



Determinants of lean success and failure in the Danish public sector

Determinants of
lean success

A negotiated order perspective

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Abstract

Purpose – The purpose of this paper is to examine the determinants of lean implementation in Danish public sector organisations. It is proposed to structure the paper around a theoretical model based on a negotiated order perspective.

Design/methodology/approach – The paper is based on interviews with 29 managers and employees from Danish public sector organisations who have been involved in the planning and implementation of lean projects over the past few years.

Findings – The paper identifies a number of factors within the structural context and the negotiation context which are deemed important for the fate of lean projects in the public sector.

Originality/value – The qualitative study brings new insights into the debate on the barriers and success factors in the lean transformation process in the public sector.

Keywords Lean implementation, Public sector organizations, Critical success factors, Barriers, Negotiated order

Paper type Research paper

Introduction

Lean is essentially about increasing customer value and reducing waste by optimizing processes within and between organisations, departments, and teams. A few contemporary examples of how the concept of lean is interpreted are:

Lean is an improvement approach that consists in eliminating waste (steps that do not add value to the customer/patient, e.g. interruptions, delays, mistakes. . .) to improve the flow of patients, information or goods (Brandao de Souza, 2009, p. 122).

The core idea of lean involves determining the value of any given process by distinguishing value-added steps from non-value-added steps, and eliminating waste (or muda in Japanese) so that ultimately every step adds value to the process (IHI, 2005, p. 2).

The aim of lean manufacturing is the elimination of waste in every area of production and includes customer relations, product design, supplier networks, and factory management (Bhuiyan and Baghel, 2005, p. 763).

Lean is about creating more value for customers by eliminating activities that are considered wasteful (Baines *et al.*, 2006, p. 1544).



It has been said that the two basic concepts in lean thinking are to eliminate waste and create value (Duque and Cadavid, 2007, s. 72).

Production is lean if it is accomplished with minimal waste due to unneeded operations, inefficient operations, or excessive buffering in operations (Narasimhan *et al.*, 2006, p. 443).

Lean production is an integrated socio-technical system whose main objective is to eliminate waste by concurrently reducing or minimizing supplier, customer, and internal variability (Shah and Ward, 2007, p. 791).

With regard to the former, a value creating activity is perceived as being important by the customer, changing what is processed, and is done correctly the first time (Chalice, 2007). With regards to the latter, waste can be defined broadly as everything that a customer does not want to pay for (Bhuiyan and Baghel, 2005). Sometimes distinctions are made between different types of waste, including defects, overproduction, inappropriate processing, unnecessary transport, excess movements, waiting time, inventory, underutilization of human potential, inappropriate systems, and environmental waste (Chalice, 2007; Bicheno, 2004; Keyte and Locher, 2004; Kollberg *et al.*, 2007). In order to become lean (reducing waste/increasing customer value), organisations are generally expected to follow five core lean principles which concern:

- (1) *Specify value.* Value can only be defined by the customer, and the first step in the lean journey is therefore to identify the customer and understand what the customer needs (Kollberg *et al.*, 2007).
- (2) *Value stream analysis.* Value stream analysis is about examining the processes and activities that are required to deliver a product to the customer in order to identify the activities that add value – as well as those that do not (Duque and Cadavid, 2007).
- (3) *Flow.* Ideally, products and services should run steadily and smoothly through all the value-creating steps in the value stream without stops, delays, interruptions, defects, etc. (Womack and Jones, 2003).
- (4) *Customer pull.* Put simply, pull means that the organisation should only produce goods or services when the customer asks for it (Womack and Jones, 2003).
- (5) *Perfection.* The organisation should continuously strive for improvements (Womack and Jones, 1994). Organisation members should not accept status quo but continuously work to reduce costs and improve quality.

Lean is often associated with the auto industry and, in particular, Toyota, which around the time of the Second World War started to work with principles, tools, and techniques that have later been included in the lean concept (For a more comprehensive review of the history of lean, see Holweg, 2007). However, the concept “lean” was not introduced until the 1980s when it was popularized in the book *The Machine that Changed the World* which inspired companies throughout the world to adopt lean thinking (Womack *et al.*, 1990; Hines *et al.*, 2004; Kollberg *et al.*, 2007; Holweg, 2007). Since then, lean theory and practice have spread to other sectors (e.g. administration, service and healthcare) and are also becoming an increasingly popular phenomenon in the public sector (Brandao de Souza, 2009). In Denmark, it is estimated that

approximately 50 percent of public organisations have experimented with lean (Arlbjørn *et al.*, 2008; DIOS Consulting, 2008; Kompetenceforum, 2007; Rambøll, 2007).

