

Work Values and Behaviors of Middle Managers in Lean Organizations: What Does It Take to Sustain Lean?

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Abstract

Although many firms have adopted Lean, values and behaviors for effectively *sustaining* Lean lack specification. Our research aimed to capture values and behaviors of highly effective Dutch middle managers in Lean firms. We had nineteen consultants of a Dutch consulting firm specialized in Lean identify Lean values and behaviors as well as names of highly effective Lean middle managers. We then interviewed, surveyed these so-selected six managers and their related managers, and video-observed four of them. As their key values they consider ‘honesty’ and ‘participation/teamwork.’ Their self-reported main behaviors are ‘actively listening to a person’s concerns’ and ‘building trust.’ From the objectively video-analysed regular meetings we coded indeed mainly: ‘active listening.’ Clearly, our study addresses a new relevant organization-behavioral niche.

Introduction

The concept ‘Lean production’ has been around since the 1950s when Toyota Motor changed its way of production and won the productivity battle with its American and West-European competitors (Holweg, 2007). Womack, Jones and Roos were the first to popularise it in their 1990 book *The Machine That Changed The World* (Holweg, 2007). Subsequently, Lean principles have also been successfully applied to service organizations. Lean is widely influential in business (Holweg, 2007) yet in practice many variations of the term exist. In our definition, Lean organizations focus on customer value by eliminating waste and installing a continuous, rhythmic small batch product or service flow, based on pull strategy instead of push (Emiliani, 2003; Womack, Jones, & Roos, 1990). Recently, at the Lean Enterprise Institute Summit of 2007, James Womack argued for further study of ‘Lean leadership.’ Our study is among the first to help specify the particular values and behaviors of practicing exemplary managers in Lean organizations and to differentiate them from the values and behaviors of otherwise effective management.

Although *commitment* of managers to ‘Lean production’ is essential, poor *leadership* is seen as the cause of poor sustainability of Lean (Found & Harvey, 2006, p. 36). Typically, the final implementation stage in which Lean is to be sustained, gets neglected by managers (Found & Harvey, 2006). Also, for sustaining Lean one must use the Lean methods accurately (e.g. Kaizen, 5S, Value Stream Mapping). However, its success lies not in simply installing such tools; Lean is no project one can tick off after implementation. Instead, Lean and especially sustaining Lean is a philosophy, a way of thinking and doing business that must be common among all employees: it requires widespread ‘Lean thinking’ (Emiliani, 2003; Found & Harvey, 2006), advanced of course by the values and behaviors of leaders who must motivate employees to truly change and continuously improve their work habits.

As leaders need to take on different roles during the implementation phases of Lean thinking (Found & Harvey, 2006), theory on successful leadership during the change towards Lean

may not be sufficient for the final phase when Lean gets *sustained*. Therefore, this article deals with the question: *What are the specific values and behaviors of highly effective middle managers in Lean organizations in the sustaining phase of Lean?*

Theory: Work Values and Behaviors of Leaders

As we now have explained why our research is of interest for both researchers and practitioners, this section will clarify various values and behaviors linked to Lean leadership.

Although leadership literature is mostly focussed on CEO's, sustaining Lean implies high managerial involvement on a day-to-day operations level (Found & Harvey, 2006). The famous Harvard case on the Florida Power & Light's quality improvement program (Livingston & Hart, 1987) describes the importance of middle managers to succeed in the implementation of their Lean program. Huy (2001) even notes that middle managers are the most valuable source of support when implementing radical change, such as shifting towards the Lean principles. Also Wilderom, Van der Weide, Klaster, Ehrenhard and Hicks (2008) note that highly effective middle managers are crucial, especially in large companies, to connect top management vision to work floor ideas. As there are differences in the type of tasks across managerial levels, and middle management literature is rare, we decided to focus on the middle management level. Our definition of a 'middle manager' is: "*Any manager two levels below the CEO and one level above line managers*" (Huy, 2001, p. 73). In practice, middle managers' responsibilities basically involve facilitating a good work environment for their line managers and operators, one that fits corporate strategy. Especially during the final Lean implementation stage in which Lean gets sustained, ideally, multi skilled teams (Womack et al., 1990) push forward the continuous improvement cycle, while the manager functions as a coach (Found & Harvey, 2006).

