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# The Diffusion of Lean in the Norwegian Municipality Sector: An Exploratory Survey

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**Abstract:** The use and application of Lean in the public sector has attracted considerable interest in recent years. In Norway, the concept of Lean has lately been hugely popular, not only among private sector firms such as manufacturers, but increasingly also in the public sector where Lean has been proposed as a management tool that can improve the productivity and performance of, for example, municipalities. There have been several initiatives suggesting and recommending Lean adoption and implementation in the municipality sector. However, little is known about how and to what extent Lean is currently used by Norwegian municipalities. Therefore, this paper examines the diffusion of Lean among Norway's 426 municipalities, by means of an exploratory survey that yielded a response rate of about twenty-five percent. The survey results generally show that the awareness and adoption of Lean has increased quite sharply in recent years. Most municipalities have recently adopted and started using the Lean concept, and the concept appears to be in a relatively early stage of its lifecycle in the Norwegian municipality sector. When it comes to implementation of the Lean concept, the municipalities vary in terms of how they apply and utilize Lean. For example, the survey data indicate that municipalities use a broad spectrum of Lean-related tools and techniques. Finally, while the perceived effects of Lean are generally positive, there are also a range of issues and challenges associated with the implementation of Lean in municipalities.

**Keywords:** Lean; municipalities; management concept; adoption; diffusion; implementation; effects; experiences

## 1. Introduction

### 1.1. *The concept of Lean in the Public Sector*

The concept of Lean was introduced around 1990 (Krafcik, 1988; Womack, Jones, & Roos, 1990). Lean draws on insights and practices developed by the Toyota auto company decades earlier. Several commentators have noted that the Lean concept is vague and open to interpretation, and that there is little agreement among academics and practitioners about the exact meaning and content of the concept (Benders & Van Bijsterveld, 2000; Brännmark et al., 2012; Wittrock, 2015). As pointed out by Ingvaldsen, Ringen, and Rolfsen (2014), Lean can be understood in four different ways; as an organizational trend, a management philosophy, a set of principles, or a set of practices. For example, the latter understanding of Lean highlights the concept's direct manifestations in organizations, as Lean users often use and apply different tools from the "Lean toolbox" (e.g. Poka-Yoke, Kanban, SMED, and Value Stream Mapping).

Since its introduction, Lean has attracted attention all over the world. As Wittrock (2015) points out, Lean has been positioned as a "world changing" management concept. Proponents of Lean (e.g. Lean "gurus" and consultants) generally argue that the concept can help organizations improve organizational performance and productivity by reducing waste (e.g. time and resources spent on unnecessary and non-value-generating activities and processes). However, it has not been all "guru-hype" and media attention. Many studies also show that Lean has had a considerable impact on organizational practice (Benders, 1996; Benders & Van Bijsterveld, 2000; Ingvaldsen & Benders, 2016; McCann, Hassard, Granter, & Hyde, 2015; Wittrock, 2015).

In the beginning, Lean was primarily developed with the aim to improve the performance of private business organizations. Over time, the use of Lean has also spread like wildfire to the public sector. As pointed out by Bergström and Lapsley (2017, p. 17), the increased use of Lean in public sector management can be viewed as "a classic case of the mimicry of private sector practice."

In recent years there has been much debate about how and to what extent the Lean concept can be successfully adapted and applied in public sector organizations, such as, for example, municipalities (Bateman, Radnor, & Glennon, 2018; Bhatia & Drew, 2006; Drotz, 2014; Holmemo & Ingvaldsen, 2018; Holmemo, Ingvaldsen, & Benders, 2017; Martin, 2018; Radnor & Boaden, 2008; Radnor & Osborne, 2013; Radnor, Walley, Stephens, & Bucci, 2006; Scorsone, 2008; Suarez Barraza, Smith, & Mi Dahlgard-Park, 2009).

While proponents of Lean are optimistic, commentators such as Bergström and Lapsley (2017, p. 17) are not fully convinced about the merits of Lean in the public sector, and suggest that Lean could be perhaps the latest in a long line of public sector management fads: "Indeed, there is almost an entire industry of management consultants, authors of guidebooks and a support industry of experts selling the merits of this latest fad in public services management which is, in fact, presented as novel and new despite being a recycled idea from decades earlier."

### 1.2. *Purpose and Contribution*

Several recent literature reviews have shown that there is an emerging but small body of research on the diffusion and use of Lean in municipalities (Brännmark, 2011, 2012; Drotz, 2014). Bergström and Lapsley (2017, p. 19) suggest that the concept and practice of Lean in Scandinavian public services is under-researched, in particular issues related to the effectiveness and efficacy of the adoption of Lean.

Therefore, the overall aim of this paper is to make a contribution to the literature on the diffusion and use of Lean in municipalities. The paper is guided by the following overall research question: *To what extent and in what ways is the Lean concept diffused and used in the Norwegian municipality sector?* The paper attempts to answer this question by carrying out an empirical study drawing on survey data from the Norwegian municipality sector. By doing so, the paper also contributes specifically to our knowledge about the use of the Lean concept in the Norwegian context.

Obtaining an updated picture of the impact of Lean in Norway is in and of itself interesting, since the Lean concept has attracted much attention and interest in Norway in recent years, not only in the private sector, but also in the public sector (Andersen & Røvik, 2015; Aspøy, 2014; Ingvaldsen, Rolfsen, & Finsrud, 2012; Rolfsen, 2014). For example, a recent survey of Lean in Norwegian organizations has shown that Lean is widely used among manufacturing, construction, as well as accounting and financial services firms (Madsen, Storsveen, Klethagen, & Stenheim, 2016).

However, our knowledge about the extent to which Lean is used in the Norwegian municipality sector, is quite limited. Two surveys of Lean, conducted more than five years ago, show that Lean started getting traction in Norwegian municipalities in the early 2010s (Dolva, 2011; Schie, 2012). There is reason to believe that a new survey could provide an updated picture and be able to cast light on developments in terms of Lean adoption, diffusion and implementation in Norway.

### *1.3. Structure*

The remainder of the paper is organized as follows. Section 2 provides a brief review of previous research on the Lean concept in the public sector, with an emphasis on the municipality context. Section 3 describes the methods and data used. Section 4 provides the main results, focusing on adoption, implementation, and effects of Lean. Section 5 discusses the main findings in relation to the extant literature on Lean in the municipality sector. The last section is dedicated to conclusions, as well as discussions of limitations and areas for future research.

## **2. The Lean Concept in the Public Sector**

This section provides a brief review of extant related research on Lean in the public sector, starting with a description of the importance of the concept for the public sector, before continuing with a deeper description of the case of municipalities.

### *2.1. Lean in the Public Sector*

The early books and articles about Lean published during the 1990s focused primarily on the concept's application in the private sector, for example among manufacturing or construction firms (Alarcón, 1997; Liker, 1997; Womack & Jones, 1996; Womack et al., 1990). However, as mentioned in the introduction, Lean has over time, and particularly during the 2000s, been put forth as a viable management concept with a high degree of applicability in the public sector.

The demand for new innovative management concepts has been fueled by the many New Public Management (NPM) inspired reforms and modernization efforts (Hood, 1995; Hyndman & Lapsley, 2016) that have swept public sector organizations in recent years. For example, in the Scandinavian countries there has been a strong focus on modernizing the public sector to reduce waste and to improve productivity and performance (Bergström & Lapsley, 2017; Lapsley & Knutsson, 2016). Lean has emerged as one of the management concepts currently used as a part of NPM-inspired reforms and modernization efforts. For example, Bergström and Lapsley (2017, p. 17) argue that the fundamental aim of Lean, "to provide more with less resources has become something of a mantra for public sector modernisers."

