

Chapter 10

Lean Teams¹

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Introduction

The success of a lean organization can, to a large extent, be traced back to its primary production units: teams at the lowest hierarchical level do a substantial amount of “value-added work” (e.g., at Toyota, see, Liker and Convis, 2012, p. 144). Continuous process improvement within an organization is difficult to achieve without the smooth cooperation between non-managerial team members and their leaders. Despite this insight, an insufficient amount of research attention has been paid to the dynamics of leading *effective lean teams* (e.g., Van Dun and Wilderom, 2012). *Operations management* (OM) scholars emphasize the various bundles of lean tools in relation to high lean performance (Shah and Ward, 2003). However, these typically non-human tools are used by humans, who must function effectively in teams. Team human dynamics were long seen as an add-on instead of a key to lean’s success; they have been analyzed by some other scholars under the relatively small rubric of “self-directed work teams” within human resource management (Shah and Ward, 2003). This may explain in part why so few *organizational-behavior* (OB) studies have dealt with lean team’s success and/or the implications for durably healthy lean work units or cultures (see, e.g., Shook, 2010). Without such OB-type knowledge, the unnecessary failures of lean initiatives will not be curbed.

This chapter summarizes the current behavioral findings on effective lean team dynamics and delineates new areas and OB-type approaches for future investigations. Lean practitioners may also benefit from these insights. It may improve their efforts of accommodating healthy lean contexts, especially now that lean is increasingly being embraced by efficiency-seeking managers worldwide. The chapter ends with an illustrative case, three years into the life of a continuously high-performing lean team.

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What are lean teams?

We define a “*lean team*” as a more-or-less permanent work floor unit within a larger organizing context, which subscribes to lean’s philosophy and uses tools to improve its own processes through the implementation of (non-managerial) workers’ ideas. Lean team members, including their team leader, are typically responsible for producing or (pre)assembling goods or delivering (internal or external) services. Hence, we are *not* focusing here on the (often centralized) lean change teams of experts, named by some people as “lean teams.”

Bridging the lean and team-effectiveness literatures

Lean does *not* play a role yet in the generic team-effectiveness literature (which is a sizeable part of the OB sub discipline of business administration). We foresee a lot of useful room for OB-types of lean team studies (Bendoly et al., 2010). In our opinion, lean team-effectiveness entails a desirable constellation of effective human team dynamics that are facilitated by specific enablers. Simply reversing this reasoning, by assuming that the human dynamics in and around lean teams are identical or similar to otherwise effective teams, does not seem to hold. Lean teams stand out from other types of effective teams because they adhere to different (sometimes experienced as counterintuitive) production principles such as pull, single-piece flow, and JIT production. Moreover, lean teams are commonly seen as being “self-directed” or “self-managed teams” (Shah and Ward, 2003), which is different to top-down hierarchically organized teams that have much less autonomy. Hence, the human dynamics within and surrounding lean teams are worthy of close examination.

A structured review of the available empirical lean team studies to date distilled nine affective, behavioral, and cognitive intra-team dynamics in effective-lean teams and four contextual enablers (see Figure 1, reprinted from Van Dun and Wilderom, 2012, p. 142). We will show how this linear *input-process-output* (IPO) type of model may be sketched more dynamically, based on a recent longitudinal study of five carefully selected, highly performing lean teams (Van Dun and Wilderom, 2015). First, however, we will first review the so-called *input-mediator-output-input* (IMOI) model. This latter generic team model connects lean to the up to date generic team-effectiveness literature.

IMOI is different from the linear stage-models that have been most often presented in lean or continuous-improvement studies (see, e.g., Bessant et al., 2001; Hines et al., 2004); real (lean) teams are more dynamic social systems (Hackman, 2012; Humphrey and Aime, 2014; Salas et

al., 2015). At the micro-level, teams and their leaders show behavioral patterns, consisting of dynamical elements, such as the ones displayed in Figure 1. In addition, in the more realistic, recursive IMOJ models, feedback loops are incorporated. A team's performance level may reinforce the continuance of input factors such as higher-level leaders' support for lean. Nevertheless, the "black-box" of effective (lean) teamwork has often been studied as a static phenomenon, with relatively "simple cause-effect models" (Hackman, 2012, p. 430). However, in line with the IMOJ model, performance outputs fuel the inputs, and, in turn, the evolution of mediating team processes. Hence, as lean is built upon the principle of continuous improvement, effective lean teams are seen to (re)organize (or reconstitute) themselves continuously (Humphrey and Aime, 2014). Consequently, "recent research has begun to match internal team behaviors with external contingencies, capturing at least part of the multilevel nature" of lean work floor teams (Humphrey and Aime, 2014, p. 464).

