

THE SMALLBUILD+ BUSINESS DEVELOPMENT METHOD: FINDINGS FROM A LONGITUDINAL STUDY IN THE CONSTRUCTION SECTOR

Anniken Karlsen, Norwegian University of Science and Technology NTNU, Ålesund, Norway,
anniken.t.karlsen@ntnu.no

Anne Persson, University of Skövde, Skövde, Sweden, anne.persson@his.se

Kristens Gudfinnsson, University of Skövde, Skövde, Sweden, kristens.gudfinnsson@his.se

ABSTRACT

We have investigated, in the form of a longitudinal study, practices aiming at ensuring survival and growth in an SME construction company. An outcome of the investigation is the SmallBuild+ Business Development Method (SmallBuild+) presented in this paper. Visualizing our findings into a method picture, SmallBuild+ expresses that a manager needs to juggle day-to-day activities, urgent issues and change endeavors all at once. As regards change endeavors we find support for classifying them into two categories (1) continuous incremental, and (2) discontinuous sporadic. We also find that company specific goal modeling is a useful technique to reveal relevant goals for business improvement. In general, SmallBuild+ evolved into being as a result of the construction company's need for a more holistic way to address business improvements, realizing that one cannot survive by merely being great at bricks, mortar and carpentry.

1 INTRODUCTION

For many years, construction companies have had a poor reputation for coping with the adverse effects of change (Smith et al., 2009). Even more serious is the fact that many of these companies, especially small ones, are going bankrupt in an industry that constitutes one of the key drivers for economic growth in Europe (Love and Irani, 2004). The outcome of a company's unforeseen and/or sudden closure is, among others, to add people to the unemployment lines with corresponding negative consequences.

In the work leading up to this paper, we have noticed that for small construction companies one or two problematic decisions can transform into a severe financial crisis. We have also reflected that being good at "bricks, mortar and carpentry", which many leaders of SME small construction companies are, does not mean that one has the adequate skills to manage a company, including managing the change processes needed to adapt to the companies continuously changing conditions.

The fact that many SME construction companies struggle financially as well as their great importance to a country's gross domestic product (Love and Irani, 2004), obviously makes them important subjects for in-depth research and development.

Our research focuses on the capacity of SME construction companies to flexibly adapt to changing conditions within the company or in their business environment. More specifically, the goal is to develop a method to support such companies to continuously manage their change processes.

In this paper we present an overview of the developed method, the SmallBuild+ Business Development Method (SmallBuild+). The method is the result of a longitudinal study focusing on a Norwegian SME construction company.

Karlsen, A., Persson, A. and Gudfinnsson, K., The Smallbuild+ Business Development Method: Findings from a longitudinal study in the construction sector, Paper presented at NOKOBIT 2016, Bergen, 28-20 Nov., NOKOBIT, vol. 24, no 1, Bibsys Open Journal Systems, ISSN 1894-7719.

The remainder of the paper is organized as follows. Section 2 provides theoretical background and motivation for the work. In section 3 our research method is described. In section 4 we present our research findings and the SmallBuild+ Business Development Method. In section 5 we discuss our findings before we draw some conclusions and provide some ideas for future research.

2 THEORETICAL BACKGROUND

In this section we provide the theoretical background to the research reported in this paper.

2.1 Challenges of SME Construction Companies

The building and property industry is a large, fragmented and complex industry. It is also an important policy area affecting all sectors of the society. The wealth creation of society is among others dependent on the construction industry delivering well-functioning buildings and infrastructure to businesses, industry, public entities, private individuals and society (Direktoratet for byggkvalitet, 2014). As an example, in 2014 the construction of 25,404 homes was initiated in Norway alone.

Continuing with Norway as an example, the following list indicates some major challenges facing the industry (Direktoratet for byggkvalitet, 2014) We believe that it is fair to assume that the situation is similar in other countries.

1. Productivity growth seems to be too weak.
2. Building and construction processes are characterized by many quality deviations, errors and omissions.
3. The industry is characterized by fragmented purchasing and low procurement expertise leading to a non-holistic overall cost focus, contributing to short-term investments.
4. The industry has a too low rate of innovation. There is broad consensus in the industry that the industry must get better at taking innovations in use.
5. Parts of the industry are characterized by too many unethical practices.
6. Production processes are characterized by weak interaction. Widespread use of detailed contracts, selecting suppliers based on the lowest price, combined with split purchasing, provides many changes, additions and conflicts that generate distrust and weakened interactions.
7. The construction process is hampered by too many delayed and costly regulations and rules and different interpretations of these.

In addition to this, a sector study by e-Business W@tch (2006) identified the issues of improving ICT skills, increasing the awareness of ICT benefits and potentials, and facilitating interoperability are identified as relevant construction sector policy initiatives. Although the study is 10 years old, our experience shows that this is still the case.

Olawale and Sun (2010) conducted a survey of 250 construction project organizations in the UK, which was followed by face-to-face interviews with experienced practitioners from fifteen of these organizations. They found that the top five factors inhibiting effective project cost and time control, are all project internal elements and that quite often programs are drawn upon gut feeling. This is in contrast to previous studies where many external aspects are cited as the most important factors, such as inflation, material shortage, unforeseen ground conditions, inclement climate, etc. (Olawale and Sun, 2010).

For many years construction companies have had a poor reputation for coping with the adverse effects of change with several projects unable to meet deadlines, cost and quality targets [7]. Even more serious is the matter that many are going bankrupt within an industry that possibly influences an economy's gross domestic product more than any other [8]. This is particularly the case with small and medium sized companies (SME). Due to this, top-level concerns for both business executives and others are how to turnaround the construction companies to profitable and well-run businesses and keep them that way.