The empirical part of our research explores the differential values and behaviors of highly effective middle managers in Lean organizations. As many researchers already explored leadership styles and roles, Wilderom, Wouters and Van Brussel (2008) called for research that would not only include leaders' behaviors, but also their work values. Values are known to precede behavior, and that normally among effective leaders a causal relationship exist. However, little empirical research has been devoted to this hypothesis (Szabo, Reber, Weibler, Brodbeck, & Wunderer, 2001). Szabo et al. (2001) are convinced that leadership values and behaviors are linked to each other, although not always in a linear and direct way. In their conceptual model, values ('far-from-action' concepts) also affect ultimately behavior ('leadership action'). They note that, in between, conscious, cognitive 'close-to-action' concepts, such as intentions as well as subconscious habits play an important role. These authors further point out that contextual factors affect values as well as behaviors. Lakshman (2006) in defining a model of TQM leadership also assumes that values precede behaviors. We decided to focus both on the far-from-action concept 'values' and the 'close-to-action' behaviors of middle managers, and we built upon earlier behavioral research.

In conformity with Szabo et al. (2001) we used Schartz's (1999) definitions of values, which we particularly liked as it directly links values to behaviors: "*desirable notions a person carries with him/her at all times as a guide for his/her behavior, both during work as in private.*" Furthermore, we defined behaviors as in the Szabo et al. model (2001): "*things leaders do in interaction with their followers in an organizational setting.*"

Lakshman (2006) hypothesizes four values to be the key in TQM leadership: ‘customer focus,’ ‘participation and teamwork,’ ‘continuous improvement,’ and ‘information sharing and analysis.’ To Emiliani (2003) the two typical Lean values are ‘continuous improvement’ and ‘respect for people.’ Womack et al. (1990) noted ‘customer focus,’ since the production process is dedicated to increase value for the customer. Moreover, ‘employee empowerment’ plays an important role in Lean thinking; According to Womack et al. (1990, p. 54), “*The balance of power had shifted to the employees.*” Also Fairholm’s (1995) model of leadership values fits to the belief of employee empowerment. The values, included in our model, concern his ‘value groups:’ leadership, excellence culture and vision (Fairholm, 1995).

An influential and widely used effective-leadership taxonomy is that of Yukl (2002). According to him a highly effective manager adopts certain task-, relations- or change-related behaviors, which are all included in the questionnaire of our empirical part of the study. Further, Found and Harvey (2006) described behaviors responsible for failures of Lean transitions in its final sustaining phase, namely (positively rephrased): ‘monitoring and evaluating,’ ‘engaging employees,’ and ‘celebrating and recognizing success.’ Also Laksman’s (2006) behavioral TQM dimensions are covered by our empirical study.

In an effort to obtain concrete findings, we focus in our empirical part of the study to be described next on specific values and behaviors. Leader behaviors can best be assessed through observation (Szabo et al., 2001). In the context of Van der Weide’s research (2007) video-observation studies were employed, which is relatively new to the leadership research field. His most recent observation coding scheme for highly effective middle managers consists of three behavioral classes, together counting up to 19 specific behaviors (Wilderom, Klaster et al., 2008). We enriched the 3S model (Supporting, Steering, Self-defending) with behaviors that emerged in the pilot study. We renamed the first behavioral class into ‘Sensing’ to clarify its largely emotional, non-verbal content, while Supporting can also be linked to task-related behavior.

Methodology

In order to obtain the most essential values and behaviors of Lean leaders for sustaining Lean, we divided our research in two phases: 1) a nomination study of highly effective middle managers in firms engaged in sustaining Lean, and 2) case studies of these nominated exemplary managers.