We will now describe the "internal workings" of effective lean teams (i.e. the middle column of Figure 1), and then discuss the enablers of these human lean team dynamics. Such internal workings of a lean work floor unit can be depicted by many different angles; we focus on the effective behaviors of both the members of lean teams and their higher-level internal stakeholders. The rationale for this focus is the need to know more about the (mundane) behaviors of people involved in lean work floor initiatives, which enhance the overall effectiveness, including the efficiency of their efforts.

Human dynamics in lean teams

The nine dynamics displayed in Figure 1 reinforce each other in a delicately balanced way, as we will describe next. Central to this figure are four *affective* dynamics that pave the way for the improvement of a team's processes.

1. Team members' *psychological safety* (see, e.g., Edmondson, 1999; Salas et al., 2015) is a springboard for continuous improvement and cooperation. Without such safety, members will restrain the sharing of their criticisms, ideas, and suggestions, resulting in fewer process improvements. Furthermore, once those ideas are transformed into successful process improvements, the level of team psychological safety is likely to go up.
2. *Team cohesion* will help to establish or reinforce a safe climate for effective improvements. Of course, only up to a point because *very* highly cohesive teams risk social loafing, groupthink, or contentment with the status quo. The moment lean teams

attain high performance, through their cohesive, collaborative process-improvement efforts, it is likely the level of team bonding will be strengthened (Mathieu et al., 2015, p. 727). There is thus “a mutual reciprocal relationship between cohesion and performance.”

FIGURE 1 APPROX HERE

Figure 1. Model of behaviors in and around lean teams

3. Team members must be willing and able to *support colleagues* or provide backup when needed, for instance, after a worker pulls the andon cord. When such help is demonstrable in a team’s performance figures or is appraised by management, it will spur members to stand in for their colleagues, up to a point where helping is the team’s norm (Raver et al., 2012).
4. In order to challenge current work processes effectively and to curb the potential waste involved, team members must argue with each other constructively and *manage conflicts*. If a conflict between two or more team members is not brought to a close, it may inevitably damage both team members’ psychological safety and the level of team cohesion, and thus the level of overall lean team performance (see, for instance, Humphrey and Aime, 2014; Salas et al., 2015; Van Dun and Wilderom, 2015). Moreover, the lower a team’s performance, the more it is likely that a conflict will emerge within the team (Peterson and Behfar, 2003).

Together, the four affective dynamics propel lean team members to engage in four lean *behavioral* dynamics:

5. When lean team members feel psychologically safe, members of effective lean teams customarily *share ideas and information* about, for instance, work standards, and tactical and strategic developments. This sharing of information during meetings points to the non-wasting importance of effective lean team meetings. Our survey study among 25 lean teams showed that when team members shared more factual information, they scored significantly higher on team-effectiveness (Van Dun and Wilderom, 2014). The implied direction of causality here is likely to work both ways, although this still needs to be established.
6. In addition to factual informing, effective lean teams are supposed to engage in continuous team- and individual-level *performance monitoring*. Team members are

expected to know, discuss, and improve their individual as well as their team's performance by solving hiccups together. Members of effective lean teams use lean tools such as visual management, performance dashboards, and daily start-up meetings to enable and learn from such performance monitoring, to enhance their group's further progress or improvement.