The usefulness and applicability of Lean in the public sector is currently subject of much debate in the academic literature (Bateman et al., 2018; Holmemo & Ingvaldsen, 2018; Holmemo et al., 2017; Martin, 2018; McCann et al., 2015; Neumann, Mothersell, & Motwani, 2014; Pedersen & Huniche, 2011a; Radnor & Boaden, 2008; Radnor et al., 2006). For example, some researchers have dealt with the issue of how the Lean concept has to be adapted when it is applied in a public sector context (Bhatia & Drew, 2006; Radnor & Walley, 2008). This is an important issue since research has shown that the Lean concept can be defined, interpreted and translated in different ways (Benders & Van Bijsterveld, 2000; Brännmark et al., 2012; Morris & Lancaster, 2006; Pettersen, 2009; Wittrock, 2015, 2017). In a public sector context, researchers have noted the fluidity and negotiated nature of the Lean concept (Pedersen & Huniche, 2011b).

### *2.2. Lean in Municipalities*

Several recent literature reviews have shown that there is an emerging but still small body of research on the use of Lean in municipalities (Brännmark, 2011, 2012; Drotz, 2014). While there are some studies that have been carried out in other European countries such as England (Radnor & Walley, 2008) and Spain (Suarez Barraza et al., 2009), the rest of this section will focus narrowly on research that has been carried out in a Scandinavian context (i.e. Sweden, Denmark and Norway).

Studies which have been carried out in these countries are deemed to be of particular relevance since these countries can be characterized as Social Democratic welfare states where the public sector plays a big and active role in people's lives (Esping-Andersen, 1990). While previous research has shown that these three countries have had different responses to New Public Management-inspired reforms (Green-pedersen, 2002), it can be argued that

these countries still share many commonalities in terms of size, politics, culture, and management style. Therefore, a review of past work carried out in a Scandinavian context helps contextualize the current study's overall aims and research question.

Previous research suggests that the Lean concept has taken different trajectories in the municipality sectors of the three Scandinavian countries (Arlbjørn & Freytag, 2009; Arlbjørn, Freytag, & Haas, 2011; Brännmark, 2011, 2012; Ringen & Rolfsen, 2014). It has been noted that Lean got a relatively early start in the Danish and Swedish municipality sectors (Ringen & Rolfsen, 2014).

For example, the Lean concept has received much attention in Denmark (Pedersen & Huniche, 2011a; Pedersen & Huniche, 2011b), and has been used in Danish municipalities for some time (Ringen & Rolfsen, 2014, p. 121). Danish municipalities were inspired by Danish private sector organizations' experimentation with Lean (Ringen & Rolfsen, 2014). In a survey, Arlbjørn and Freytag (2009, p. 64) found that roughly seventy percent of Danish municipalities were using Lean in some way or another. Around this time, Lean was viewed favorably by Danish politicians and local government as part of a strategy to reduce costs and improve efficiency (Arlbjørn et al., 2011), and as "an important cornerstone for increasing productivity" (Arlbjørn et al., 2011, p. 286).

In Sweden, Lean has also received much attention and interest (Larsson, 2012; Modig & Åhlström, 2014), including within the public sector where the concept has "spread like wildfire" (Hallström & Thedvall, 2015; Thedvall, 2015, 2017). A couple of recent studies have shown that Lean is used within different parts of the Swedish public sector (Drotz, 2014; Innovationsrådet, 2012), and the concept has been quite extensively adopted and implemented in the municipality sector (Brännmark, 2011, 2012).

Compared with their Danish and Swedish counterparts, Norwegian municipalities have been relatively late movers in terms of adopting and implementing Lean. However, in recent years Lean has attracted much attention in the Norwegian public sector (Aspøy, 2014; Ringen & Rolfsen, 2014). For example, just in the last few years, the Norwegian government has published two Official Norwegian Reports highlighting the need to improve productivity and efficiency in the public sector (NOU 2015:1; NOU 2016:3).

The Norwegian Association of Local and Regional Authorities (KS) ([www.ks.no](http://www.ks.no)) has played a key role in the introduction of Lean in Norwegian municipalities. For example, KS was heavily involved in the pilot implementations in several Norwegian municipalities in 2010 (Ringen & Rolfsen, 2014). KS has also functioned as a type of competence center, providing Norwegian municipalities with consulting and training services related to Lean. For example, KS's subsidiary KS-Konsulent ([www.kskonsulent.no](http://www.kskonsulent.no)) provides consulting services related to Lean, and have developed a version of Lean ("K-Lean") which is tailored to municipalities.

In addition, Norwegian municipalities have been inspired by and learned from Danish municipalities. To this point, it has been noted that Danish consultants were involved in some Norwegian Lean implementation projects in the early phase (Ringen & Rolfsen, 2014, p. 121).

Overall, it can be argued that Lean is a new phenomenon in the Norwegian municipality sector, since (Ringen & Rolfsen, 2014) pilots and experimentation with Lean took place as late as in 2010 (Ringen & Rolfsen, 2014). In addition, the two aforementioned surveys of Norwegian municipalities conducted in the early 2010s, documented that Lean is a new phenomenon in Norwegian municipalities, but that these organizations relatively quickly starting learning about and experimenting with the Lean concept (Dolva, 2011; Schie, 2012).

Overall, the review of extant related research on the use and application of Lean in Scandinavian municipalities suggests that the Lean concept has had different trajectories in each of the three Scandinavian countries. Furthermore, relatively little is known about the diffusion and use of Lean in municipalities in Norway. Therefore, a survey of Norwegian municipalities could provide an updated picture of the concept's diffusion and application and could help identify and shed light on recent developments and trends.

### **3. Methods and Data**

This section outlines and describes the research approach followed in this study, focusing on issues related to overall research approach, questionnaire design, and response rate.

#### *3.1. Electronic survey methodology*

The study employs an electronic survey (e-survey) methodology. In the case of this study, the survey was administered using the survey software MI Pro ([www.mipro.net](http://www.mipro.net)), and the data were exported from MI Pro to the statistics software SPSS for further analysis.

All of the Norwegian municipalities' e-mail addresses were gathered from a website ([www.kommuneforlaget.no](http://www.kommuneforlaget.no)), and thereafter an e-mail invitation to take part in the survey was sent to each

municipality's public e-mail address. The e-mail invitation contained a brief explanation of the purpose of the study, as well as a link to the web survey.

The invitation contained an explicit instruction for the recipient to forward the e-mail to the person best suited to answer a survey about Lean. In this study, the aim was to target individuals with relevant managerial roles in the municipality such as general managers, financial managers, or internal Lean consultants/advisors who would be able to answer questions about the use of Lean in their respective municipality in a meaningful way.

### 3.2. Questionnaire Design

As discussed in the literature review, two previous surveys of Norwegian municipalities were conducted by Dolva (2011) and Schie (2012). In addition, another broad-based survey of Norwegian organizations was conducted in 2015 (Madsen et al., 2016). Many of the questions used in the current survey build on those used in these aforementioned surveys. In part, this makes it possible to make comparisons and to identify developments and trends in the adoption, diffusion and implementation of Lean in Norwegian municipalities.