Lean is not beyond reproach and its definition, use, and impacts remain much debated (Radnor and Boaden, 2004; Pettersen, 2009; Williams *et al.* 1992; Mehri, 2006). Moreover, despite its current popularity, lean is often said to fail in implementation (Bhasin, 2008). This is something that lean has in common with other management systems and organisational changes more generally, where studies report failure rates of up to 70 percent (Bourne *et al.*, 2002; Johanson *et al.*, 2006; Senge *et al.*, 2007; Sirkin *et al.*, 2005). With regards to lean, evidence indicates that failure may be rooted in limited implementation experience, a tendency to return to old routines, low management commitment, lack of training and education, poor linkage between lean activities and overall strategy, etc. (Arlbjørn *et al.*, 2008; Blichfeldt, 2006; VfL, 2008; Radnor *et al.*, 2006; Bateman and Rich, 2003; Achanga *et al.*, 2006). Table I provides examples of barriers and success factors identified in the lean/process improvement literature.

The purpose of this paper is to bring new insights into the debate on the determinants of lean success and failure in the Danish public sector. The analysis is

Issue	Barrier	Success factor
Resources	Insufficient resources (technical, financial, human)	⇔ Sufficient resources (technical, financial, human)
Management	Lack of management awareness and support	⇔ Management commitment
Objective	Cost-cutting, layoffs	⇔ Improve processes and work
Link to strategy	Aligned	⇔ Misaligned
Employees	Employee resistance	⇔ Employee buy-in
Need for change	No real or perceived crisis	⇔ Burning platform
Competences	Limited experiences in change management	⇔ Long history of successfully managed change projects
Staffing	Poor selection of change agents and improvement teams	⇔ Presence of improvement champion and dedicated staff
Time plan	Slow pace of change	⇔ Realistic timescales for changes
Competence building	Inadequate training and education	⇔ Comprehensive training and education
Ownership to improvements	No ownership to improvement initiatives	⇔ Ownership to improvement initiatives
Culture	Need for culture change	⇔ Supportive organisational culture
Impacts	Failure to document benefits from lean	⇔ Significant, visible impacts from lean
Dominant mindset	Silo thinking	⇔ Whole systems thinking
Knowledge transfer	Little/no knowledge transfer	⇔ Knowledge transfer
Rewards	No rewards/recognition from participating in lean	⇔ Department gets a share of the benefits from lean
Communication	Poor communication	⇔ Effective communication

Sources: Based on Arlbjørn *et al.* (2008); Blichfeldt (2006); Radnor *et al.* (2006); Bateman and Rich (2003); Achanga *et al.* (2006); Radnor and Boaden (2008); Sim and Rogers (2009); Simonsen *et al.* (2009); Duque and Cadavid (2007)

Table I. Determinants of lean implementation in the private and public sectors

based on interview data from 29 managers and employees who have been involved in the planning and implementation of the lean projects in public sector organisations (see Table II for information on the interviewees). Some of the organisations had experience from implementing lean in several departments, whereas others were just at the beginning of their lean journey. The interviews took place in 2007-2009 and were based on an interview guideline that covered questions relating to the three main stages of a lean project:

- (1) *Drivers*. The interview guide includes questions regarding the motivation behind the lean initiative. What were the symptoms in the organisations that called for a lean project? Who took the initiative to introduce lean and how were the departments/processes selected? What did the organisations hope to achieve with lean?
- (2) *Processes*. The interview guide also attaches importance to the various issues relating to the implementation process (planning, organisation, training/education, etc.). For instance, how was the project organised and who took part in the working groups/steering groups? Did changes/new insights inspire changes in the project design and implementation process. What were the main barriers for implementing lean in the organisation?