Morris and Pinto (2004) investigated data on project overruns from 3600 projects and concluded that project managers also need to look into the organizational business contexts within which projects are managed. This aspect is highlighted by Aarseth (2014) who presents findings from interviews conducted with

hundreds of project managers and project team members suggesting that the task perspective, time schedule and scope, is not sufficient when the context of the project is complex. Just as important are focus on business relationship management, cooperation between the project, the people and companies in the project and the external environment, organizations and context (Aarseth, 2014).

Obviously, construction projects seldom can be handled one by one along a timeline. Instead they are usually parts of project portfolios where a number of projects continually must be analyzed, invested in and developed in concert (Hernández et al, 2011). Within these portfolios each project are likely to be subject to uncertainty and risk as regards cost, time and quality (Smith et. al., 2006). Therefore, managers must know which projects the company is involved in, which stage each project has reached, who is involved in each project, capital-binding in each project, and how each project is related to and dependent on other project schedules. As regards the highest ranked factor inhibiting both cost and time control it is obvious that there is a need for controlling and restricting the influence of this factor.

In summary, SME construction companies face big challenges, not only in Norway, which means that the potential for improving the management aspect of construction companies is great. Such improvement should, however, be done orderly and with a long-term perspective, which implies setting up orderly schemes for continuous improvement.

2.2 Challenges to change

Peter Senge (1999, 1990, 2014) acknowledges that change is subject to a variety of challenges. A vital aspect of his work is systems thinking, where challenges, among others, are seen something that by nature is dynamic and interdependent.

In general, a variety of literature addresses characteristics of organizational contexts that must be in place to enable successful change. To Peter Drucker (2007), for example, management is the dynamic, life-giving element in every business. He sees the quality and performance of the managers as determining the success of business, indeed determining its survival (Drucker, 2007). The vital role of management as regards bringing a company forward is also emphasized in the book *Managing Corporate Lifecycles – How Organizations Grow, Age and Die* by Adizes (2004). An example is the following text sequence: *What if a company suddenly found itself short of cash because management, not knowing how to project cash flows, hadn't predicted the problem? That is an abnormal problem on the typical path. Management should have known* (Adizes, 2004) (Refer to location 416 of 3486 in Kindle Edition). Adizes (2004) states more specifically, that to be a successful leader one must learn to discriminate normal from abnormal problems in organizations, whereby his theory of organizational lifecycles can be used as a tool to accomplish this.

In Collins and Kolstad (2002) what helps a company to move from just being good to becoming great is discussed. Collins found the transition beginning with (1) Having a Level 5 leader; e.g. a leader with the characteristics of being incredible ambitious for the institution, manifesting a blend of personal humility and a professional, almost maniacal. The other characteristics of good-to-great companies were found to be: (2) Having the right people onboard, (3) Having a culture where people are listened to, to get all the brutal facts, (4) Having a crystal-clear concept of the business guiding all your efforts based on the three circles (a) What you can be best at in the world, (b) What drives your economic engine, (c) What you are deeply passionate about (Collins termed this *The hedgehog concept*), (5) Having a culture of discipline based on a) disciplined people, (b) disciplined thought and (c) disciplined action, (6) Technology accelerators, remembering that having the right technology can accelerate the movement from good to great but it does not create or ensure it, (7) Transitioning not at a specific point in time but more as an organic development process; once started and then continuing having the effect of building up momentum like an immense flywheel starting slowly but being hard to stop (Collins termed this *The flywheel effect*) and (8) Simultaneously preserving core values and continually change goals, strategies, operating policies and culture as warranted by circumstances (Collins and Kolstad, 2002, Finnie and Abraham, 2002).

Among newer sources, more specifically addressing success factors of change in the construction sector, Lines et al (2015) can be referred as an example. They have empirically measured the impact of individual change management factors on minimizing resistance from organizational members during implementation of new processes for procuring, contracting, and managing, often cited as a major reason for organ-

izational change failure (Lines et al., 2015). Among factors contributing to minimizing resistance to change, Lines et al (2015) have found aspects of project scope, size and duration, organizational expectations of change implementation speed, the establishment of formal change agents, and the level of change agent involvement with implementation activities.

Building on the literature on organizational capacity for change, the study of Heckmann et al (2015) addresses the questions of why some organizations are more capable of change than others and if organizations that are better at changing also are more successful with their change projects. Based on an analysis of data from a questionnaire given to top management in 134 firms in Germany, they among others find that an organization's capacity for change associates positively with the performance of the company's change projects. Heckmann et al (2015) highlight many important aspects regarding change literature, for example the lack of consensus regarding a commonly accepted framework for the management and the implementation of organizational change and existing practice and theory resting on unchallenged assumptions about the nature of organizational change.

According to Rosing et al (2015) Business Process Reengineering (BPR) is all about creating change by identifying and focusing on business processes and then making them more efficient by simplifying them by the involvement of the whole organization and use of modern technology. Guha (1993) showed that the plethora of methodological approaches to BPR followed the step principle divided into overriding phases: (1) Identify company vision and goals to see where to concentrate the efforts, (2) Identify processes to redesign, (3) Understand existing processes to be able to create an optimal redesign, (4) Insight into the IT level in the organization can provide ideas on new process approaches, (5) Design and test the new process (Rosing et al., 2015).