At the same time, it should be noted that no particular test of the questions' reliability and validity have been carried out. However, the questions are not supposed to reflect complex, underlying concepts that need to be measured by multiple questions (for instance by employing a reflective measurement model). For most questions there is a simple one-to-one relationship between the question and the underlying concept. This makes lack of validity less of a concern. The questions have also been employed in the three aforementioned surveys (Dolva, 2011; Schie, 2012, Madsen et al., 2016); all of which have provided consistent and reliable results.

The questionnaire consisted of a mix of closed-ended and open-ended questions. However, most of the questions were closed-ended, and used five-point Likert scales. For many of the questions, it was possible for the respondents to select several answer alternatives. This means that in some of the tables, the sum of the percentages add up to more than one hundred percent. Moreover, answer alternatives such as "do not know" and "do not wish to answer" as well as open-ended answer alternatives to some of the questions were included. The purpose of this was to avoid forcing the respondents to select an answer alternative they did not feel appropriate. However, the analysis of the results in Section 4 excludes open-ended answers as few respondents provided such answers.

### 3.3. Response Rate

The survey was sent to all 426 municipalities in Norway in February 2017. After two reminders that were sent out at two-week intervals, the final response rate ended at roughly twenty-five percent (Table 1). While this response rate may be considered relatively low judging by conventional standards in the research methods literature (see e.g., Ghauri & Grønhaug, 2002; Mitchell & Jolley, 2012), studies suggest that response rates in web and internet-based surveys tend to be lower (Cook, Heath, & Thompson, 2000; Shih & Fan, 2008). The fact that about seventy-four percent did not respond to or complete the survey, suggests that there could be potential issues related to non-response bias (Armstrong & Overton, 1977), which could represent a threat to the validity and generalizability of the findings.

**Table 1.** Response rate.

	<b>Frequency</b>	<b>Percentage</b>
Complete	109	25.55
Answered via e-mail (declined)	3	0.7
Incomplete	16	3.75
Non-response	298	70.0
Sum	426	100.0

## 4. Findings

This section consists of three main parts, each providing results about different aspects of the diffusion and use of Lean (adoption, implementation, effects).

#### 4.1. Adoption

This section reports on findings related to the adoption of the Lean concept in Norwegian municipalities. The section starts off with findings related to awareness and contact points, before examining adoption rate, time of adoption, adoption motives, reasons for non-adoption, and finally, planned adoption.

##### 4.1.1. Awareness

The first issue concerns the awareness of Lean among Norwegian municipalities. It is important to examine the level of awareness, as municipalities are unlikely to adopt management concepts that they have not heard of. Table 2 shows that the awareness of Lean has increased sharply since the early 2010s. While the surveys by Dolva (2011) and Schie (2012) both showed that nearly sixty percent reported having heard of Lean, in 2017 nearly ninety-two percent report having heard of the concept.

This level of awareness is close to the level reported in a broad-based study of Lean adoption and diffusion in Norway (Madsen et al., 2016). The overall increase in the awareness of Lean over time is not surprising given the attention that has been devoted to Lean by Norwegian government agencies, politicians and other actors (e.g. consulting firms) (Aspøy, 2014; Rolfsen, 2014). For example, Madsen et al. (2016) showed that there was a sharp increase in print-media discourse about Lean in Norway in the period from 2010 to 2016.

**Table 2.** Awareness of Lean in Norwegian municipalities 2011-2017.

	2011 (Dolva, 2011)		2012 (Schie, 2012)		2017 (Current study)	
	N	%	N	%	N	%
Yes	108	58.7	110	58.5	100	91.7
No	76	41.3	78	41.5	9	8.3
Sum	184	100.0	188	100.0	109	100.0

##### 4.1.2. Contact Points

The second issue is related to how municipalities have encountered the Lean concept, i.e. what the contact points are. Table 3 shows the municipalities' contact points with the Lean concept. The data indicate that the most important contact points were educational programs, other municipalities, previous employers, conferences, and employees.

It is a bit surprising that only three percent of the respondents point to consultants as a contact point since consultants play a leading role in the diffusion and popularization of management concepts and ideas (Heusinkveld, 2013; Jung & Kieser, 2012). The percentage mentioning consultants as a contact point is also much lower than what was reported in the study by Madsen et al. (2016). The rather surprising finding can be explained in different ways. One explanation for this difference in the role of consultants could perhaps be attributed to a lower degree of usage of consulting services among municipalities than among private sector firms. However, another explanation could be that the survey respondents who were forwarded the survey within the municipalities and may be responsible for Lean implementation, were not the ones who were in contact with consultants in the adoption phase (e.g. CEOs or mayors).

**Table 3.** Contact points with Lean (N = 100).

	<b>Frequency</b>	<b>Percentage</b>
Employees	11	11.0
Media	7	7.0
Other municipalities	17	17.0
Educational programs	18	18.0
Previous employer	16	16.0
Courses/conferences arranged by private sector actors	0	0
Courses/conferences arranged by public sector actors	14	14.0
Courses/conferences arranged by KS	7	7.0
Representatives from KS	3	3.0
Meetings with KS	1	1.0
Projects run by KS	0	0.0
Consulting firms	3	3.0
Other	3	3.0

Table 4 shows that twenty-four percent of respondents report that they have not participated in any courses about Lean at all. More than half of the respondents report that their employees have participated, while roughly a third report that managers have participated. Twenty percent report that union representatives have participated in courses about Lean. The involvement of union representatives in seeking out information about Lean is not surprising since researchers have noted that unions have been actively involved in the introduction of Lean in Norway (Rolfsen & Ingvaldsen, 2012).

**Table 4.** Participation in courses about Lean (N = 100).

	<b>Frequency</b>	<b>Percentage</b>
Have representatives from the municipality participated in courses about Lean?		
Managers	35	35.0
Employees	54	54.0
Union representatives	20	20.0
Do not know / unsure	16	16.0
No	24	24.0

The respondents were also asked about the types of actors organizing and arranging these Lean-related courses and seminars. Table 5 shows that many respondents reported that they did not know who organized and arranged the courses. Among those respondents who were able to recollect this, the organizations KS and Lean Forum Norge (Lean Forum Norway) were most commonly mentioned as having organized and arranged Lean courses. Moreover, some respondents identified other consulting, research and analyst firms (e.g. Flowit AS, Ikaro Solutions AS, SINTEF, Lean Consulting AS, and Bedriftskompetanse AS). Most of these firms have been actively involved in the Norwegian market for Lean consulting services, e.g. by being listed in the “Lean consulting guide” on Lean Forum Norge’s website.

**Table 5.** The actors arranging courses about Lean (N = 60).

	<b>Frequency</b>	<b>Percentage</b>
KPMG	1	1.7
PwC	1	1.7
Lean Lab	1	1.7
Lean Forum Norge	6	10.0
KS	17	28.3
Do not know	22	36.7
Other	12	20.0
	60	100.0



#### 4.1.3. Contact with Other Municipalities

The next issue concerns contact with other municipalities, since management concepts and practices may spread via inter-organizational networks and ties (Abrahamson, 1991; DiMaggio & Powell, 1983). In a related question, the respondents were asked about whether the municipality had been in contact with other municipalities. Table 6 shows that about sixty percent have not been in contact with other municipalities, while about forty percent agree that they have at least partly been influenced, or influenced by, other municipalities. Furthermore, thirty-three percent report that they have visited other municipalities that are current Lean users, while twenty-one percent report that other municipalities have visited them.