Number	Position	Type of organisation/department number
1	Department head	Local authority 1, Department 1
2	Team manager	Local authority 1, Department 2
3	Department head	Local authority 1, Department 3
4	Department head	Local authority 1, Department 4
5	Administrative officer	Local authority 1, Department 5
6	Department head	Local authority 1, Department 6
7	Finance manager	Local authority 1, Department 6
8	Consultant	Local authority 2, Department 1
9	Social worker	Local authority 2, Department 1
10	Project manager	Local authority 2, Department 1
11	Department head	Local authority 3, Department 1
12	Department head	Local authority 3, Department 2
13	Department head	Local authority 3, Department 3
14	Engineer	Local authority 3, Department 3
15	Chief executive	Local authority 4, Department 1
16	Consultant	Local authority 4, Department 2
17	Department nurse	Regional authority 1 (healthcare), Department 1
18	Health service assistant	Regional authority 1 (healthcare), Department 1
19	Department head	Regional authority 2 (healthcare), Department 1
20	Radiographer	Regional authority 2 (healthcare), Department 2
21	Medical doctor	Regional authority 2 (healthcare), Department 2
22	Project coordinator	Regional authority 2 (healthcare), Department 2
23	Secretary	Regional authority 2 (healthcare), Department 3
24	Clinical director	Regional authority 2 (healthcare), Department 3
25	Manager	State authority 1, Department 1
26	Consultant	State authority 2, Department 1
27	Department head	State authority 3, Department 1
28	Project manager	State authority 3, Department 1
29	Project manager	State authority 4, Department 1

Table II.
The interviewees
participating in the
analysis

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- (3) *Results.* Questions were also asked about the impacts of lean (positive/negative). For example, to what extent did the lean project generate the desired results? Is lean still in use today? Moreover, the interviewees were asked to give recommendations to other public sector officials who considered introducing lean in their department.

The interviews with the 29 public managers and employees were recorded and subsequently transcribed and analysed. The original purpose of the interviews was to get an understanding of the lean implementation process and results in the Danish public sector. The immediate result of this work was the writing of short case examples that were included in a publication on lean in the Danish public sector (Pedersen and Huniche, 2009). However, the rich data also provided an opportunity to analyse the determinants of the lean implementation process in more depth. The initial interest in understanding the determinants of lean springs from the data rather than the theory, yet the qualitative analysis based on readings of the interview transcripts clearly has deductive elements, since it was structured around the theory-based model that is presented in the next section.

The contribution of this paper is two-fold. First, the paper provides new insights into the understanding of lean implementation in the public sector. This is important since there is still only limited knowledge of the use and impacts of lean thinking in the public sector (Radnor *et al.*, 2006; Radnor and Boaden, 2008; Hines *et al.*, 2008; de Brandao de Souza, 2009). An exception is perhaps lean healthcare, where there has been a steadily growing literature since the beginning of the new millennium (Radnor *et al.*, 2006; Brandao de Souza, 2009). Second, the paper does not just present a smorgasbord of potential barriers and success factors which are said to influence the lean implementation process. Thus far, studies on the determinants for lean implementation have rarely linked the findings to a specific theoretical perspective. Therefore, this paper develops an analytical model based on negotiated order theory to organize and structure the discussion of the numerous factors that influence the lean implementation process.

Theoretical perspective and analytical model

Theoretically, the paper adopts a negotiated order perspective. Originally, Strauss *et al.* (1963) coined the term “negotiated order” almost accidentally when studying two psychiatric hospitals (Strauss, 1978). Since then, the theory has been applied to a number of other fields, including the study of, e.g. audit reporting (Basu *et al.*, 1999), public sector accounting (Rahaman and Lawrence, 2001), cost allocations (Modell, 2006), and network-form organisations (Parhankangas *et al.*, 2005).

A negotiated order characterizes a situation where people have determined the “rules of the game” that are expected to guide relationships and stimulate concerted action (social order) (Nathan and Mitroff, 1991). Central in the theory is the idea that the formal rules and guidelines do not tell the whole story of organisational life. On the contrary, they are often incomplete, ambiguous, and unclear (Strauss *et al.*, 1963). In consequence, negotiations, bargaining, mediation, diplomacy, persuasion and manipulation take place in order for organisation members to reach shared understandings and get things done (Maines, 1982; Strauss, 1978). The outputs from negotiations (e.g. agreements, contracts, and rules) at any given point in time have

temporal limits, which means that they will eventually be evaluated, renewed, adjusted or changed as a result of the ongoing interactions between the involved parties (Strauss, 1978; Rahaman and Lawrence, 2001; Fine, 1984; Nathan and Mitroff, 1991).

Negotiated order theory makes a distinction between the structural context and the negotiation context (Strauss, 1978, 1982; Regan, 1984). The structural context is loosely defined as the larger social world that shapes the context within which the negotiations take place. However, even though the structural context may partly be constitutive in shaping the dominant meanings of lean in the public sector, the actual use depends on interactions between the various individuals, groups, and organisations within the negotiation context (Fine, 1984). The negotiation context is defined here as the structural properties that have a direct influence on the negotiations within the organisation or between organisations (Strauss, 1978; Regan, 1984; Strauss, 1982; Maines, 1982).