We first queried 19 Lean production experts operating from within one consulting firm. They all had a minimum of several years of consulting experiences in various firms and especially in Lean implementation projects. In an effort to reach some consensus among them in terms of Lean values and behaviors, a two-round Delphi approach was taken. During this Delphi, a first questionnaire ‘round’ was completed by the experts after which they were provided with a summary of the results (Keeney, Hasson, & McKenna, 2006). In a subsequent focus group, facilitated by the researcher (Morgan, 1996), seven of the experts openly discussed the validity, reliability, completeness and usefulness of the Delphi findings (Keeney et al., 2006). After this discussion we had the same seven experts individually rank the five most essential values and behaviors of highly effective Lean leaders. Additionally, five of these consultants nominated exemplary middle managers in Lean organizations. Those managers who were named at least twice by these five consultants were asked to participate in our study. It appeared that the all so nominated managers had started implementing Lean principles

minimally six months earlier, and had thus started sustaining the basic set of Lean tools and principles (e.g. Kaizen, 5S, flow, waste).

In six subsequent case studies of these Lean middle managers, we aimed for triangulation: through the integrating of several research methods within each case we carried out 21 multi-source feedback interviews with the six middle managers and his/her subordinates, supervisors and firm-internal Lean advisors (Foster & Law, 2006). We also conducted video-observations of regularly held team meetings chaired by four of the six nominated Lean middle managers. After those filming sessions, we also had the four middle managers, his supervisor, Lean advisor and subordinates fill out behavioral questionnaires. This multi-method design for the case studies answers to Van der Weide's (2007, p. 125) call for integrating video-observation with questionnaires and interviews.

All 21 interviews followed the same structure. After several open questions, we retrieved examples of effective leadership values and behavior with the Critical Incidents Technique (Flanagan, 1954). Then we conducted a Q-sort (Brown, 1996) based on the values resulting of the Delhi study, enriched with those found in the extant literature. A Q-sort may consist of 24 statements (in our case: values), that are rank-ordered by each respondent in a forced distribution from 'agree' to 'disagree' (Brown, 1996). The Q-sort was useful as social desirability would otherwise make respondents attribute all the given values to their manager.

Then, within one week (in January 2008) we videotaped the behavior of four of our selected highly effective Lean middle managers: during regular staff meetings with their subordinates, like in the study of Van der Weide (2007) and subsequent studies (Wilderom et al, 2008). Very carefully, on the basis of an elaborate coding book, we coded each sentence or behaviour expressed by the middle managers in these meetings.

After the interviews and videotaped meetings a questionnaire was distributed to all subordinates, focussing on the behaviors of each Lean middle manager, as suggested by Van der Weide (2007). This survey was based on the Yukl taxonomy (2002), our Delphi results, the Balanced Leadership Questionnaire of Wilderom, Wouters and Van Brussel (2008), and the Multifactor Leadership Questionnaire (Den Hartog, Van Muijen, & Koopman, 1997), hereby protecting external validity. The BLQ consisted of 61 statements at a 7-point Likert scale ranging from 'never' to 'always', corresponding with the coding scheme we used for the video-observations. We employed various ways of analyzing our data (see our full paper).

Results

All six nominated middle managers are considered exemplary in sustaining Lean in their organizations; they were nominated by at least two consultants. The following few paragraphs describe the results of our main study consisting of 21 Multi-source feedback interviews with the six focal middle managers and with on average one of their subordinates and one supervisor (which included open questions, critical incidents and Q-sort), 43 behavioral questionnaires and four videotaped regular staff meetings.

Multi-source feedback interviews

After coding the data of our 21 interviews (six middle managers and his/her subordinates, four supervisors and five firm-internal Lean advisors) into several behavioral and value categories resulting from the experts in our first research phase, we note from the open questions and critical incidents that the values 'honesty' and 'participation and teamwork' are

attributed mainly to the particular Lean middle managers. Furthermore, eight of in total 21 individual respondents also mentioned ‘open-heartedness.’