One famous BPR method is the PDSA Cycle, described as a systematic series of steps for gaining valuable learning and knowledge for continual improvement of a product or process (Deming, 1982, Deming Institute, 2015, Rosing et al., 2015). For short, the cycle starts with Plan, where you establish a goal or purpose, formulate a theory, define metrics for success and putting a plan into action. Next is the Do step where the components of the plan or processes are implemented. Then follows the Study step. This is where outcomes are monitored to test the validity of the plan, followed by the last cycle closing step, Act, integrating the learning generated by the entire process. Decisions are then made on possible areas of improvement (Deming Institute, 2015, Rosing et al., 2015), or as formulated on the internet pages of The Deming Institute (2015): *These learning aspects can be used to adjust the goal, change methods or even reformulate a theory altogether*. The four steps of the cycle are repeated over and over in a never-ending cycle of continual improvement (Deming Institute, 2015).

That goals are important for navigation and prioritization has been known to business for years. In 1954 Peter Drucker published the book *The Practice of Management*, being recognized as the first book to write about *objectives*, to define *key result areas*, to outline how to set objectives, and to describe how to use them to direct and steer a business and to measure its performance while looking at management as a whole (Drucker, 2007). The time dimension is essential in management because management is concerned with decisions for action, and action is always aimed at results in the future (Drucker, 2007). This clearly points to the need to take a continuous improvement perspective when working towards goal achievements.

A goal model is a structure of interrelated goals that describe the strategic direction of an enterprise towards a desired state of the enterprise. Goals models provide an analytical instrument for a number of purposes, e.g. decision-making and planning in order to achieve consistence, coherence and increased understanding among (Overbeek et al, 2014). Goal models are often considered to be a part of the enterprise modeling process, where a number of integrated models capturing and representing different aspects (focal areas) of an enterprise, for example business processes, business rules, concepts, information, data, vision, goals and actors (Sandkuhl et al, 2014). The systematic use of process models for various purposes is a quite common practice in all types of organizations. We have observed, however, that the systematic use of goal models in practice is less common even though goals are needed as a driver in all kinds of organizational development work.

A number of goal modeling techniques are described in the literature. Some examples can be found in [Sandkuhl et al, 2014; Dardenne et al, 1993; Yu, 1997; Rolland, 2007]. They are reported to have a num-

ber of weaknesses, e.g. being complex to understand, requiring a huge amount of time to implement and as such being unable to support business analysts in a rapidly changing business environment (Ullah and Lai, 2011). Nevertheless, since goals are essential for business development, there is a need to find fairly simple and practical approaches that support businesses in working with goals.

2.3 Challenges to Change in SME Construction Companies

SME enterprises are a key driver for economic growth in Europe (European Commission, 2013). In order to stay competitive and profitable, SMEs, like larger organizations, must meet the requirements and demands of a rapidly changing market. One strategy to achieve this is to implement different continuous improvement initiatives, such as, e.g., Lean. However, despite the well-known theories, only a few SMEs succeed in their continuous improvement initiatives (Bhasin, 2012).

Ogunbiyi, Oladapo and Goulding (2013) have done an empirical study of the impact of lean construction techniques on sustainable construction in the UK. Results from their study indicate that there are many benefits associated with implementation of lean construction and sustainable construction such as improved corporate image and sustainable competitive advantage, improved productivity and process flow, improvement in environmental quality and increased compliance with customer's expectations. The study also identifies several areas of linkage between lean and sustainability such as waste reduction, value maximization, environmental management and health and safety improvement among others.

SMEs are generally defined by their number of employees, but there are other variables than size that influence leadership, strategic planning and culture in companies (Ghobadian and Gallea, 1996). A majority of SMEs are privately held and family-owned. Research has shown that this affects how the company is managed and operated. Family firms are run by reasons other than financial and rational and reflect a different view of ownership, based on the owner's values and beliefs (Brundin et al, 2008). This implies that non-economic (family) goals may take precedence over economic goals in family firms (Kraus et al, 2011). These circumstances have implications both on the design of business support services and SMEs' willingness to participate in continuous change as well as their objectives to do so (Bill et al, 2009).

There are several factors that have shown to be critical for a successful implementation of different change initiatives. The most common are management and leadership (Achanga et al, 2006), but also performance evaluation (Alaskari et al, 2013) and supporting information systems have shown to play an important role particularly now with the growing use of business intelligence (Davenport and Short, 1990).

Performance Measurement Systems (PMS) support performance management by communicating and transforming different performance measurements between different organizational levels and employees. Ukko et al. (2006) conclude that association between goals on the strategic level and on the operational level is important in order to achieve the strategic goals, and that performance measurement should be enabled on the operational level. They also state that since many companies today apply performance measurement on the operational level, one of the major challenges for managers is to achieve understandable and accessible communication about the goal of the organization. There is also a need to better understand challenges in transforming performance measurement on the operational level to usable information on the strategic level. It is critical that managers on different levels have relevant decision support of good quality.

3 RESEARCH APPROACH

A few years ago, a Norwegian SME construction company facing the danger of bankruptcy became the subject in a first study focusing on enterprise modeling practice used as a technique within IT-enabled process change. By following the turnaround process, change was seen taking place in three stages (Karlsen and Opdahl, 2012): (1) Change maturation, (2) Change decision and (3) Process change, where the last stage constituted four steps of modeling supported process change: (a) Increased business understanding by providing a generic model of a company, (b) Identification of the TO-BE state by process modeling, (c) Process categorization by sorting models into risk zones and (d) Implementation of prioritized change consistent with model artifacts. Readiness was identified as a precondition both for change and for doing modeling at all (Karlsen and Opdahl, 2012). Later, from 2012 onwards, necessary turna-

rounds to avoid bankruptcy turned into a question of how to ensure survival of the company in the long run.

In the period 2012-2015 the company was the subject of a second study focusing on developing methodological support for SME construction companies in their efforts to continuously change and adapt to changing conditions. The ultimate aim of the research was to contribute to making SME construction companies less vulnerable in the long run.