Figure 1 illustrates how the structural context and the negotiation context are expected to influence the planning, implementation and maintenance/development phase of lean projects. The structural context is interpreted as the societal forces which have placed lean high on the agenda in many Danish public organisations, whereas the negotiation context is divided into four dimensions:

- (1) goals and values;
- (2) complexity and importance;
- (3) balance of power; and
- (4) resources and capabilities.

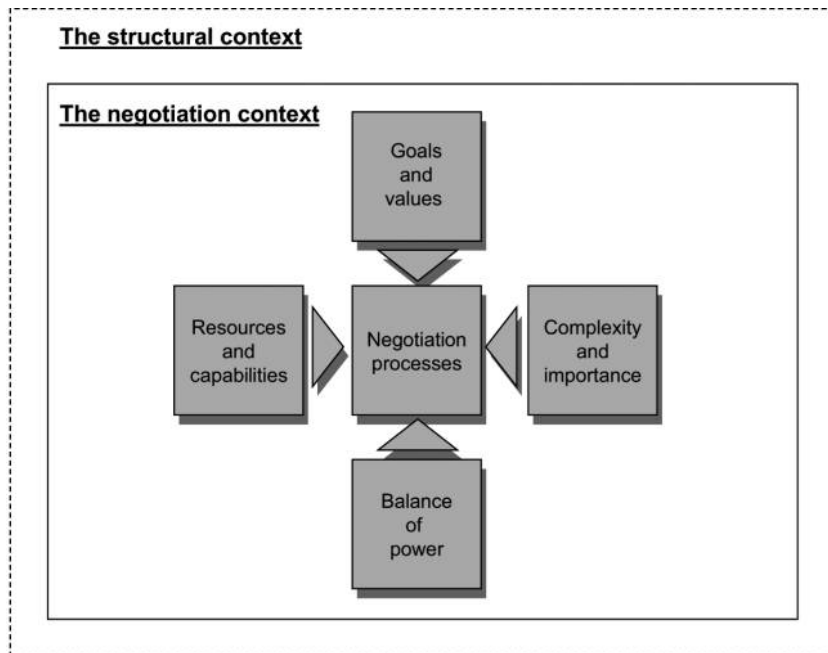


Figure 1.
Factors affecting
negotiations in lean
projects

Source: Model inspired by Strauss (1982) and Grant (1998)

The four dimensions are based on Strauss (1982), who lists a wide range of factors which determine the properties of the negotiation context, including the number of negotiators as well as their experience, power, and stake, the type of negotiations, the availability of options, the number and complexity of the issues negotiated and their legitimacy. However, the wording is also inspired by the insights from strategic management theory, which, for example, highlights the role of resources and capabilities (Grant, 1998). Below, we have provided a short description of each dimension and the relevance for the research on lean implementation. It is not argued that the model is complete and covers all elements of the negotiation context (see, e.g. Strauss, 1978). The four dimensions in the model serve mainly as a means to make the analysis more operable.

Goals and values

From a negotiated order perspective, the goals, values, and interests of the actors often conflict and change over time (Rahaman and Lawrence, 2001). Such conflicts may also be an impediment for change in a lean implementation project. At least, the lean literature often highlights the importance of getting buy-in and commitment from managers and employees (Bicheno, 2004; Chalice, 2007; Graban, 2009; Tapping and Shuker, 2005; Zidel, 2007; Radnor *et al.*, 2006). The importance of employee buy-in is probably also one of the main reasons why lean proponents are reluctant to link lean projects to cost-cutting and layoffs (IHI, 2005; Womack and Jones, 1994, 2003; Graban, 2009; Jones and Mitchell, 2006). The lean literature emphasises the role of quick successes as an effective means to generate support and convince the critics (VfL, 2008; Womack and Jones, 2003).

Complexity and importance

Complexity depends, for example, on the number of negotiators and the properties of the problems and solutions related to the issues negotiated (Strauss, 1978). In relation to lean implementation, it has been argued that lean projects should begin at a relatively small scale with simple problems that have significant, visible improvement potentials (Radnor *et al.*, 2006; Womack and Jones, 2003). More generally, lean is said to work best on repeatable tasks of a certain volume (Hines *et al.*, 2004, p. 1006; Radnor *et al.*, 2006; Arlbjørn *et al.*, 2008; VfL, 2008). With regards to importance, the real and perceived need for changes may also influence the course of the negotiations and the related outcome. In a lean implementation context, a “burning platform” is said to create a feeling of urgency that makes it easier to reorganize processes (Henderson and Larco, 2003; Kotter, 1995).