7. Another behavioral dynamic within effective lean teams pertains to their so-called *innovating* efforts. The information, ideas, and data that effective lean team members share while monitoring their team performance are actually transformed by them into concrete, small process improvements or proposals for larger production process adjustments. In turn, team members' monitoring of their team performance level enables the evaluation of the effectiveness of those solutions and to what extent new process innovations are required.
8. A related dynamic is *supportive team leadership*. Formal as well as informal team leaders must guide and facilitate the continuous improvement processes, assist workers when problems occur (Shook, 2010), and also foster a psychologically safe and cohesively performing team climate. Indeed, our longitudinal study found leader support to be a key dynamic of effective lean teams. This is expressed through a behavioral pattern consisting of frequent active listening, informing, providing individual consideration, and infrequent task monitoring. The same longitudinal study showed that team leaders' behavioral pattern is handed over, gradually, to the team-member level, whereby workers engage in task self-monitoring, providing backup and information sharing, and are innovating. The leaders' personal value constellation also seems to play a role here. If lean team leaders endorse mainly self-transcendence type of values, their team members adopt more information sharing behavior, resulting in a higher level of lean team effectiveness (Van Dun and Wilderom, 2014).

The final lean team dynamic is members' degree of *cognitive commitment* to lean:

9. Members of effective lean teams focus, often passionately, on achieving organizational-level lean objectives. At the very least, they must be willing to engage in continuous process improvement (Angelis et al., 2011). Members of effective lean teams are able to explain and pursue the organizations' strategy, and can demonstrate well how their own work leads to achieving those goals. Such shared goal commitment is seen to enhance team cohesion (Salas et al., 2015). Thus, several interrelations can be assumed among the nine factors displayed in Figure 1. Moreover, it is better

according to the IMOI model if the horizontal arrows in this hypothetical model are bidirectional.

Enablers of high-performing lean teams

Effective human dynamics in lean teams are fueled by four contextual enablers: Visible *higher-level leader support*, *strategic and structural clarity*, a lean-supportive *human resource policy*, and *resource abundance* (see Figure 1). All these factors and their presumed linkages merit large-scale empirical testing in the field, also in recursive ways.

1. Higher-level leaders, i.e., *top- and middle managers*, play particular roles in initiating and sustaining lean on their work floors (Beer, 2003; Marodin and Saurin, 2013; Netland and Ferdows, 2014; Soltani and Wilkinson, 2010). Specifically, the extent to which top managers show their true commitment to lean, for instance by frequently visiting the workplace, is likely to improve a lean team's effectiveness in the longer term (Netland and Ferdows, 2014; Van Dun and Wilderom, 2015). This type of top-leader behavior must be guided by work values that are focused on respect, teamwork, and the challenge of continuous improvement by aiming for a deeper understanding (Liker and Convis, 2012). Similarly, an exploratory empirical study of the precise behaviors and underlying value constellations of the middle managers who report to those top managers, showed they support their teams with tactful, relations-oriented behaviors such as active listening and agreeing (Van Dun et al., 2010). Compared to non-lean middle managers, they adopted significantly less behaviors that tend to dampen the energy level within staff meetings such as: task monitoring, providing negative feedback, and defending one's own position. Higher-level leaders enact their visible support for lean by showing tact or consideration for the feelings of their followers; they tend to listen actively to workers' ideas. As was found at the *team leader* level, the relations-oriented behavioral pattern of effective lean middle managers coincided predominantly with a self-transcendent type of value constellation and openness-to-change. In other words, various empirical studies on effective lean teams point towards a constellation of self-transcendent values and predominantly (but not only) to relations-oriented behaviors, thereby revealing the cascading effect of lean leadership: from the top- and middle manager level, to team leaders and team members (Van Dun and Wilderom, 2015). Effective lean managers are especially relations-oriented when coaching and developing their subordinates (Liker and Convis, 2012), by also adopting some *task-oriented*

behaviors (e.g., structuring) and *change-oriented behaviors* (e.g., providing a vision) (Van Dun et al., 2010).