Together, these two studies form a longitudinal study covering the period 2002-2015 of one SME construction company resulting in the development of SmallBuild+. An overview of the method is presented in this paper. An overview of the process is provided in Figure 1. In this paper we focus on the results of Study Part 2 and the development of the SmallBuild+ method. Study Part I is reported in Karlsen and Opdahl (2012).



Figure 1. Overview of longitudinal study.

Table 1 provides sources of evidence from these longitudinal, qualitative studies, where the company has gone from being in a state where focus was on avoiding bankruptcy by choosing selected processes for improvement (Table 1, Study Part One), to becoming what we see, with references to Adizes' (2004) lifecycle perspective, as a more adult organization focusing on achieving more systematic approaches to increase the ability to balance (1) Day-to-day activities, (2) Handling Urgent-Issues and (3) Planning and implementing change (Table 1, Study Part Two).

As seen from Table 1, research in the first part of the study was done by collecting data via in-person interviews and written material. As regards Study Part Two (Table 1), the main evidence was collected by in workshops where consultants and employees of the construction company collaborated in improvement practices. By observation, listening and note taking, this gave the authors of this paper an increased insight into the practitioners' way of working towards business improvement. At occasions we as researchers were asked to contribute by providing information on modeling concepts and key process indicators, but at large our work has focused on making sense of the practitioners' dos and don'ts to ensure long-term survival. The researchers were also actively involved as modeling facilitators when process models were developed, both regarding the AS-IS state of targeted processes and the TO-BE state of the same processes.

The SmallBuild+ method was developed in an iterative process based on the empirical data, theories of change, theories about the conditions of SME construction companies and theories of Enterprise Modeling, particularly on goal modeling and process modeling. This part of the research process can best be characterized as action research. In action research, theory generation is combined with researchers intervening to solve organizational problems (Baburoglu and Ravn 1992; Baskerville and Wood-Harper 1998). In this case the researchers and managers of the company worked together to develop the different components of the method. Components were continuously tried out as development of the method progressed and the researchers collected feedback on the usefulness of the components. Based on the feedback, revisions were made.

Sources of Evidence Study Part One Covering the period 2002-2012 (Karlsen & Opdahl, 2012)	Sources of Evidence Study Part Two Covering the period 2012-2015 (Project funded by EUREKA Eurostar)
In-person interviews Board protocols Mail correspondence on modeling meetings Summary of the case history Financial numbers and bank letters Model artifacts Literature references motivating the approach followed Procedure descriptions PowerPoint from meetings Description of the stages followed in the building process	Participation in modeling sessions Participation in company workshops On-site visits Observations In-person interviews Literature studies Following and observing personnel on information meetings and courses Business information like financial numbers, tools and technique descriptions

Table 1. Longitudinal study - sources of evidence

4 FINDINGS

In the following we go through the various building blocks of SmallBuild+. In section 4.1 we discuss the need of balancing ones focuses on *Day-to-day activities*, *Urgent Issues* and *Change* to ensure company growth and survival. In section 4.2 we look into the *Check Status* activity of change. In section 4.3 the need to *Prepare for Change* is examined. These are all activities in the method. In Section 4.4 the actual *Change* is discussed. Finally, in section 4.5 the building blocks of change is assembled into the picture of the SmallBuild+ Business Development Method, a method with a goal focus and which distinguishes between episodic and continuous change.

4.1 Balancing the focus on Day-to-day activities, Urgent Issues and Change

A valuable insight that evolved among project participants as part of working to avoid bankruptcy in the demonstrator, was that survival in the long-run demands hitting a good balance of necessary change activities, for example to avoid waste motivated by lean thinking, at the same time having the capacity to be great at building and selling houses with a profit. This aspect at large relates to the following management experiences: In the period around 2011, in the middle of the storm, e.g. when the company struggled to avoid ruin, it was difficult to raise ones head and keep a balanced focus on the many areas constituting the enterprise. An example of a crisis that occurred is illustrated by the following quote from an interview with the company's chairman of the board:

“As the chairman of the board I, one day received the following text message from the company's CEO: “Our project manager is hospitalized with stroke. I am on my way to the hospital now, but I do not know if I will get in touch with him. Talk later”.

Handling urgent issues, putting out fires, obviously had to be a main prioritization, besides picking processes for improvement that seemed to be in the “red zone”. Later on, when the storm subsided, coinciding with Study Part Two (Table 1), it was time to think holistically around business governance and the making of long-term plans. There was a joint agreement on the need to become more systematic when handling tasks based on more holistic views of the situations at hand.

According to the literature, a variety of factors inhibit effective project cost and time control, for example risk and uncertainty associated with construction projects and inaccurate evaluation of projects' time/duration (Olawale and Sun, 2010). Interestingly, the top five factors inhibiting effective project cost and time control in the construction sector are all project internal elements, and quite often programs are drawn upon gut feeling (Olawale and Sun, 2010).

In the construction company it had been realized for quite some time that insight into project portfolios was demanding and not optimal even though managing to achieve excellent project results could be seen management task number one. It was therefore necessary to do something actively about the situation. As a response to this problem, an external IT-company participating in the project consortium of Study Part

Two (Table 1) started the planning of an early warning project portfolio system to give real-time information on finances and liquidity in relation to building and selling houses. This triggered a long period focusing on mapping the cash-flow and other flows of the construction processes both as regards building houses on other parties' land and building houses on the company's own land. Since it takes time to develop such an innovative system, in the meantime a simpler paper based portfolio management system was made and implemented by a newly hired manager in the construction company. This system is, as the manager sees it, far from optimal, but it is a necessity to enable more adequate day-to-day management and planning of construction projects.