Balance of power

It has been argued that the question of power has not been fully developed in the negotiated order theory even though power plays an important role in all social relationships (Day and Day, 1977; Regan, 1984; Fine, 1984; Rahaman and Lawrence, 2001). For instance, organisations (e.g. hospitals) dominated by one profession make it difficult to negotiate changes in the social order (Regan, 1984). In relation to lean implementation, power relationships also affect the implementation of the lean projects. For instance, if organisation members resisting lean (so-called anchor draggers) hold formal and informal power in the organisation, it will become very

difficult to generate the desired improvements and culture change (Womack and Jones, 2003).

Resources and capabilities

The availability of the right amount of the right resources and capabilities undoubtedly has an important impact on the process and outcomes of the lean implementation. For instance, organisations with past experiences in change management are also more likely to benefit from lean (Radnor *et al.*, 2006). On the contrary, lack of resources (financial, technical, human) is a common barrier for implementing lean (Achanga *et al.*, 2006; Bateman and Rich, 2003). For instance, Radnor *et al.* (2006) note that it can be a barrier to get staff released from their daily duties and work pressures. This potential conflict between lean work and everyday operations is also recognized by other authors (Arent and Theill, 2008, Bateman and Rich, 2003; Graban, 2009).

Negotiated order theory was adopted as a framework for analysing the determinants of lean implementation because it focuses on both the formal and informal side of the organisation. The implementation of lean and other management technologies are not detached from the negotiation and structural context. On the contrary, organisational politics, the availability of financial, technical, and human resources, the presence of strong coalitions/professions, and the nature of the problems and solutions all affect how lean is implemented in practice. As seen from the evidence provided in the earlier quoted examples of how the concept of lean is interpreted, success and failure are determined by organisational factors rather than the lean technology itself. Therefore, negotiated order theory provides a useful framework to structure the analysis because it moves beyond the technical side of lean implementation by emphasising the fluid and informal aspects of the organisation and the negotiations among the actors involved in the change process.

The role of the structural context for lean implementation in the Danish public sector

In the last few years, lean thinking has moved from the margins to the mainstream in the Danish public sector. The growth has been remarkable. For instance, in 2008 lean was found in 56 percent of Danish state organisations (DIOS Consulting, 2008). In 2006, the percentage was 15 percent (DIOS Consulting, 2008). However, it is worth mentioning that the lean activities in most organisations still only cover a limited number of processes within a limited number of units within the organisation. The growing popularity of lean has not gone unnoticed in the public debate where the present lean hype has been questioned (Nielsen, 2010; Petersen, 2008; Wiegand, 2009).

There is probably not only one explanation that can explain the rapid growth in lean adoption. On the contrary, it is possible to identify a wide variety of factors that may have contributed to the noticeable increase in the number of public organisations that are starting to experiment with lean. At the broadest level, lean is also well in line with the NPM movement which describes the growing tendency to adopt market-oriented instruments in the public sector and emphasise: "(...) results, individual responsibility and flexible organizations, employment and personnel (...)" (Kollberg *et al.*, 2007, p. 12). However, it is worth mentioning that NPM is not exactly a new phenomenon. On the contrary, reforms to promote, e.g. decentralisation, customer

orientation, performance pay, measurement, private-sector style management, contracting out, and privatisation have a long history in Denmark and abroad (Hansen, 2005; Jensen, 1998; Green-Pedersen, 2002). Therefore, even though lean projects can be seen as a continuation of existing attempts to “companyze” public organisations, there might also be other drivers for explaining the current emphasis on process improvement.

