 2. No need for education and comprehension of the project execution model and the used terminology to new project participants

Lean in the Academy was considered to contribute to increased value creation through increased transparency, resulting in a better realization of the participants' primary objectives and better collaboration. Lean design has created value by increasing the probability of completing the project within time, cost and quality through better planning. Use of more resources in detail design reduces waste in the design and was believed to reduce waste under construction. The involvement of the users was as in the traditional approach. It is notable that there was no increased attention on value creation regarding total monetary value for the client – but mainly a waste reduction focus.

CONCLUSIONS AND FUTURE RESEARCH

It is hard to generalize the findings when the study is based on design approaches in only two projects. In this case lean design seems to have reduced waste in the Academy due to the focus on process, collaboration and planning. This is noticed as promising because it might increase in the consciousness around excellent processes and planning. The total value concept (as defined in this paper) was rarely considered. A reason for this might be that lean design was first introduced into the project in detail design. In future projects using lean design, there is a potential to have more focus on total value by implementing lean design from the very beginning and also consider to implement tools like TVD, CBA and SBD.

Further research in this context should focus on delivered value, ex-post assessment of use value and benefits. This may give a broader understanding of advantages and disadvantages of lean design vs. a traditional approach.

REFERENCES

- Atkinson, R., 1999. Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. *International Journal of Project Management*, 17(6), pp. 337-342.
- Badiru, A.B., 2005. *Handbook of industrial and systems engineering*. CRC Press.
- Ballard, G., 1999. Can pull techniques be used in design management? *CIB REPORT*, pp. 149-160.
- Ballard, G., 2008. The lean project delivery system: An update. *Lean Construction Journal*, 2008, pp. 1-19.
- Ballard, G., Harper, N. and Zabelle, T., 2003. Learning to see work flow: An application of lean concepts to precast concrete fabrication. *Engineering, Construction and Architectural Management*, 10(1), pp. 6-14.
- Ballard, G. and Howell, G.A., 2003. An update on last planner1. In: *Proc., 11th Annual Conf. of the Int'l. Group for Lean Construction*. Virginia, U.S.A, 2003
- Ballard, H.G., 2000. The last planner system of production control. The University of Birmingham.
- Bowman, C. and Ambrosini, V., 2007. Firm value creation and levels of strategy. *Management Decision*, 45(3), pp. 360-371.
- Cooke-Davies, T., 2002. The “real” success factors on projects. *International Journal of Project Management*, 20(3), pp. 185-190.

- Emmitt, S. and Ruikar, K., 2013. *Collaborative Design Management*. Hoboken: Taylor and Francis.
- Emmitt, S., Sander, D. and Christoffersen, A.K., 2004. Implementing value through lean design management. In: *Proc., 12th Annual Conf., International Group for Lean Construction*. Helsingør, Denmark, 3-5 Aug 2004.
- Emmitt, S., Sander, D. and Christoffersen, A.K., 2005. The value universe: defining a value based approach to lean construction. In: *Proc. 13th Annual Conf. of the Int'l. Group for Lean Construction*. Sydney, Australia, 19-21 Jul 2005.
- Errasti, A., Beach, R., Oyarbide, A. and Santos, J., 2007. A process for developing partnerships with subcontractors in the construction industry: an empirical study. *International Journal of Project Management*, 25(3), pp. 250-256.
- Fewings, P., 2013. *Construction project management: an integrated approach*. London: Routledge.
- Forbes, L.H. and Ahmed, S.M., 2011. *Modern construction: lean project delivery and integrated practices*. Boca Raton: CRC Press.
- Hines, P., Holweg, M. and Rich, N., 2004. Learning to evolve: a review of contemporary lean thinking. *International Journal of Operations & Production Management*, 24(10), pp. 994-1011.
- Hjelmbrekke, H. and Klakegg, O.J., 2013. The New Common Ground: Understanding Value. 7th Nordic Conference on Construction Economics and Organization. Akademika forlag, 12-14 Jun 2013.
- Hjelmbrekke, H., Lædre, O. and Lohne, J., 2014. The need for a project governance body. *International Journal of Managing Projects in Business*, 7(4), pp. 661-677.
- Kelly, J., Male, S. and Graham, D., 2004. *Value management of construction projects*. Oxford: Blackwell Science.
- Koskela, L., 2000. *An exploration towards a production theory and its application to construction*: VTT Technical Research Centre of Finland.
- LCI., 2015. *What is lean design and construction?* [online]: Lean Construction Institute. Available at: <<http://www.leanconstruction.org/about-us/what-is-lean-construction/>> [Accessed on 27.04.2015].
- Oglesby, C.H., Parker, H.W. and Howell, G.A., 1989. *Productivity improvement in construction*: McGraw-Hill College.
- PMI, 2013. *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*: Project Management Institute, Incorporated.
- Salvatierra-Garrido, J. and Pasquire, C., 2011. Value theory in lean construction. *Journal of Financial Management of Property and Construction*, 16(1), pp. 8-18.
- Salvatierra-Garrido, J., Pasquire, C. and Miron, L., 2012. Exploring value concept through the iglc community: Nineteen years of experience. In: *Proc. 20th Annual Conf. of the Int'l. Group for Lean Construction*. San Diego, USA, 18-20 Jul 2012.
- StatisticsNorway, 2015. *Årlig Nasjonalregnskap* [online]. Available at: <<http://bit.ly/1BFDgvv>> [Accessed on 28.04.2015].
- Thyssen, M.H., Emmitt, S., Bonke, S. and Kirk-Christoffersen, A., 2010. Facilitating Client Value Creation in the Conceptual Design Phase of Construction Projects: A Workshop Approach. *Architectural Engineering and Design Management*, 6(1), pp. 18-30.
- Wysocki, R.K., 2014. *Effective project management: traditional, agile, extreme*. Indianapolis, Ind.: Wiley.

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Yin, R.K., 2013. *Case study research: Design and methods*: Sage publications.