In a workshop meeting a representative from a business consultancy company, also involved in the construction company turnaround, highlighted the need to make prioritizations not only between construction projects but to strike a balance between activities that includes day-to-day activities, change and urgent issues. This led to a discussion of what a company, in general, must be good at to survive in the long run, e.g. what are the business goals? A business goal can more specifically be defined as a desired state of affairs that needs to be attained, expressing what to achieve, or to avoid, and when (Stirna and Persson, 2007, Stirna and Persson, 2009).

The outcome of the discussion was a long list of areas, for example the need to be good at management, building and selling houses, getting capital and avoiding waste, with a reference to the work of Miller and Berger (2001) using the views of executive, business, resources and processes. Based on this a generic goal model with overarching goals and corresponding sub-goals evolved on paper after one of the researchers gave a short introduction to the theme of goal modeling as a way of approaching the theme. The goal model is described in Persson, Karlsen and Gudfinnsson (2015).

4.2 Check Status

Assessing the various goals in the generic goal model with critical eyes, focusing on the construction company, it became obvious that the company was not "bad" within all areas in the model. In fact, several areas were by the construction company's representatives evaluated as being in more or less good health. In addition, having too many priorities means having none, one of the workshop participants emphasized, a saying also found in Adizes (2004). Another participant emphasized limited resources as an influencer on ones capacity to act. The solution became making a company specific goal model constituting a subset of the generic goal model. But, having extracted a goal subset from a "blueprint" is not enough, the manager reflected. Due to previous experiences he argued that priorities still had to be made since change is costly and often takes a lot of time even if one should focus on achieving only one or two goals in the near future. Based on positive experiences from sorting processes into red, green and yellow zones (Karlsen and Opdahl, 2012) to help making priorities, a similar system was seen necessary to distinguish company specific goal achievements.

After the workshop the manager and one of the researchers transferred all the company specific goals to a paper-based scheme. In this scheme, specific actions to achieve each prioritized goal were listed with corresponding activity time schedules and responsibilities. After some time using goals as navigation stars for action, the manager reported that he obviously has to check the status of goal achievement on a continuous basis to ensure that resources and efforts always are used where most needed. He also felt that as an extra precaution he should look into the generic goal blueprint on a more ad-hoc basis to see if goals not part of the company specific goals model were in need of actions in relation to the company's vision and present tactics. These two experiences were noted, and later on marked by the numbers 1 and 2 to the right in SmallBuild+. These needs reported by the manager, later on motivated the making of a computer-based goal application to improve the ability to keeping track of the change initiatives and goal achievement statuses by treating each and everyone as specific projects along a time-line. This system will be the subject of another publication.

4.3 Prepare for Change

Both the construction company's manager and an external consultant at several occasions emphasized that creating an understanding for needed change is a condition for a successful outcome. More specifically they argued that understanding functions as a foundation for necessary change motivation, wherein participation is a success-factor. This motivated the phase *Prepare for change* by creating understanding

via a participative approach as a vital activity after having checked goal achievement status and made prioritizations among goals.

In the early times of the turnaround change process of the construction company, *The House* model was presented to the employees to *Prepare for change*, by increasing the ability to see how various nuts and bolts of the company interact and make up a company. *The House*, presented in Figure 2, is an adapted version of a model found in Miller and Berger (2001). We have noted that the employees in the construction company reported positive experiences from using it as a platform for communicating to achieve a shared understanding of the complexity of work. “Besides increasing the competence of the employees on how processes interact in the organization, the facilitator also links the use of the general model as a means to create readiness; to understand why things had to be done and what had to be done” (Karlsen and Opdahl, 2012, p. 207).

When presenting *The House* to employees, management has experienced that one should delve deeper into the model by questioning whether course and orientation is set, by having a clear vision and well-formulated business ideas and goals.



Figure 2. Consultancy company's enterprise model for house construction (An adapted version of a model found in Miller and Berger, 2001)

The use of *The House* to increase insight and motivate for action fits well with findings by Persson and Stirna (2002) emphasizing two main reasons for using Enterprise Modeling: (1) Developing the business, entailing developing business vision, strategies, redesigning how the business operates, developing the supporting information systems, etc., (2) Ensuring the quality of the business, focusing on (a) sharing the knowledge of the business, its vision and operation, and (b) ensuring acceptance of business decisions by committing stakeholders to the decisions made.

4.4 Change

While reflecting on and working towards various goals it became evident that some goals were achieved by working towards them in a continuous, incremental way while others were results of sporadic, discontinuous events. An example of the first type of change was, according to the manager, working towards a better working climate within the organization. To capture good amendments from employees a suggestion board (Figure 3) was created and reported to be a valuable tool by the manager by which he followed a process of checking the status of each goal, making prioritizations for change, preparing for change, and making improvements in a continuous circle; not only for one goal at a time, but most often for several goals at once.

Based on experience, other events associated with reaching a goal, by nature were seen as sporadic and discontinuous from the construction company's perspective at a given moment in time. A concrete example was the introduction of the new IT system to handle project portfolios. In such instances the process followed was best described by the steps: Check status, Prioritize goals for change, Prepare for Change, Analyze AS-IS or alternatively Design future state, and finally Develop and Change.