The growing popularity of lean may also be a response to more recent developments in the Danish public sector. First, the public sector is said to be met with constantly growing demands for value creation from both politicians, citizens, and employees (VfL, 2008). By promising increasing productivity, quality, and job satisfaction, lean can be seen as a management instrument that is intended for addressing the variety of societal expectations, claims, and needs. Second, tight public budgets also imply that public organisations have to “do more with less” (or at least “the same with less”). For instance, Danish hospitals are expected to increase productivity by 2 percent each year, which also means that the budgets are reduced by 2 percent annually (Bendix *et al.*, 2008). Here, lean is increasingly viewed as a means to create more value with fewer resources. Third, the Danish public sector faces difficulties in attracting qualified employees. For instance, a recent study concluded that the Danish healthcare system will be short of 15,000 employees within six to seven years (Pedersen, 2008). Lean can potentially be a way to make ends meet in situations where it is hard to attract qualified personnel. Fourth, the Danish government has also been active in promoting lean in the public sector. As an example, the Danish Ministry of Finance (FM) has recommended the transfer of successful lean-experiences from the private to the public sector (FM, 2005). Fifth, lean may be a symptom of the need for a service check in many public sector organisations. To give a few examples, an analysis carried out in relation to a lean project in a Danish municipality showed that a lot of time was spent on correcting errors and that the process times of some services varied significantly (from 17 and 165 days) (Hansen, 2008). Moreover, a lean-project in a state organisation revealed that some processes had not been reviewed in 15 years (Sand *et al.*, 2008). Sixth, lean has received a lot of media attention in recent years, and the various success stories have undoubtedly contributed to the spread of lean in the public sector. Seventh, commentators have pointed out that there is currently a lean hype where public managers introduce lean without a strategic plan and without trying to adapt lean thinking to the public sector context (Wiegand, 2009). Finally, lean may simply have become popular, as it is a good idea that has only recently travelled from the manufacturing floor in the private sector to service and administration in the public sector.

However, despite its current popularity, it is worth mentioning that lean projects in the public organisations typically cover only a few departments and a few processes. As an example, only 16 percent of Danish municipalities with lean experiences try to introduce this line of thinking throughout the organisation (VfL, 2007). Most lean projects take place at the departmental level (47 percent). Even organisations with a high focus on lean are still far from the ideal of organisations that are organised entirely in accordance with the lean principles (the lean enterprise) (Womack and Jones, 1994).

The role of the negotiation context for lean implementation in the Danish public sector

The evidence from the interviews with managers and employees from the public sector indicates that not all organisation members have the same goals and values, and that it is unlikely that everyone will be supportive of lean. For instance, a project manager from a municipality argued:

It is no secret that out of 100 percent in a department, there is a percentage who are sceptics and a percentage which are super motivated and then all those in between that think: – We see what will happen (Manager, our translation).

Other interviewees also reported an element of resistance as a barrier for lean implementation. As an example, a manager from a local municipality experienced that a small group of organisation members used any drawbacks in the lean implementation process (which is perhaps inevitable) as an opportunity to argue that “things were better before.” However, an element of agreement and shared understanding needs to be in place for lean to be properly implemented. For instance, a manager from a local municipality noted that an important precondition for lean success is a management team who agrees on doing lean. The interviewee experienced personally that two middle managers on the surface supported the lean project but fought against it in action. It created a lot of tension during the lean implementation phase. In general, middle managers are often highlighted by the interviewees as important change agents. As noted by a department manager in a state agency:

It does not help anything if a top manager says “we have to do this” unless there is someone in the middle who clings to it, who is interested in it, and reads about it (Manager, our translation).

According to the interviewee, one way to ensure local management support is to translate/negotiate lean into the overall strategy and the everyday activities in the organisation. Quick visible results are also said to help to convince local managers about the merits of lean. For instance, an employee from a hospital department refers to a local manager who changed his attitude about lean after it was possible to reduce the waiting time within his area from 24 weeks to 8 weeks. Communication of good practice is also reported to promote employee buy-in. As an example, an interviewee from a municipality invited a representative from a similar department in another organisation to talk about their lean experiences. In a similar vein, an employee from a hospital argued that the internal demand for lean could be increased by communicating success histories from one department to another.

Different types of pecuniary and non-pecuniary benefits may also promote alignment of goals and values. For instance, some organisations have offered support to departments that were willing to begin the lean journey. Moreover, a state agency gave individual bonuses for employees who contributed to improvement meetings with a lot of good ideas. In addition, it is the policy of a hospital that 55 percent of the results from lean stay within the department, whereas 45 percent are transferred to the hospital management (Admittedly, one of the local managers questioned whether this policy was actually implemented).

The interviewees were, in general, reluctant to the idea of linking lean to layoffs because it is the employees who are supposed to drive the project forward. It would create resistance and make it impossible to reach a shared agreement on the lean

project. For instance, one municipality department deliberately decided to delay the lean project in one unit because it had recently been subject to layoffs. Moreover, a hospital manager saw it as an important advantage that the department was able to say to all employees that no one got fired as a result of the lean project, even though the process improvements could change the roles and positions within the department. Similarly, a manager from a municipality claimed:

It has been clear from the beginning that it is not about cutting staff. It has been about freeing resources to do, what really matters, better (Manager, our translation).