In terms of the values emerging from our Q-sort results obtained from 18 of 21 of our interviewed managers, subordinates, supervisors and internal Lean advisors, ‘responsibility’ had the highest mean score (M=6,78; SD=1,44). ‘Continuous improvement’ (M=6,78; SD=1,52) had a second place. Then also the values ‘honesty’ (M=6,50; SD=1,76) and ‘participation and teamwork’ (M=6,28, SD=2,30), which resulted from the open questioning. We computed the Spearman rho correlation coefficient (2-tailed) at a significance level of $p < .05$ for each item. No significant correlations were found except for ‘continuous improvement’ which showed a positive correlation ($r = .47$) with ‘information sharing and analysis.’ Further, we found that the item was negatively correlated ($r = -.49$) with ‘freedom of choice.’ As one of our respondents commented ‘freedom of choice’ is applied within a set framework: “[Lean] poses a methodology in which things are possible. (...) in which you create clear frameworks in which people have their freedom.”

We asked all 21 interviewees which values they find typical for Lean middle managers. According to two interviewees ‘participation and teamwork’ is very typical. Thus, the extent to which they are unique to Lean organizations is questionable: One respondent remarked: “If you want to establish a Lean organization, these values are of high added value. But, in a different non-Lean organization they could be useful as well.”

In analyzing the responses to the open questions and critical incidents, subordinates also spontaneously listed behaviors of their middle manager. More than 50% listed ‘encouraging – cooperating’ and ‘asking for ideas.’ In responding to our question whether the listed behaviors are uniquely Lean, three respondents referred to ‘encouraging – cooperating.’ To quote one respondent: “So one needs to give freedom and trust to people to come up with things themselves and to engage them instead of dictating what to do. The latter would kill the Lean philosophy.” However, five respondents disagreed with the statement: “I think these behaviors would fit in another type of organization as well. But it definitely helps in Lean.”

Behavioral leadership questionnaire

Next to the interviews, 43 respondents completed our Behavioral Leadership Questionnaire (BLQ): 26 males and 18 females. We had their four supervisors fill it out as well as the six middle managers themselves. Additionally, we incorporated the responses of two internal Lean advisors and a total of 31 subordinates. The response rate was 89,59%. After deleting one item, BLQ’s Cronbach’s alpha increased from $\alpha = 0.927$ to $\alpha = 0.930$. Table 1 shows the six items with the highest total means (see the last ‘Total (N=43)’ column of Table 1). These descriptive statistics show that in general highly effective middle managers in sustaining Lean in firms relatively often behave as listed in Table 1.

We explored the between-case differences in the BLQ-responses. Based on a Kruskal-Wallis test, five BLQ items showed significant inter-group variances at $p < .05$, namely ‘builds trust,’ ‘trains and teaches the Lean principles by doing,’ ‘designs and coaches teams,’ ‘cooperates effectively with his/her employees,’ and ‘delegates sufficient tasks to his/her employees.’ T-tests did confirm a part of the following proposition: *The outcomes for the group ‘Start of Lean implementation > 1 year ago’ are higher than the outcomes for the group ‘Start of Lean implementation < 1 year ago’.* This proposition appeared to apply ($p < .05$, independent samples 1-tailed T-test) for 17 of the 60 individual items.

Table 1. *Outcomes Behavioral Leadership Questionnaire (on a 7-point Likert scale)*

	<1 year (N=16)	>1 year (N=27)	Total (N=43)
8. Actively listens attentively to a person's concerns	5,25 ^a (1,44) ^b	6,30* (0,78)	5,91** (1,17)
31. Builds trust	5,38 (1,26)	6,19* (0,79)	5,88* (1,05)
9. Actively provides support and encouragement	5,31 (1,25)	6,11* (0,70)	5,81 (1,01)
28. Encourages/facilitates learning by team members	5,44 (0,96)	6,11* (0,75)	5,86 (0,89)
16. Leads by example and models exemplary behavior	5,19 (1,11)	6,11* (0,80)	5,77** (1,02)
18. Expresses confidence team can attain objectives	5,38 (1,09)	6,07* (0,96)	5,81 (1,05)

^a Mean, ^b Standard deviation, * p<.05; ** p<.10
Note. Last column describes Kruskal-Wallis test

Table 2. *Behaviors of four highly effective Lean middle managers and that of the 14 other highly effective middle managers (the comparison group figures are listed between brackets)*