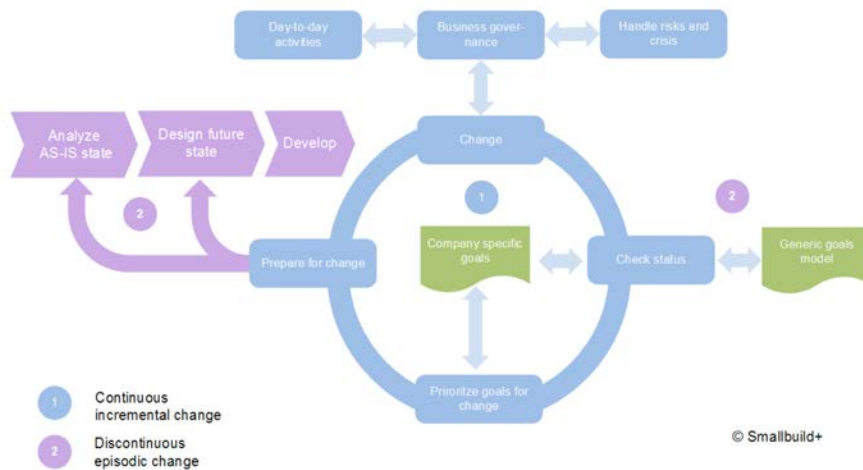


Figure 3. Suggestion board.

4.5 Overview of SmallBuild+ Business Development Method

Based on the empirical data, it was concluded that two types of change could be identified: 1) continuous incremental change and 2) Discontinuous periodic change. The first type was seen as part of continuous improvement involving change decisions that improves the company in small increments. The second type was seen as larger improvement efforts that are often organized as specific projects for a dedicated period of time and with a specified budget.

After having identified the two types of change and their corresponding methodological steps, an important question evolved on how they fit into a joint method picture (Figure 4), where change initiatives are to be prioritized subject to the company specific goal model.



Symbols used:

= Activity, = Process, = Document

Figure 4. Overview of SmallBuild+

It became evident that from a broader perspective all change initiatives are and must be part of the company's long-term continuous improvement effort cycle, constituting the accumulation of various continuous, incremental and discontinuous, sporadic improvement efforts aiming at achieving the company's prioritized to-dos for long-term survival. Based on these insights, the final model of the SmallBuild+ Business Development Method was assembled, where each change loop in fact constitutes several change

efforts all aiming at specific goal achievements. Additionally, while difficult to visualize in the model picture, evidently each and every change effort is at a specific change step at a specific moment in time, which obviously might be different from the others. In the figure, a difference is made between activity and process. Processes such as Analyze AS-IS state, Design future state and Develop are considered to be large enough to be projects in their own right while activities are considered to be carried out continuously as the company develops.

5 DISCUSSION AND CONCLUSION

Having followed business life in the construction company for many years now, we have seen change practice transform from having a focus on selected processes to a state acknowledging that survival in the long run demands striking a good balance of focusing on various activities, for example avoiding waste, handling risks and crises, and at the same time having the capacity to be great at building and selling houses with a profit. The change process description found in Karlsen and Opdahl (2012) has correspondingly broadened into the SmallBuild+ Business Development Method (Figure 4). This broadening is important compared to a variety of BPR methods described in the literature, typically having a restricted focus on business processes (Rosing et al, 2015) and compared to the previous practice in the construction company as described in Karlsen and Opdahl (2012). This aspect is also important with reference to the work of Adizes (2004), since it indicates that change practice is related to and must be understood in relation to where a company is within its lifecycle.

Besides focusing on achieving a balance between *Handle risks and crises*, *Day-to-day activities* and *Change*, an important aspect of SmallBuild+, compared to previous practice in the construction company, is its focus on goals as navigations stars for action. In this respect, one question that turned out to be vital was how to uncover which goals to aim for to ensure survival. This question resulted in the development of a generic goal model with subsequent development of a company specific goal model (Persson et al, 2015).

Investigating SmallBuild+ it is evident that making and choosing among goals to focus on constitute a kernel or key method aspect. Deep insight into goals by the help of goal modeling was perceived valuable to make qualified decisions and keeping focus, according to the construction company's management. This aspect does not undermine the importance and value of creating process models. As we saw in the first part of the study, several benefits were associated with modeling processes. In the second part of the study, process modeling still proved useful in the understanding of the AS-IS and planning for the TO-BE. These experiences are not unexpected. The basic idea of enterprise modeling is to offer different views of an enterprise that complement each other, enabling a more holistic understand of the situation at hand. This implies that different types of models and corresponding modeling approaches have different strengths, for example that process modeling is great to understand flows and goal modeling to reveal and choose among areas for action.

In Lines et al (2015), it is emphasized that unrealistic expectations underestimate the amount of time and effort required to accomplishing change. In the construction company, change projects have periodically come to a halt because of other pressing issues. A possible approach to address this is making change plans that are flexible. A possibility seen in the wake of lessons-learned in the construction company is to formulate concrete specifics for each goal. These specifics can then be put into a schedule subject for follow-ups and revisions on a continuous basis by the help of a computerized tool as mentioned in 4.2 *Check Status*. At present this is work in progress. We have already started the development of a system prototype.

As regards how change happens in the construction company, our findings indicate that we can distinguish between: (1) Continuous, incremental or (2) Discontinuous, episodic change. This fits well with Weick and Quinn (1999) who quite early recognized this as different types of change.

We agree with Smith et al (2009) emphasizing that the time dimension is essential in management because management is concerned with decisions for action, and action is always aimed at results in the future. This clearly points to the need to take a long-term continuous improvement perspective when working towards goal achievements. We supplement this saying by stating that one should beware of ones priorities and by able to link them to ones overall strategy and vision manifested via company specific

goals. The key here is to formulate and set into action concrete specifics, including dates and deadlines, to reach the goals that have been prioritized.