**Table 6.** Contact with other municipalities (N = 100).

	<b>Frequency</b>	<b>Percentage</b>
We have visited other municipalities using Lean	33	33.0
Other Lean-using municipalities have visited us	21	21.0
No	61	61.0

Following up on this question, the respondents were asked about the extent to which other municipalities' adoption and experiences with Lean has influenced them. Table 7 shows that about forty percent agree (at least partly) that other municipalities' adoption of Lean has been an influential factor in their own choice of whether or not to adopt Lean. Sixty percent agree that they have derived utility from other municipalities' knowledge of Lean, suggesting that a degree of inter-organizational learning has taken place.

**Table 7.** Influence by other municipalities (N = 27).

	<b>Other municipalities' adoption of Lean has been decisive in our choice</b>	<b>We have derived utility from other municipalities' knowledge of Lean</b>
Disagree completely (%)	29.6	25.9
Disagree partly (%)	7.4	3.7
Neither agree nor disagree (%)	22.2	7.4
Agree partly (%)	25.9	22.2
Agree completely (%)	14.8	40.7
Do not know (%)	0.0	0.0
Sum	100.0	100.0

#### 4.1.4. Adoption Rate

In order to say something about the diffusion of Lean, it is important to examine the adoption rate, i.e. the percentage of municipalities that have adopted Lean. The surveys by Dolva (2011) and Schie (2012), which were carried out relatively soon after the emergence of Lean in the Norwegian municipality sector, documented adoption rates of twelve and about eighteen percent, respectively. Table 8 shows that, roughly five years later, thirty-three percent claim to have adopted Lean. This means that the adoption rate has increased considerably over course of the last six years, and is now at a fairly high level. It is also worth noting from Table 8 that three percent of Norwegian municipalities have already abandoned Lean. The respondents were not asked a follow-up question about why they have abandoned Lean. However, as shown in Section 4.3.4, many respondents report having experienced implementation challenges. It is therefore possible that some may have dropped the Lean concept because of such implementation difficulties.

**Table 8.** Adoption rates in studies of Lean in Norwegian municipalities.

	2011 (Dolva, 2011)		2012 (Schie, 2012)		2017	
	N	%	N	%	N	%
Yes	13	12.0	20	18.2	33	33.0
No	95	88.0	90	81.8	64	64.0
Used Lean previously, but have abandoned it	N/A		N/A		3	3.0
Sum	108	100.0	110	100.0	100	100.0

#### 4.1.5. Time of Adoption

Related to the previous question, the respondents were asked about when they had adopted Lean. Table 9 shows that almost half of the municipalities are very recent adopters of Lean, having adopted the concept within the last two years. Less than a quarter of the respondents answered that they adopted Lean more than five years ago (i.e. prior to 2012). Overall, these data support the view that Lean is still a relatively new phenomenon in the Norwegian municipality sector.

**Table 9.** Time of adoption (N = 33).

	Frequency	Percentage
Less than 1 year ago	9	27.3
1-2 years ago	7	21.2
3-4 years ago	9	27.3
5-10 years ago	8	24.2
Do not know	0	0.0
Sum	33	100.0

#### 4.1.6. Adoption Motives

Related to adoption, another important issue pertains to the motives and rationales for adopting new management concepts (Abrahamson, 1991; Sturdy, 2004). Therefore, one question focused on the municipality's motives and rationales for adopting Lean. The answer categories that are shown in Table 10 are based on the influential typology of motives for adoption of management fads and fashions introduced by Abrahamson (1991).

Table 10 shows that the most commonly cited rationale for adopting Lean is that the concept is viewed as the most effective management tool, i.e. an efficiency-driven motive. About eleven percent answer pressure from politicians and the government, which is similar to what Abrahamson (1991) labels "forced selection." Nearly nineteen percent report that others have recommended Lean ("fashion"), while about seven percent report that other municipalities are using Lean ("fad"). Compared with the survey by Madsen et al. (2016), motives related to fashion, the fad and forced-selection categories seem to play a bigger role in the municipality sector than in other sectors in Norway.

**Table 10.** Adoption motives (N = 27).

	<b>Abrahamson (1991) typology</b>	<b>Frequency</b>	<b>Percentage</b>
Other municipalities are using Lean	Fad	2 (1)	7.4
Lean is the most effective management tool	Efficient choice	12 (4)	44.4
Others have recommended Lean	Fashion	5 (4)	18.5
Pressure from politicians and the government	Forced selection	3 (1)	11.1
Do not know		1	3.7
Other		4 (16)	14.8
		27	100.0

#### 4.1.7. Reasons for Non-Adoption

In the previous questions, respondents were asked about the motives for adoption of Lean. Related to this, it is important to find out why non-adopters of Lean have chosen not to adopt the concept. Therefore, the respondents were asked about reasons for why they had not adopted Lean. As shown in Table 11, the respondents cited several different reasons. The most common claim was that they were using other management tools, that the effects of Lean were unclear, or that Lean was too resource-intensive.

These findings suggest that other management tools currently have a strong position in the Norwegian municipality sector. Recent research lend some support to this view, by showing that Norwegian municipalities are frequent users of other management concepts such as the Balanced Scorecard (Fallan, Olsen, Daleq, & Hobbel, 2015) and benchmarking (Askim, Johnsen, & Christophersen, 2008). It could be that municipalities may be less inclined to try Lean when the effects are perceived to be unclear. After all, managers are unlikely to adopt new management concepts unless they perceive potential benefits (Benders, 1999).

**Table 11.** Reasons for non-adoption of Lean (N = 70).

	<b>Frequency</b>	<b>Percentage</b>
Using other management tools	20	28.6
Change fatigue	0	0.0
Do not need it	2	2.9
Too resource intensive	8	11.4
Not feasible due to financial reasons	0	0.0
Effects are unclear	15	21.4
Do not know	14	20.0
Other	11	15.7
	70	100.0

#### 4.1.8. Non-Adopters' Use of Other Management Concepts and Tools

Those respondents who answered that they had either not heard of or adopted Lean, were asked about what types of management concepts and tools they use. Table 12 shows that nearly ninety percent used performance-oriented budgets, whereas balanced scorecards were used by roughly a third of the municipalities.

**Table 12.** Non-adopters use of other management concepts and tools (N = 82).

	<b>Frequency</b>	<b>Percentage</b>
Performance-oriented budgets	73	89.0
Balanced Scorecard	27	32.9
Activity Based Costing/Management	0	0.0
Benchmarking	15	18.3
No management tool	0	0.0
Do not know	5	6.1
Other	6	7.3

#### *4.1.9. Respondents Considering Lean Adoption*

Those municipalities that had not adopted Lean were asked about whether the municipality is considering future adoption of Lean. About twenty-nine percent of the non-adopters were considering adoption (28.6%, N=70), twenty-three percent reported that they did not know (22.9%, N=70), whereas nearly fifty percent answered that they were not considering adopting Lean (48.6%, N=70). Compared with the findings of Madsen et al. (2016), the percentage of municipalities considering adoption is relatively high. This could cautiously be interpreted as a sign that the adoption rate could climb further in the future.