<i>Behavioral categories</i>	<i>Standardized frequency (% based on frequency)</i>
Encouraging – enthusing the individual	2,27
Encouraging – enthusing the team	3,07
Encouraging – enthusing	5,34 (3,23)
Active listening	39,67 (34,66)
Sensing	48,54 (44,23)
Agreeing	6,21 (2,78)
Informing	8,38 (6,06)
Visioning – providing own insight / opinion	10,23
Visioning (sum of all sub-items in visioning)	11,07 (15,55)
Structuring – the conversation / interrupting	11,51 (8,75)
Verifying	4,79 (8,76)
Steering	46,33 (44,33)
Showing disinterest	2,62 (1,76)
Self-defending	4,70 (12,28)

Video-observations

Our four focal middle managers were videotaped at a regular staff meeting. The mean duration was 119 minutes per manager (min=89 minutes, max=137 minutes). We base our coded findings on in total eight hours of videotape. The mean level of agreement between our

observers was calculated to be 98,80%. This high interrater reliability is comparable to the ones reported in the study of Van der Weide (2007). The subordinates involved assessed the representativeness of the behavior of each Lean middle manager on the tape as 93,90%. In Table 2 ‘active listening,’ ‘informing,’ ‘agreeing,’ ‘structuring the conversation/interrupting,’ and ‘visioning—providing insight/opinion’ were the five most frequently shown behaviors. These behaviors belong exclusively to the behavioral classes ‘Steering’ and ‘Sensing.’

Given the fact that we have access to Van der Weide’s (2007) similar dataset we compared our video data to his 14 highly effective middle managers in the private sector (for a summary of the standardized frequencies: see Table 2, a complete table is provided in our full paper). In terms of the standardized frequencies, Lean middle managers more often than the otherwise effective middle managers show ‘Sensing’ and ‘Steering’ behaviors. Furthermore, it appeared that in comparison with the non-lean managers, Lean middle managers adopt less frequently in team meetings the coded ‘Self-defending’ behaviors.

Discussion

Some contend that middle managers themselves are the biggest waste within organizations. It might look like an easy solution to eliminate them when implementing Lean principles. However, middle managers, through their behaviors and guiding work values, are assumed here a key to *sustaining* Lean. The middle managers that are the subject of our study are even considered exemplary (and therefore necessary) in sustaining Lean.

Furthermore, values such as ‘*honesty*’ and ‘*participation and teamwork*’ are important to the interviewed managers. Another much-heard value was ‘*open-heartedness*.’ The Q-sort results showed that Lean middle managers also find ‘*responsibility*’ and ‘*continuous improvement*’ their most important drivers. The latter is a key concept in the Lean literature. ‘Responsibility’ became an unexpected outcome but as one respondent explained: sustaining employee empowerment implies distributing responsibilities low in the organization. Although most interviewees considered these values to be key to highly effective middle managers in general, we consider the *combination* of these values ideal typical Lean. Future research may differentiate Lean values from work values embraced by non-Lean managers.

Highly effective Lean middle managers are perceived to more often adopt the BLQ behaviors of Table 1. These results are in line with the findings from our interviews, as ‘encouraging – cooperating’ was almost unanimously listed as the key success behavior, which overlaps with behavior number 8, 9 and 28 (Table 1). ‘Asking for ideas,’ an item that got high scores in our interviews is not represented at all in our questionnaire findings. So, in sustaining Lean leaders must at least ‘actively listen to a person’s concerns’, and ‘build trust.’

The videotapes showed similar results, as the most frequent adopted behaviors are: ‘active listening’ and ‘structuring the conversation/interrupting’: behaviors from the ‘Sensing’ and ‘Steering’ class of Wilderom et. al. (2008). Also, compared to general middle managers our Lean managers showed more ‘Steering’ and ‘Sensing’ behaviors. The observed higher frequency of ‘Sensing’ can be explained through the expected coach role (Found & Harvey, 2006). Interestingly, finally, our Lean middle managers put themselves less frequently into a ‘Self-defending’ position and the Steering behavior ‘visioning.’ In this way they act in a more mentoring and facilitating style in conformity with their value of ‘*participation and teamwork*.’ Sustaining Lean is thus no small feat for managers as it disqualifies the commonly adopted traditional, hierarchical leadership style.

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