In terms of complexity, some interviewees reported that lean was most successful in the implementation “quick hits” compared to large, complex projects. As an example, it was noted in a hospital department that lean worked well when it concerned small changes. However, it was more difficult to implement larger and more complex initiatives that involved other departments and required more resources. Large-scale initiatives were often “parked” as projects, whereas minor improvements could be implemented immediately without much extra effort. According to an interviewee:

We do not have the same success rate regarding the implementation of the improvements, because they have become more complex, and they have become bigger, and they have become more expensive (Manager, our translation).

The lean implementation also becomes more complex if the selected processes involve a large number of actors from many different departments, divisions, and organisations (especially if the lean project is organized and sponsored by only one of the involved parties). Therefore, lean projects often focus on processes that do not involve too much interaction with other departments or external parties. Not only does the focus on some departments, teams, and processes reduce complexity, it also makes the negotiations between the actors more manageable. This is not to say that it is always easy to organise the interaction processes in a departmental lean project. For instance, a hospital department found it hard to implement short (eight weeks) improvement cycles, not least because it was difficult to find open slots in the participants’ calendar:

(. . .) there are a lot of decision makers that have to be involved in the meetings, and to set a meeting with three or four doctors within a week is unrealistic (Employee, our translation).

With regard to importance, the evidence indicates that Danish public sector organisations adopt lean for a variety of reasons. In some cases, it is relevant to talk about a “burning platform” where the organisations have been faced with a strong internal or external pressure. For instance, one organisation was expected by the government to increase productivity by 25 percent before 2010. Another was threatened by competition from the private sector. And yet another had problems meeting governmental requirements regarding process times; something that would lead to a significant drop in state support. However, some organisations also implemented lean even in the absence of a major crisis or stakeholder pressure. For instance, in some departments lean was introduced at least partly because new employees brought new ideas with them from previous jobs. Moreover, as mentioned earlier, some organisations have tried to sell lean to the departments whether or not they are facing major problems. Based on the available data, it is not possible to say

whether a shared feeling of urgency among the organisation members makes it easier to implement lean projects.

A negotiated balance of power is important for the lean implementation to run smoothly. However, the evidence from the interviews indicates that this has not always been the case. Lean projects are far from conflict-free and even though lean is rarely implemented as a means to reduce headcounts, it is far from unusual that actors leave the organisation during the course of a lean project. Such reactions can essentially be seen as a breakdown of the existing negotiated order. One source of conflict is related to the employees' perceived loss of autonomy and hence also loss of power. According to an interviewee from a state agency, lean inspired the development of a new team-based organisation which was met with criticism from a group of employees who preferred to do their own work in their own offices. Moreover, not all employees were happy about the new tasks to which they were assigned (e.g. having more customer contact). In addition, a municipality department experienced conflicts because a lean project implied that the work planning was centralised instead of being organised by the individual employee. Lastly, an interviewee from a hospital noted that some employees opposed the transparency promoted by lean thinking:

There is always someone who is not willing to let others look what they are doing (. . .). There are a lot of people who are afraid that it is visible how much or how little they are doing (Employee, our translation).

The balance of power also concerns the organisation of the lean project which is also important in the understanding of lean success and failure. For instance, an interviewee from a state agency considered it to be a key strength that all management team members were represented in a lean steering committee. Locally, an interviewee from a hospital department also stressed the importance of lean project groups that reflect all functional groups in the department. However, an issue that sometimes remains unsolved – and thus without a negotiated order – concerns the power relationships between the lean project group and the line managers. As an example, a lean project group from a hospital found it difficult to facilitate lean in departmental units where they normally did not work. It was important not to overrule the local management by coming up with too many good ideas about how other people should run their units. Therefore, it was necessary to involve people from the units more in the project and guide them to see the problems themselves. According to one of the interviewees:

We were probably a bit naïve in the beginning and thought that a high level of information could solve a lot of things. We did not realize that we also need a high level of involvement (Employee, our translation).

Resources and capabilities are also important in understanding the lean implementation. For instance, time was seen by several interviewees as a key issue because lean projects sometimes conflicted with everyday work. Especially in periods with difficulties in making ends meet, it can be difficult to convince a department to allocate enough work hours to a lean project. For instance, a municipality department deliberately decided to run lean projects only in low activity periods when it did not interfere too much with everyday work. Moreover, an interviewee from a state agency noted that in certain periods only small changes were implemented, whereas major initiatives to redesign processes were put on hold. lean projects often compete with

everyday activities within the department, but without the necessary investment of technical, human, and financial resources, all lean initiatives are likely to fail.