#### *4.2. Implementation*

This section focuses on the part of the survey that focuses on how the Lean concept has been implemented in Norwegian municipalities. This entails a description of how the municipalities have contextualized the Lean concept, e.g. in terms of implementation in different functional areas. Furthermore, the section examines aspects of the implementation process, such as the degree to which employees and union representatives have participated, what types of Lean tools and techniques are used, and whether external consultants have been involved. Finally, the section contains related issues such as perceptions of the degree to which Lean is implemented, and as well as whether or not Lean is used alongside other management concepts and tools.

##### *4.2.1. Contextualization of Lean*

Contextualization refers to how a management concept such as Lean is adapted, customized and translated to fit in a particular organization (see e.g., Røvik, 2007). As noted by several researchers (Benders & Van Bijsterveld, 2000; Brännmark et al., 2012; Morris & Lancaster, 2006; Wittrock, 2015, 2017), the Lean concept is vague and open to interpretation, which means that the Lean concept is likely to be contextualized and translated in different ways as it is implemented in organizational practice.

##### *4.2.1.1. Lean Project Manager*

In Lean implementation projects it is typically important to have an internal Lean “navigator” or change agent (Breit & Rolfsen, 2014b; Rolfsen, 2014). This person may be an individual with knowledge and experience with Lean, and is given the task of driving and developing the Lean concept within the organization. Therefore, the respondents were asked about whether the municipality has a Lean project manager. Nearly half of the respondents (44.4%, N=27) answer that they have a designated Lean project manager.

##### *4.2.1.2. Choice and Adaptation of the Lean concept*

As mentioned earlier, the Lean concept has considerable room for interpretation and is implemented and translated in different ways (Benders & Van Bijsterveld, 2000; Brännmark et al., 2012; Morris & Lancaster, 2006; Wittrock, 2015). The survey data also suggest that that the municipalities vary in terms of how they interpret and

apply the Lean concept. Table 13 shows that more than half of the municipalities claim to have developed their own “home-made” Lean model. About fifteen percent have adopted a Lean model from another municipality, whereas about twenty-five percent have adopted a Lean model from external consultants.

**Table 13.** Municipalities’ choice of what Lean model to adopt and implement (N = 27).

	<b>Frequency</b>	<b>Percentage</b>
Developed own Lean model	15	55.6
Adopted a Lean model from another municipality	4	14.8
Adopted a Lean model from external consultants	8	25.9
Do not know	1	3.7
Sum	27	100.0

#### 4.2.1.3. Evolution of the Lean concept after adoption and implementation

In the literature on management concept and ideas, it is suggested that concepts may take different trajectories in organizations (Røvik, 2007, 2011). Therefore, the respondents were asked about whether the municipality’s Lean model has evolved since the Lean concept was initially introduced in the municipality. The data show that about three out of four (74.1%, N=27) claim that their Lean model has evolved over time.

#### 4.2.2. Implementation in different functional areas

Next, the respondents were asked about the implementation of Lean within different functional areas of the municipality. The respondents were asked to identify areas where Lean was used at the time of initial adoption/implementation, as well as where it is currently used. Table 14 shows that, initially, Lean was most commonly used within areas such as health care, administration, and real estate and buildings. The table also reveals some changes between use at the time of adoption and current use. In particular, the use of Lean in areas such as child care services, schools and education, real estate and buildings, and taxation and commerce has increased sharply. One possible explanation for the heavy use of Lean in these areas could be that these are big budget items for Norwegian municipalities. Therefore, municipalities may be particularly motivated to adopt and implement Lean in these areas.

**Table 14.** Areas where the Lean concept has been implementation (N = 27).

	<b>At the time of initial adoption/implementation Percentage</b>	<b>Current Percentage</b>
Health care	81.5	88.9
Administration	70.4	77.8
Real estate and buildings	55.6	74.1
Nature, culture and leisure	14.8	25.9
Water and sanitation	14.8	25.9
Child care services	25.9	51.9
Schools and education	22.2	37.0
Taxation and commerce	3.7	18.5
Waste and recycling	7.4	7.4
Housing and social services	14.8	33.3
Fire department	3.7	11.1
Transportation, parking and roads	7.4	14.8
Agriculture	3.7	N/A
Other	18.5	14.8

#### 4.2.3. Employee Participation in the Implementation Process

Next, the focus turns to an examination of the perceived level of employee participation in the implementation process. Table 15 shows that there generally is a very high degree of employee participation in the Lean implementation process. This suggests that the implementation of Lean at least partly is a bottom-up process. These findings are not very surprising given that Lean in Norway typically has a more “democratic” flavor than in other countries (Ingvaldsen et al., 2012; Ingvaldsen, 2013; Rolfsen, 2014).

**Table 15.** Perceived level of employee participation in the implementation process (N = 27).

	Disagree completely (%)	Disagree partly (%)	Neither agree nor disagree (%)	Agree partly (%)	Agree completely (%)	Do not know (%)
Employees had a high level of influence on the implementation of Lean	0.0	11.1	11.1	18.5	55.6	3.7
Employees participated in the implementation of Lean	7.4	7.4	18.5	25.9	40.7	0.0
Management are visible and active in the implementation of Lean	0.0	0.0	14.8	37.0	48.1	0.0
There are regular meetings where employees can suggest new solutions	0.0	18.5	14.8	18.5	40.7	7.4
Suggestions from employees are often taken into account	0.0	0.0	3.7	37.0	55.6	3.7

#### 4.2.4. Union Participation in the Implementation Process

A distinguishing feature of the implementation of Lean in Norway is that unions have been actively involved in the process (Ingvaldsen et al., 2012; Rolfsen, 2014; Rolfsen & Ingvaldsen, 2012). Therefore, the respondents were asked about how they perceived the level of union participation in the implementation of Lean. Table 16 shows that there is generally moderately high level of participation by union representatives in the Lean implementation process.

**Table 16.** Perceived union participation in the implementation of Lean (N = 27).

	Disagree completely (%)	Disagree partly (%)	Neither agree nor disagree (%)	Agree partly (%)	Agree completely (%)	Do not know (%)
Union representatives had a high level of influence on the implementation of Lean	11.1	3.7	37.0	29.6	18.5	0.0
Union representatives participated in the implementation of Lean	18.5	18.5	11.1	33.3	14.8	3.7
Union representatives are visible and active in the implementation of Lean	11.1	18.5	25.9	29.6	14.8	0.0
There are regular meetings where union representatives can suggest new solutions	3.7	22.2	18.5	33.3	22.2	0.0
Suggestions from union representatives are often taken into account	3.7	7.4	29.6	37.0	14.8	7.2

#### 4.2.5. Use of Lean-related tools and techniques

The “Lean toolbox” consists of a large number of tools and techniques (Bicheno, 2008; Bicheno & Holweg, 2008; Modig & Åhlström, 2012; Rolfsen, 2014). Organizations draw on and utilize these tools and techniques to varying degrees in actual implementations of Lean. Table 17 provides an overview of the most commonly used Lean-related tools and techniques among Norwegian municipalities. The six most widely used tools are (1) continuous improvement, (2) visual cards, (3) identification and removal of constraints, (4) 5S, (5) value stream mapping, and (6) five whys. The data show a pattern that to some extent resembles what has been seen in studies of Danish and Swedish municipalities (Arlbjørn & Freytag, 2009; Arlbjørn et al., 2011; Brännmark, 2012).