Understanding one's company AS-IS state and TO-BE state has also proved essential in our study. As regards this, it is interesting to note that the company manager in the aftermath of the modeling sessions has found it useful to print out the models of Selling houses on other parties' land to put them on the wall in the lunchroom. On a company visit a short time ago he explained that they now both portray how they work and how they are planning to work in times ahead.

By hanging the models on the wall the manager has made process thinking a visible part of daily work. They hang on the wall for him and others to reflect on the complexity of work. Sometimes ideas strike on improvements by standing by the wall and thinking. Traces of these thinking processes are visible on the model prints in the form of pen writings and Post-It notes (Figure 5), emphasizing that change has not come to an end.



Figure 5. Process models hang on the wall in the lunchroom.

However, some employees are not as easily convinced while others are, as demonstrated by the following quote by a manager:

“Consensus and involvement in the planning of the new workflow was clearly in no way sufficient despite our efforts. Even the visual presentation of the new sales process demonstrated in a flow chart on the wall didn't have the desired effect on some of our sellers. However, for the new sales person we just hired, the process charts were a gold mine and a great help for that person to quickly understand the processes and roles involved in the sales process. We estimate that we have cut down the training period of the new employee by several months thanks to the explicit visualization of the sales process. I emphasize again that we (the managers), too easily think that everyone follows the procedures we lay down, and that they are loyally followed by the employees. I think it is useful when working with change processes to think the opposite. That is, assume no one follows the new processes until proven otherwise. Meanwhile the manager's most important task is to guard the new workflow and to make sure the new processes are followed”.

With regard to future work, focus will be on evaluating the usefulness and effects of the method. Even though there is some promising experiences based testing of the individual components of the Small-Build+ Business Development Method, the method as a whole has not yet been the subject of proper evaluation. Since the construction company has now adopted the method the researchers will keep on following the company's change endeavors and collecting the experiences from using the method.

ACKNOWLEDGEMENTS

Special thanks goes to Per Endre Bolseth , Terje Græsdal, and Christer Wåhlander. Without you providing us with valuable insights into your doings and thinking we could not have created SmallBuild+, a product of our joint thinking. We are happy that you confirm that the method portrays practice in a sensible manner. Not just relating to the construction company portrayed in this paper, but also in relation to your more than 90 years of accumulated experience of contributing towards successful turnarounds and business improvements in real life endeavors.

REFERENCES

- Aarseth, Wenche (2014) *Project Management - A New Mindset for Success. Collaborative Business and Global Mindset*. Fagbokforlaget, Trondheim, Norway.
- Achanga, P., Shehab, E., Roy, R. and Nelder, G. (2006) "Critical success factors for lean implementation within SMEs". *Journal of Manufacturing Technology Management*, 17, 460-471.
- Adizes, I. (2004) *Managing Corporate Lifecycles – How Organizations Grow, Age and Die*. Kindle Edition, California USA: Adizes Institute Publishing Santa Barbara.
- Alaskari, O., Ahmad, M., Dhafir, N. and Pinedo-Cuenca, R. (2013) Critical Successful Factors (CSFs) for Successful implementation of Lean tools and ERP systems. *World Congress on Engineering WCE 2012*. London, U.K.: International Association of Engineers.
- Baburoglu, O. N., and Ravn, I. 1992. "Normative Research," *Organization Studies* (13:1), pp. 19-34.
- Baskerville, R. L., and Wood-Harper, A. T. 1998. "Diversity in Information Systems Action Research Methods". *European Journal of Information Systems* (7:2), pp. 90-107.
- Bhasin, S. (2012) "An appropriate change strategy for lean success". *Management Decision*, 50, pp 439-458.
- Bill, F., Johannisson, B., and Olaison, L. (2009) "The Incubus Paradox: Attempts at Foundational Rethinking of the SME Support Genre". *European Planning Studies*, 17(8), 1135-1152. doi: 10.1080/09654310902980997
- Brundin, E., Florin Samuelsson, E. and Melin, L. (2008). The Family Ownership Logic: Core Characteristics of Family-Controlled Businesses. CeFEO Working Paper 2008:1 Jönköping: Center for Family Enterprise and Ownership, Jönköping International Business School.
- Collins, L. and Kolstad, H. (2002) *Good to great : hvorfor noen virksomheter blir fremragende- og andre ikke*. Oslo, Universitetsforlag.
- Dardenne, A., van Lamsweerde A. and Fickas., S. (1993) "Goal-Directed Requirements Acquisition". *Science of Computer Programming*, 20(1-2).
- Davenport, T., Short, J. (1990) "The new industrial engineering: Information technology and business process redesign". *Sloan Management Review*, Vol. 31, No. 4, pp. 11-27.
- Deming, W. E. (1982) *Out of the crisis*. Massachusetts Institute of Technology, Boston.
- Deming Institute, W. E. (2015) "The PDSA Cycle" [Online]. <https://www.deming.org/theman/theories/pdsacycle> .
- Direktoratet for byggkvalitet, Bygg21 strategirapport (2014) http://www.dibk.no/globalassets/bygg21/bygg21strategien/bygg21_strategirapport.pdf [Online]
- Drucker. P. F. (2007) *The practice of management*. Elsevier Butterworth-Heinemann, Amsterdam.
- e-Business W@tch (2006) http://ec.europa.eu/enterprise/archives/e-business-watch/studies/sectors/construction/documents/Construction_2006.pdf [Online]
- European Commission. (2013) Small and medium-sized enterprises (SMEs) [Online].