2. Another important enabler of lean team effectiveness constitutes top managers' provision of strategic and structural clarity. Beer (2003) noted that unclear organizational strategy and priorities are major barriers to lean (team) success. In line with that, Marodin and Saurin (2013) see "strategies and performance measures consistent with lean" as a factor that positively affects lean adoption. In order for members to mentally commit themselves to organizational goals, it is of course essential for work floor personnel to have strategic clarity. When lean team members know how to translate the organization's strategy to their team level, it becomes much easier for them to monitor and improve their team performance: in line with that strategy. Moreover, perceived stability in terms of organizational strategy and structure is likely to boost team members' psychological safety: Team members' psychological safety is difficult to achieve if they fear that their jobs might be cut. Consistent with this, our longitudinal study found that temporary destabilization, through formal reorganizations, negatively affects team-members' commitment towards lean.
3. Human resource policy was noted as another lean enabler by Marodin and Saurin (2013). The focus of their study was on lean's organizational alignment of reward and bonus systems as well as job security. Other empirical lean studies have found that education and training is common practice in most effective-lean teams (Bamber et al., 2014; Netland and Ferdows, 2014) (see also the illustrative case at the end of this chapter). It is known that Toyota leaders continuously train their leaders and workers in lean methods, enabling them to improve their work standards effectively (Liker and Convis, 2012).
4. Related to those human-resource type of enablers is what we generally call organizational resource abundance; Marodin and Saurin (2013) list the "availability of financial and human resources." Shook (2010) noted the need for lean firms to provide their workers with necessary "tools" to successfully do their jobs. In order to improve (or innovate) processes and performance, lean team members need not only time, but also: a dedicated performance-monitoring workspace on their work floors, access to higher-level leaders who function as a change or improvement sponsor, a reasonable budget for realizing small-scale improvements, and, from time-to-time, access to external help. Additionally, the availability of financial means has been shown to be a particularly challenging enabler of lean teams; firms may struggle to continue their

investment in lean development when team performance levels drop during a difficult economic tide (see, also, Netland and Ferdows, 2014; Van Dun and Wilderom, 2015).

Challenges and opportunities for effective lean teams: A future research agenda

With the recently increased scholarly attention to human dynamics and enablers of effective lean teams, we can sketch more opportunities for new lean team research. Even though the toils of lean implementation in the lower-level organizational echelons have been described amply in the form of OM types of case studies, few of them have taken a behavioral perspective. New academic studies of lean teams ought to integrate the wealth of non-lean team knowledge that is already available in the field of OB. Future studies will then benefit from more cross-pollination among both research areas. Considering that team-effectiveness is a long-established field, it would be fascinating, and important to compare the content of effective lean teams and their leaders to equivalent non-lean teams and their leaders. Several OB theories may be explored for this purpose, including those on small groups, team learning, innovation, psychologically safe team climate, voice behavior, and team identity. Follow-up studies should start by including matching non-lean control groups as well as field experimentation (Marodin and Saurin, 2013). Given that lean team studies have, to date, been mainly case-based, i.e., small in scope, it is high time large-scale empirical studies are instigated that compare the dynamics and enablers of highly effective with less effective teams across large lean organizations. Far too often lean scholars apply the case-study method without clearly accounting for *how* and *why* these studies were performed; the same pertains to the predominantly *perceptual*, survey-based measures. Overcoming research issues creatively such as arranging access to various behavioral-field data is of importance here. This will undoubtedly lead to more (theoretical and practical) knowledge of effective-lean team dynamics and enablers than described in this chapter.

An opportunity for longitudinal field study entails the exploration of the precise links between the contextual enablers and human dynamics in building effective lean teams: Which enablers should come first, and which human dynamics could fuel other effective dynamics? That of course depends on the specific lean context. It is worthwhile to explore such multi-level and recursive linkages over time. Especially, how higher-level managers, through their behavior, enable the evolvement of a team-level behavioral pattern. Then, through that, how enhanced team performance may reinforce leaders' supportive behaviors. In line with the IMOI literature, an empirical study of the dynamic evolvement of lean teams does justice to the "organizing

nature of teams” (Humphrey and Aime, 2014, p. 489). OM/OB scholars might benefit from such recursive insights and use them to enhance their research designs so that they are able to capture more of the dynamic (and not only: static) reality of organizational life in work teams or settings aimed at client-driven, continuous improvement. Also, since psychological safety has been noted as enabling the open sharing of ideas and information (Edmondson, 1999), and thus lean team’s effectiveness, lean team leaders (or their higher-ups) will facilitate the development of such safe work climates (Salas et al., 2015). Interesting questions for new longitudinal follow-up research are: How much of the safety feeling is needed (as a “tipping point”?) in lean work environments so that it fosters real-time performance tracking and transparent information sharing? Additionally, how (much) can such safety-levels fluctuate? The cascade effect of leadership, which was revealed in our longitudinal study (Van Dun and Wilderom, 2015), also shows the importance of lean team leaders in empowering their team members. How the apparent transmission of what was once seen as *leader* behavior towards blue-collar workers/followers takes place precisely, is another interesting line of study, i.e., how are lean team members learning to work effectively, monitor their own and team tasks, share information, and improve their work processes (see Liker and Convis, 2012). Such new research is necessary for improving effective lean team development in practice (Scherrer-Rathje et al., 2009).