For example, in Denmark, Arlbjørn and Freytag (2009) found that tools such as continuous improvement, value stream mapping, and identification of waste were widely used. Similarly, in Sweden, value stream mapping,

5S, identification of waste, as well as identification and removal constraints were much used (Brännmark, 2012, cited in Ringen & Rolfsen, 2014).

**Table 17.** Use of elements of the Lean toolbox (N = 27).

	<b>Frequency</b>	<b>Percentage</b>
Value stream mapping	20	74.1
Five whys	19	70.4
Continuous improvement	25	92.6
Identification of waste	19	70.4
Kanban	2	7.4
SMED	0	0.0
Visual cards	25	92.6
5S	20	74.1
Six Sigma	0	0.0
Identification and removal of constraints	21	77.8
A3	11	40.7
Systematic observation of work processes	9	33.3
PDCA	14	51.9
Standardized work processes	14	51.9
Poka-Yoke	1	3.7
Quality circles	7	25.9
Other	4	14.8

#### 4.2.6. Use of External Consultants

The respondents were asked about the extent to which external consultants have been involved in the implementation of Lean in their municipality. This question stems from previous research on Lean in Norway which has shown that external consultants have been involved in the implementation of Lean in many organizations (Breit & Rolfsen, 2014a). For example, it has been reported that consultants were actively involved in some of the early initiatives in the Norwegian municipality sector (Ringen & Rolfsen, 2014).

Table 18 shows that consultants generally have played a very active role in the adoption and implementation of Lean in Norwegian municipalities. Only about fifteen percent answer that consultants have not been involved. Nearly half of the respondents answer that external consultants have been involved in relation to top or middle managers. Earlier in this paper, it was shown that only three percent stated that consultants were the point of contact with Lean. An explanation for this difference, is that some municipalities may have hired external consultants later in the implementation process.

**Table 18.** Use of external consultants (N = 27).

	<b>Frequency</b>	<b>Percentage</b>
External consultants have developed a ready-to-use solution	3	11.1
External consultants have been involved in relation to top managers	13	48.1
External consultants have been involved in relation to middle managers	12	44.4
External consultants have been involved in relation to union representatives	6	22.2
External consultants have been involved in relation to other employees	8	29.6
No	4	14.8
Do not know	1	3.7
Other	5	18.5

Following up on the previous question, the respondents were asked if the municipality kept using consultants in the post-adoption phase. Table 19 shows that most of the municipalities have not used consultants to a great extent in the post-adoption phase. While Table 18 above indicates that consultants have played an influential role in

the early adoption phase, the data in Table 19 suggest that these consultants have mostly left the municipalities after the initial development and roll-out of Lean.

**Table 19.** Use of external consultants post-adoption (N = 27).

	<b>Frequency</b>	<b>Percentage</b>
Yes	2	7.4
Partly	7	25.9
No	18	66.7
	27	100.0

#### 4.2.7. Degree of Lean Implementation

Related to contextualization, it is interesting to find out how the respondents perceive the degree to which Lean is implemented in the municipality. Therefore, the respondents were asked to indicate their perception of the degree to which Lean is implemented in the municipality. Table 20 shows that most respondents perceive a relatively low level of Lean implementation. More than a third perceive that they currently are less than twenty percent Lean. Only a single respondent claims to be “completely” Lean. These findings can be seen in relation to the findings in section 4.1.5 showing that most municipalities have recently adopted Lean. Hence, they may not have been able to venture far on their “Lean journeys.” After all, in the Lean literature it is highlighted that the implementation of Lean could take several years (e.g. Womack & Jones, 2003).

**Table 20.** Degree of implementation (N = 27).

	<b>Frequency</b>	<b>Percentage</b>
0 – 20 percent	10	37.0
20 – 40 percent	7	25.9
40 – 60 percent	6	22.2
60 – 80 percent	3	11.1
80 – 100 percent	0	0.0
All units	1	3.7
Do not know	0	0.0
	27	100.0

#### 4.2.8. Use of Other Management Concepts in Addition to Lean

It is also interesting to find out what other types of management concepts municipalities used in addition to Lean. Researchers have shown that new management concepts are often combined with other existing concepts and practices (Heusinkveld & Benders, 2012; Røvik, 2011). Table 21 shows that a majority of the respondents reported that they use budgets and balanced scorecards, while benchmarking is used to a lesser extent. The respondents who answered “other” claimed that they used different types of causal analyses, priority matrices or “home-made” variants of Lean-related tools and techniques.

**Table 21.** Use of other management tools and techniques in conjunction with Lean (N = 27).

	<b>Frequency</b>	<b>Percentage</b>
Budgets	24	88.9
Balanced Scorecard	17	63.0
Activity Based Costing/Management	0	0.0
Benchmarking	5	18.5
Do not know	1	3.7
Other	3	11.1

#### 4.3 Effects

This section turns the focus to what Norwegian municipalities perceive as the effects of Lean implementation. This involves a description of what the aim of implementing Lean was, whether or not the municipality has evaluated effects, the Lean concept’s fit with organizational culture, as well as the challenges associated with the implementation of Lean.



#### 4.3.1. Aim of Implementation

The respondents were asked about the aim of implementing Lean (Table 22). The results show that, not surprisingly, most respondents claimed that key aims of implementing Lean were to improve resource utilization and productivity, organizational development, or key user or employee satisfaction measures. It is noteworthy that none of the respondents referred to “downsizing” as being the aim of Lean implementation, since Lean is often strongly linked to rationalization efforts such as downsizing (Benders & Van Bijsterveld, 2000). However, the finding that none are using it for rationalization could be explained by the fact that Lean is often implemented in a more democratic and cooperative way in Norwegian work life, which has a strong focus on employee rights and powerful unions (Rolfsen, 2014; Rolfsen & Ingvaldsen, 2012).

**Table 22.** Aim of Lean implementation (N = 27).

	Frequency	Percentage
Improve user/customer satisfaction	23	85.2
Improve resource utilization / productivity	26	96.3
Improve employee satisfaction	23	85.2
Organizational development	23	85.2
Downsizing	0	0.0
Do not know / do not wish to answer	0	0.0
Other	2	7.4

#### 4.3.2. Evaluation of Effects

Related to the question of what was the aim of implementing Lean, is finding out whether the municipalities have evaluated the effects of Lean implementation. More than half of the respondents (51.9%, N=27) indicate that they have evaluated the effects of implementation. The fourteen respondents who answered that they have evaluated the effects of Lean implementation, were asked another question about the perceived effects of Lean implementation on different performance areas. Table 23 shows that the respondents predominantly perceive positive effects. This is similar to the pattern documented by Madsen et al. (2016). However, a large portion of the municipalities report that Lean is too recently implemented to be able to evaluate effects.

**Table 23.** Perceived effects of Lean implementation on different performance areas (N = 14).

	Resource utilization	Productivity	Quality	User/customer satisfaction	Flexibility and response time	Employee satisfaction	Sickness leave	Finances
Very negative (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Negative (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
None (%)	0.0	7.1	0.0	7.1	0.0	14.3	21.4	7.1
Positive (%)	71.4	50.0	71.4	35.7	50.0	42.9	35.7	42.9
Very positive (%)	21.4	21.4	14.3	21.4	21.4	7.1	0.0	14.3
Too recently implemented (%)	7.1	21.4	14.3	14.3	14.3	21.4	14.3	14.3
Do not know (%)	0.0		0.0	21.4	14.3	14.3	28.6	21.4

#### 4.3.3. Perceptions of Fit With Organizational Culture

The respondents who had evaluated effects were also asked about how Lean is perceived to fit with the organization’s culture, and how the concept has been received by employees. Table 24 shows that Lean is generally perceived as compatible with the organizational culture. Furthermore, the concept is perceived to be well-received

by employees. Generally, these findings suggest that respondents have positive evaluations of the effects of the concept.