- Finnie, W. C. and Abraham. S. C. (2002) "Getting from good to great: A conversion with Jim Collins". *Strategy & Leadership*, 30, pp. 10-14.
- Ghobadian, A. and Gallear, D. N. (1996) "Total quality management in SMEs". *Omega*, 24, 83-106.
- Guha, S., Kettinger, W. J., & Teng, J. T. (1993) "Business process reengineering: building a comprehensive methodology". *Information systems management*, 10(3), 13-22.
- Heckman, N., Steger, T. and Dowling, M. (2015) "Organizational capacity for change, change experience, and change project performance". *Journal of Business Research*.
- Hernández, C., Pajares, J., López-Paredes, A. (2011) "A Portfolio Inspired Metric for Project Selection in Construction Management". *Organization, technology and management in construction - An international Journal*, 3(1).
- Karlsen, A. and Opdahl, A. L. (2012) "Enterprise Modeling Practice in a Turnaround Project". Proceedings of *NOKOBIT 2012*.
- Kraus, S., Harms, R., and Fing, M. (2011). "Family firm research: sketching a research field". *Int. J. Entrepreneurship and Innovation Management*, 13(1), 32-47.
- Lines, B. C., Sullivan, K. T., Smithwick, J.B. and Mischung, J. (2015) "Overcoming resistance to change in engineering and construction: Change management factors for owner organizations". *International Journal of Project Management*, 33, pp. 1170-1179.
- Love, P. E. and Irani, Z. (2004) "An exploratory study of information technology evaluation and benefits management practices of SMEs in the construction industry". *Information & Management*, 42, pp. 227-242.
- Miller, T. E. and Berger, D. W. (2001) *Totally integrated enterprises: A framework and methodology for business and technology improvement*, CRC Press.
- Morris, P. and Pinto, J. (2004) *The Wiley Guide to managing projects*. John Wiley, Hoboken, New Jersey.
- Ogunbiyi, O., Oladapo, A., and Goulding J. (2013) "An empirical study of the impact of lean construction techniques on sustainable construction in the UK". *Construction Innovation*, Vol. 14, issue 1, pp. 88 – 107. Permanent link to the document: <http://dx.doi.org/10.1108/CI-08-2012-0045>.
- Olawale, Y. A. and Sun, M. (2010) "Cost and time control of construction projects: inhibiting factors and mitigating measures in practice". *Construction Management and Economics*, 28, pp. 509-526.
- Overbeek, S., Frank, U., Köhling, C. (2014) "A language for multi-perspective goal modeling: Challenges, requirements and solutions". *Computer Standards & Interfaces*, 38, pp. 1-16.
- Persson, A., Karlsen, A. and Gudfinnsson, K. 2015. A Generic Goal Model to Support Continuous Improvement in SME Construction Companies. In Ralyté, J. and Espagna, S. (eds), Proceedings of the 8th IFIP WG 8.1 Working conference on the Practice of Enterprise Modelling (PoEM 2015), pp. 27-41, Springer Verlag, LNBIP 235, ISBN 978-3-319-25897-3 (e-book).
- Persson, A. and Stirna, J. (2002) An explorative study into the influence of business goals on the practical use of Enterprise Modelling methods and tools. In G. Harindranath et. al. (eds.), *New Perspectives on Information Systems Development: Theory, Methods and Practice*, Kluwer Academic, New York, USA, pp. 215-288.
- Rolland, C. (2007) Capturing System Intentionality with Maps, In *Conceptual modelling in Information Systems engineering*, pp 141-158, Springer, Berlin Heidelberg.
- Rosing, M. V., Scheer, A. W. and Scheel, H. V. (2015) *The complete business process handbook*, Volume 1, Morgan Kaufmann.
- Sandkuhl, K. Stirna, J., Persson, A., Wißotzki, M. (2014) *Enterprise Modeling: Tackling Business Challenges with the 4EM Method* (The Enterprise Engineering Series) Kindle Edition, Springer.
- Senge, P., Kleiner, A., Roberts, C., Ross, R., Roth, G., Smith, B. and Guman, E.C. (1999) *The dance of change: The challenges to sustaining momentum in learning organizations*. Wiley Online Library.

- Senge, P. M. (1990) *The fifth discipline: the art and practice of the learning organization*. Doubleday, New York.
- Senge, P. M. (2014) *The fifth discipline fieldbook: Strategies and tools for building a learning organization*, Crown Business.
- Smith, N. J., Merna, T. and Jobling, P. (2009) *Managing risk: in construction projects*. John Wiley & Sons.
- Stirna, J. and Persson, A. (2007) Ten years plus with EKD: Reflections from using an enterprise modeling method in practice. Proceedings of the *11th International Workshop on Exploring Modeling Methods in Systems Analysis and Design (EMMSAD 2007)*, pp. 99-108.
- Stirna, J. and Persson, A. (2009). EKD: An enterprise modeling approach to support creativity and quality in information systems and business development. In Halpin, T., Proper, E. and Krogstie, J. (eds), *Innovations in Information Systems Modeling: Methods and Best Practices*, IGI Global, ISBN 978-1-60566-278-7, pp. 68-88.
- Ukko, J., Karhu, J. and Rantanen, H. (2006) How to communicate target information in SMEs? In: Malmberg, P. (ed.) *European Productivity Conference 2006*. Finland
- Ullah, A. and Lai, R. (2011) "Modeling business goal for business/IT alignment using requirements engineering". *Journal of Computer Information Systems*, Springer.
- Weick, K. E. and Quinn, R.E. (1999) "Organizational change and development". *Annual review of psychology*, 50(1), pp 361-386.
- Yu, Eric S.K. (1997) Towards Modelling and Reasoning Support for Early-Phase Requirement Engineering, *IEEE Int. Symp. Requirements Engineering 1997*, pp. 226 - 235.