Following on from Figure 1, future research must also uncover more of the content of effective lean team climates/cultures, including subcultures. Schein’s model of specific layers of culture (i.e., cultural artifacts, behaviors, norms, values, and basic assumptions) may aid in the unraveling of lean-specific cultural content (see also Shook, 2010, p. 66). Cultures are seen to gradually evolve over long periods of time. It is more likely that a team’s work climate, which is much more situation-dependent, will first change into a more improvement-focused climate. Also, if lean team dynamics have shown to be profitable, over a longer period of time, this may support the culture-change towards lean although it may be particularly difficult to change an existing (team) culture towards a lean culture (Angelis et al., 2011). Notably, scholars need to disentangle specific and observable behaviors better from attitudes and underlying, motivational values, which to date, often lack precision (see, for an overview, Van Dun et al., 2010). It would be worthwhile to include human value variables in follow-up studies of lean’s human dynamics as they have not surfaced a lot in the lean literature and it is likely that leaders’ values play important roles in the development of healthy lean team cultures. Video-based ethnographic studies may enable more detailed behavioral analysis, including the quality and

timing of their behavior, because the recent video-based studies were aimed at exploring the frequency and patterns of lean team leader and member behaviors. Further examinations of lean team members' values and behaviors, at different levels of organizational hierarchies and effectiveness, and in different work situations, could increase our understanding and aid in offering more effective help in situations where lean initiatives would otherwise fail. Moreover, human-team dynamics are, in practice, quite interrelated. Most lean team studies have tended to focus around only a few of them. There is a need for integral lean team studies connected to credible team-effectiveness measures.

Besides a further examination of the content of effective lean team dynamics and those of their leaders, the internal and external support roles in developing lean teams and their leaders deserve additional research attention. Consultants are often hired to aid or challenge managers to improve their processes, their leadership styles and lean team dynamics (Scherrer-Rathje et al., 2009). Moreover, strategic human resource specialists co-determine the selection of and promotion criteria for (middle) managers; implementing lean within teams will probably make a demand on *human resource management* (HRM) to adjust those criteria. Hence, in line with Bamber et al. (2014), we encourage further integration of lean within the fields of change management, management consulting, organizational development, OB and HRM.

In sum, more longitudinal and quantitative empirical studies of lean teams are needed. Specific theorizing within the fields of change management, human resource development, and small-group development as well as the ethnography literature must be used to prepare those examinations. Closely observing and codifying how a team's climate or culture evolves during a lean journey, perhaps also via informants' (video-)diaries, is relevant for those carrying out the empirical part. It would also be informative for those in charge of organizations that are contemplating to start with lean, enabling them to preview or to plan better effective trajectories in those organizations (see, e.g., Scherrer-Rathje et al., 2009). Eventually, we need to know how each of the lean teams' contextual enablers (as shown in Figure 1) are linked to the various lean team dynamics. Given that continuously improving the efficiency of a work floor team toward the increasingly changing needs of customers is prototypical for effective lean teams, non-lean work floor teams may also learn from the results of such recommended research. We welcome all efforts as they will teach us how to enhance a team's efficiency while, at the same time, produce healthy lean human dynamics. This, in turn, would be a source for true progress in people and societies at large.