**Table 24.** Perceptions of the Lean concept's fit with the municipality's organizational culture (N = 14).

	<b>Lean is compatible with the organizational culture</b>	<b>Lean has been well-received by employees</b>
Disagree completely (%)	0.0	0.0
Disagree partly (%)	0.0	0.0
Neither agree nor disagree (%)	11.1	11.1
Agree partly (%)	37.0	70.4
Agree completely (%)	51.9	18.5
Do not know (%)	0.0	0.0
	100.0	100.0

#### 4.3.4. Implementation Challenges

Research on Lean suggest that there are many issues and challenges associated with the implementation of the concept (Arlbjørn & Freytag, 2013; Bhasin & Burcher, 2006; Krause-Jensen, 2017; Loenen & Schouteten, 2016; Yadav, Nepal, Rahaman, & Lal, 2017). Therefore, one survey question asked the respondents about whether the municipality has encountered challenges in the implementation process. Table 25 shows that the most commonly cited problems are cultural challenges, lack of top management engagement, resistance from employees, communication problems. However, thirty-seven percent report no particular challenges.

**Table 25.** Implementation challenges (N = 27).

	<b>Frequency</b>	<b>Percentage</b>
Resistance from employees	10	37.0
Resistance from union representatives	3	11.1
Cultural challenges	15	55.6
Lack of top management engagement	14	51.9
Communication problems	7	25.9
No particular challenges	10	37.0
Do not know	0	0.0
Other	1	3.7

#### 4.3.5. Evaluation of the Future of the Lean Concept

Finally, the respondents were asked a question concerning their evaluation of the future of the Lean concept. Table 26 shows that most respondents tend to disagree that Lean is a passing trend. This can be viewed an indication of a relatively strong faith in the future of Lean as a management concept, suggesting that the concept is currently highly institutionalized in the Norwegian municipality sector. It seems that few respondents are showing signs of being disillusioned with the concept or that Lean is becoming "worn out" (Benders & Van Veen, 2001). However, in other contexts, Lean has experienced downturn periods (Benders & Van Bijsterveld, 2000; Larsson, 2012; Wittrock, 2015). Therefore, it is possible that this could happen in the Norwegian municipality sector as well at some point in the future.

**Table 26.** Evaluation of the future of the Lean concept (N = 27).

	<b>Lean is a passing trend</b>	<b>Lean is an effective tool for reducing waste</b>
Disagree completely (%)	66.7	11.1
Disagree partly (%)	18.5	0.0
Neither disagree nor agree (%)	11.1	0.0
Agree partly (%)	3.7	29.6
Agree completely (%)	0.0	59.3

#### 4.4. Summary of results

The data about the adoption of Lean have shown that the awareness of the concept has increased quite sharply since the early 2010s. The survey responses indicate that municipalities have come in contact with Lean in different ways, such as through participation in educational programs, conferences and contact with other municipalities. As a result, the adoption rate has increased to about one third. However, most municipalities are relatively recent adopters. While most claim that they made the decision to adopt Lean because it is an efficient management tool, others report that they have been influenced by other municipalities, fashion-setters, or have been pressured by politicians and the government. Moreover, there are still relatively many municipalities considering adopting Lean, which can cautiously be interpreted as a sign that the adoption rate in the municipality sector could continue to climb.

The main issue in the part about the implementation of Lean has been how Lean is contextualized within the municipalities, i.e. how the concept is adapted and customized. In the survey, the respondents reported that Lean is most commonly used within areas such as health care, administration, real estate and buildings, and child care services. The survey also reveals interesting findings about the implementation process. For example, employees and union representatives have been actively involved. The municipalities also draw on Lean-related tools and techniques to varying extent. Overall, the respondents perceive a relatively low degree of Lean implementation, which could be attributed to the relatively recent adoption of Lean. Finally, the results show that the municipalities use other management tools and techniques (e.g. budgets, balanced scorecards) in conjunction with Lean.

Finally, the part about the effects of Lean shows that the main aims of Lean adoption and implementation are related to increasing productivity and improving customer/employee satisfaction. While the respondents generally have a very favorable view of the effects of Lean, many also report implementation challenges related to culture, managerial engagement, and organizational resistance. Most respondents tend to have a positive evaluation of the future of the Lean concept, generally disagreeing with the view that Lean is a passing trend, and agreeing that it is as an effective tool for reducing waste.

### 5. Discussion

In this section the survey results are discussed in light of extant research on Lean in the municipality sector, and, more generally, the literature on the diffusion of popular management concepts and ideas. The discussion is divided into three parts: (1) adoption, (2) implementation, and (3) effects.

#### 5.1. Adoption

The survey data have cast light on several aspects of the adoption process in Norwegian municipalities. With regards to the pre-adoption phase, i.e. where organizations learn about and become aware of a management concept (Madsen, 2014; van Rossem & van Veen, 2011), the survey data show that the awareness of Lean has increased sharply since 2011/2012, to the point where more than ninety percent are aware of the concept.

One explanation for this increase in awareness is that various types of fashion-setting actors (e.g. Lean consultants, gurus and academics) have created a “wave of interest” (Kieser, 1997) around Lean. This view is partly supported by research which has shown that there has been a great increase in the media discourse about Lean in Norway in recent years, as well as a wide range of other Lean-related activities such as conferences, seminars, training programs and networks (Madsen et al., 2016).

Furthermore, the data suggest that municipalities, at least to a certain extent, appear to have been influenced by social and institutional factors. For example, municipalities report that they came in contact with the concept via interaction with different types of fashion-setting actors (e.g. conference/seminar organizers), or that they learned about the concept as a result of contact and interaction with other municipalities.

With regards to the adoption decision-making phase, the survey also sheds some light on motives and rationales driving the decision of whether or not to adopt Lean. The survey suggests that both efficiency, fad, fashion, and forced-selection motives (Abrahamson, 1991) have been influential in the adoption decision-making process. While the survey data are not able to shed much light on this, it is possible that a combination of different motives have worked in interplay in the municipality sector (cf. Daniel, Myers, & Dixon, 2012; Rautiainen, 2009; Sturdy, 2004). Overall, the data provide support for the role of institutional isomorphism in the adoption of new management concepts (DiMaggio & Powell, 1983), i.e. mimetic pressure (“other municipalities are using Lean”),

coercive pressure (“pressure from politicians and the government”), and normative pressure (“others have recommended Lean”).

Lastly, the data suggest that the adoption rate has increased considerably, and many of the municipalities are recent adopters, which suggests that Lean is still in an early stage of its lifecycle in the municipality sector in Norway. The lifecycle pattern in the municipality sector differs from the pattern in Norway as a whole where Lean appears to be in a relatively later stage of the lifecycle (Madsen et al., 2016). This indicates that the adoption and diffusion pattern of the Lean concept differs quite a bit between the private and public sectors in Norway.