However, unless a negotiated order emerges about the priorities of the department and the individual organisation members, conflicts may arise before, during, and after the lean implementation. As an example, an interviewee from a hospital department was supposed to use three days on lean and two days on the everyday work in a team. However, the workload was not adapted to her new responsibilities, and the other team members were used to a manager that was around most of the time. Therefore, the lean project turned out to be stressful for the manager and frustrating for the staff. In other words, both the individual and the group need to reach a shared agreement on the priorities in the lean implementation phase. As noted by an employee from a hospital department:

There are some things that you just don't do as well in a period, and there are some things that you do not do in a period (. . .). If it is lean that is the priority then it also has to be lean that I give priority (. . .) (Employee, our translation).

One of the things stressed by several interviewees is the fact that lean takes time. It is necessary to think of lean as something more than just a quick fix that will be implemented in a few weeks time. However, if lean is to take root, the organisation has to build internal competences in lean management and implementation as part of the change processes. For instance, a lean employee from a hospital noted that it is necessary to have enthusiastic and resourceful persons to make lean sustainable in the long run. Otherwise, the enthusiasm will slowly disappear along with the continuous improvements.

The long-term perspective of lean in combination with the importance of key lean change agents poses a threat to lean transformation. Lean is vulnerable to changes in key personnel until lean thinking is successfully embedded in organisations. For instance, an interviewee from a hospital noted that even after two-three years, it is still the same employees who run the lean process. Lean projects may slow down or even stop if these lean change agents leave the organisation, are too busy, or are unavailable for other reasons.

Conclusions and discussion

The purpose of this paper has been to study the determinants of lean success and failure in the Danish public sector. Focus has been on the factors which shape the interactional processes that take place during the course of a lean project. The paper does not view lean as a management technology that is introduced more or less automatically in organisations. Rather, lean is seen as being influenced by ongoing negotiations between organisations' members that result in negotiated order, which temporarily can define how organisations operate.

Based on the theoretical perspective, the article has developed an analytical model that distinguishes between the structural context and the negotiation context. The former consists of the societal forces which have promoted lean thinking in the Danish public sector. The latter are divided into four factors that have all proved to influence the lean implementation:

- (1) goals and values;
- (2) complexity and importance;

- (3) balance of power; and
- (4) resources and capabilities.

It is not argued that these broad categories tell the whole story of lean implementation in the public sector. A wide range of individual, organisational, and environmental factors affect the fate of lean in an organisation. However, the model is useful in making sense of how interviewees perceive the inhibitors and enablers of lean implementation.

In general, the experiences from the Danish public sector bear similarities with the international literature on lean barriers and success factors (see Table I). Actually, the findings are very much in accordance with some of the insights from the general change management literature. A lot of the observed barriers and success factors seem to be generic, i.e. characterising organisational changes in general, rather than being specific to lean projects. The generic nature of the lean determinants actually makes it difficult to separate the impacts of the lean technology from the impacts of good/bad change management. One explanation for the consistency in findings may be that new management technologies (lean, business process reengineering, time based management, etc.) all bear similarities in terms of process, structure, and content, which imply that they sets certain demands on organisations and cause a number of standard reactions. Alternatively, it may be that an organisation reacts similarly to new projects, whether it concerns lean, balanced scorecard, or other popular management concepts. Whatever the explanation, it is possible that it is the fate of new management technologies to be of a temporary nature and that these technologies simultaneously stimulate a process of change as well as cause resistance within the organisation.

The paper, of course, has limitations. For instance, the analysis covers only a small sample of the numerous public organisations that are currently experimenting with lean. Moreover, the analysis is based mainly on interviews with managers and employees who:

- can be said to have a stake in the lean project; and
- are talking about lean implementations that have taken place in the past.

Therefore, there is a risk of a social desirability bias, as well as retrospective sense-making. In the future, participant-observation studies may shed more light on the factors that shape the various stages of the lean implementation process. In addition, it has been difficult to link the reported barriers and success factors to concrete organisational impacts. In general, impact measurements of lean initiatives are rare, and those that do exist often suffer from validity and reliability problems. Examples include limited data on existing performance, difficulties in isolating the effects of lean, and a tendency to focus on short-term improvements rather than long-term effects; these make it difficult to quantify whether lean has been a success or a failure. In the future, there is indeed a need to move beyond anecdotal success stories from the consultant literature and conduct more rigorous studies of the costs and benefits of lean projects in the public sector. Lastly, both authors have been involved in several lean projects in the public sector which may constitute a bias in the interpretation of the data due to pre-assumptions about success factors and barriers based on personal experiences.

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