## 5.2. Implementation

The findings also cast light on several aspects of the implementation of Lean in the Norwegian municipality sector. These findings have implications for discussions about the nature of the Lean concept, and how it is interpreted and implemented in organizational practice (Benders & Van Bijsterveld, 2000; Brännmark et al., 2012; Wittrock, 2015). With the regards to implementation, the data show that Norwegian municipalities use of a wide range of Lean-related tools and techniques. Similar to the observations made in Denmark by Arlbjørn et al. (2011), it appears that Norwegian municipalities draw on and utilize a wide variety of tools and techniques from the “Lean Toolbox,” but it is not clear from this study whether municipalities use the different Lean tools and principles together in a “holistic” and integrated way.

The data also suggest that the Lean concept is often used in combination with other management concepts and tools (e.g. Balanced Scorecards), suggesting that “translation” (Røvik, 2007) and adaptation of the Lean concept takes place. The perceptions of a relatively low degree of implementation also suggest that interpreting and applying the Lean concept is time-consuming and challenging in many ways. Moreover, the high level of participation by employees and union representatives in Norwegian municipalities also highlight the fluid and negotiated nature of the Lean concept in the public sector (Pedersen & Huniche, 2011b). It is possible that the involvement of such organizational actors could influence the degree of implementation. For example, some employee and union representatives may be skeptical of Lean, and may argue for a more gradual and incremental increase in the use of Lean in order to be able to assess the impact on the work environment.

## 5.3. Effects

Finally, the survey data shed light on effects of adoption and implementation of the Lean concept. Overall, the respondents tend to be quite positive in their perceptions of the effects of Lean in their organizations. At the same time, they also point to different types of implementation challenges. Interestingly, this is much of the same pattern that was revealed in the survey by Madsen et al. (2016). As discussed previously, the Lean concept appears to be in a relatively early stage of the life cycle in the Norwegian municipality sector, as most municipalities have adopted Lean relatively recently. Therefore, it is possible that Norwegian municipalities are still in a “honeymoon period,” in which they are less likely to focus on negative aspects of implementing and using the Lean concept.

Another reason for the largely positive evaluations could be that few negative experiences or failure cases from the Norwegian municipality sector have surfaced in the media. This means that managers of municipalities, at least for the time being, view Lean in a primarily positive light and perhaps through rosy-colored glasses. However, this could change relatively quickly if Lean fails to live up to the high expectations that probably exist in the municipality sector. If this were to happen, the Lean concept could get “worn out” (cf. Benders & Van Veen, 2001). In the context of Lean, Wittrock (2015) has shown that the Lean concept has experienced a downturn in some parts of the world. Only time will show whether Lean will sustain its popularity in the Norwegian municipality sector.

# 6. Conclusions

## 6.1. Contributions

This paper has examined the diffusion of Lean in the Norwegian municipality sector. In doing so, the aim of the paper was to make a contribution to the literature on the use of Lean in the municipality sector, and provide a new and updated picture of the diffusion of the Lean concept in Norwegian municipalities.

Moreover, the study’s findings could also be of practical use to managers of Norwegian municipalities that are currently using, or considering adopting and implementing Lean. There are several lessons to be learned for managers of municipalities, in particular for those considering adopting or are those in the early phase of implementing Lean.

The findings of the study suggest that Norwegian municipalities use Lean in different ways, and utilize different types of Lean tools and techniques. It is important to be aware that Lean is not easy to implement; after all, many respondents report challenges related to organizational culture, managerial engagement, or organizational resistance. Furthermore, most report that they have implemented Lean to a low or moderate extent, which suggests that the “Lean-ification” process is perceived to be a long journey.

Therefore, it is important that managers of municipalities devote sufficient time and resources to the Lean implementation project. For example, Lean should not be viewed as a panacea which will immediately solve all problems related to productivity and efficiency. Rather, managers need to prepare the municipality for the fact that the “Lean journey” might not be smooth and linear as portrayed in textbooks or presentations by Lean consultants and gurus.

### *6.2. Limitations*

Like all studies, the current study has several limitations that should be considered carefully. First, the response rate is relatively low, and as a result, there is a risk that non-response bias could threaten the validity of the results. Moreover, there is a low number of responses per question, which means that it has not been possible to conduct any robust correlation or regression analyses. Instead, the analysis carried out in this paper has had to remain descriptive.

Second, the fact that the recipients of the e-mail invitation were asked to forward the email to the person best suited to answer the survey, may have introduced a source of bias. For example, there could be differences in terms of the ways the survey was circulated (“passed around”) within the municipality, or differences related to whether the initial recipient of the e-mail invitation had sufficient knowledge about who would be best suited to answer the survey.

Third, the cross-sectional nature of the current study means that it only provides a snapshot of the Lean concept’s diffusion in the municipality sector. Finally, while the survey method is useful for obtaining a picture of the diffusion of Lean in the municipality sector as a whole, it does not offer much “rich” in-depth insight into how the Lean concept is interpreted, implemented and “translated” in a particular municipality.

### *6.3. Future Work*

Keeping in mind the limitations, there are several ways in which the current study could be extended in future research efforts. First, this study has shown that municipalities tend to draw on and utilize a broad spectrum of Lean-related tools and techniques in practice. At the same time, it is unclear whether these tools and techniques are used in a “holistic” and integrated way (cf. Arlbjørn et al., 2011). Therefore, future studies could focus more closely on obtaining a better understanding of how different elements of the “Lean Toolbox” are chosen, applied and combined by municipalities in practice. An interesting question pertains to whether there are certain combinations of tools and techniques that are more effective than others.

Another avenue for future research pertains to the effects of using Lean in the municipality sector. The study shows that there is much variation when it comes to perceptions of the effectiveness of Lean. An important question is therefore why some municipalities succeed and appear to have seemingly smooth “Lean journeys,” while others encounter considerable implementation difficulties and, in some cases, ultimately fail and end up discarding the concept. Such in-depth investigations could generate insights that could be of interest and use to practitioners struggling to apply Lean in their own organizations. Moreover, insight into the main pitfalls associated with Lean implementation in the municipality sector could potentially help Lean users avoid similar problems in the future.

Finally, researchers should utilize a broader range of methodological approaches when studying Lean in the municipality sector. For example, researchers could carry out qualitative research interviews (Qu & Dumay, 2011) in one or more municipalities. Such studies could cast light on how Lean is interpreted, applied and “translated” in practice (Andersen & Røvik, 2015). Related to this, is a need for longitudinal studies where researchers follows the

implementation of Lean over time. Such longitudinal studies could uncover various organizational processes that happen as the Lean concept is implemented, and could help shed light on how organizational actors shape the organization's "Lean thinking" over time (cf. Røvik, 2011). Longitudinal fieldwork could also provide more insight into the cultural and social implications of Lean implementation in municipalities (Krause-Jensen, 2017).

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### **Public interest statement**

Lean is a management concept which is inspired by ideas and practices developed by the Toyota car company several decades ago. The overall aim of Lean is to reduce waste and improve the productivity of organizations. Since its inception around 1990, Lean has received much attention by academics and practitioners alike. In recent years, Lean has increasingly been applied in the public sector organizations, such as, for example, municipalities. This study examines the current diffusion and application of Lean in the Norwegian municipality sector, by means of an electronic survey. The results generally show that the awareness of and adoption of Lean has increased considerably in recent years. Overall, the respondents are satisfied with the use of Lean, and foresee continued use of the concept. At the same time, users of Lean also report implementation challenges related to issues such as, for example, organizational culture and managerial engagement.

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