The future of lean teams

This chapter highlights the content of lean team human dynamics and their enablers, as important social mechanisms within lean organizations. These insights may guide managers, and others alike, who envision a lean transformation on their work floors. While effective lean teams are often regarded as self-managed work teams, we found that top or higher-level managers play key roles in training and developing lean team members and their leaders (Liker and Convis, 2012). Managers showcase their desired behavioral patterns to their followers by exemplary role modeling relations-oriented behavior, and airing their self-transcendence and openness-to-change type values. In this way, higher-leader behavior is cascaded to the lowest organizational level, so that each organizational work floor member is focused on and committed to achieving optimal customer value through continuous process improvement and respect for people. Also, higher-level managers' guidance and clarity in terms of organizational strategy and structure, as well as aligned investment in lean and people development, is shown to facilitate lean team performance. In other words, despite frequent calls to simply "scrap" middle management, a remark often heard on work floors during initial attempts to implement lean, if such managers are good at translating organizational strategy to their (lean) teams, they will not become obsolete: "reducing management does grant autonomy, but it is undirected autonomy without leadership" (Liker and Convis, 2012, p. 146). This "state-of-the-art" presentation shows that, in lean organizations, middle or higher-level managers need to show their "leadership" by enacting valuable roles towards work floor employees. Lean practice may thus require a rethink of the standard (middle) managerial roles: Instead of (middle) managers fixing problems themselves, their followers should be more enabled to come to them with problems, solutions and improvement suggestions. Followers should not be commanded by them under normal lean circumstances (Liker and Convis, 2012; Salas et al., 2015).

Further, those who advise lean teams and their leaders (including internal and external consultants as well as HR officers) may benefit from the recent behavioral insights, in order to craft increasingly effective lean teams. On the basis of the state-of-the-art knowledge on lean-team effectiveness, their interventions can be sharpened so that they become more focused, creative and cost-effective. Their interventions should be directed more at leader-behavioral development, instead of merely "rolling out" a predetermined set of lean tools such as value stream mapping, 5S, or kanban. Such leader coaching could take place on the basis of mapping personal-value constellations (e.g., through a card sorting technique used by Van Dun et al., 2010) and subsequent reflecting upon how their own values influence their own behaviors. This

enables (lean) leaders to display specific, needed behaviors (Salas et al., 2015), e.g. more active listening. Another practical new option could be to get leaders to evaluate their own team in terms of the extent to which the human dynamics, as displayed in Figure 1, apply to their team. Based on our own try-outs of this approach with several team leaders during practitioner-oriented conferences, such a self-rating exercise could also be used to discuss their reflections on the current state of their team's human dynamics with their peers and followers. Moreover, leader coaching might entail giving feedback on visible behaviors in the workplace, perhaps after video-registration of actual behaviors. From our own practical experiences, regular observations of particular behaviors in meeting- or work floor settings, and feeding them back, has been shown to be an effective approach to developing "lean leaders" over time. This is likely to enhance managers' behavioral awareness and opens up their eyes to higher-performing behavioral alternatives. Whether the longitudinal effects of such an interventionist approach on actual team performance are significant, is worth following-up. Initial practical experiences certainly point to such practical behavior-performance relationships (and could be extended to their underlying work values). Linking leader behavioral development to actual performance targets, and discussing those targets in PDCA-oriented meetings, may assist leaders to improve their own lean or efficiency-related behaviors, as well as those of their followers.

Furthermore, those who select, train, and promote leaders may feel the need to enrich their leader profiles with the values and behaviors reported in this chapter. Whereas managers are often selected based on their past work experiences, it is worthwhile to also discuss their value constellations with them, especially because values may be difficult to change over time. Such a values-based selection process is advised for leaders who have to function in highly-visible roles in any lean enterprise. Also, HR officers might create leader developmental programs, that include elements of "training-on-the-gemba," in order to create more leader consciousness of own values, attitudes, and behaviors (as illustrated in the case at the end of this chapter). When leaders become more aware of their, in part, subconscious values, they might be able to convey their messages more strongly towards their colleagues and followers. Such programs may also help to develop a psychologically safe setting at the (team) leader-level.

In sum, the insights drawn from this chapter are demonstrably useful in guiding managers of lean initiatives at various hierarchical levels. Our longitudinal study found lean work floor dynamics to be potentially cost-saving and there is much more evidence for this claim:

“When lean companies experience difficulties, they should not invest more resources to increase the level of hard practice implementation; instead, the companies should accurately analyze their context in terms of OC [Organizational Culture] and invest effort in soft practices” -(Bortolotti et al., 2015, p. 194).

More studies on those lean’s human dynamics is thus a wise research investment. Preventing human and other waste associated with day-to-day work floor production is the aim. With the knowledge derived from the lean (team) literature to date, it is likely that already many more lean teams will succeed in becoming lean or sustaining lean effectively. We also hope that more effective lean team organizing leads to *more* respect for non-managerial employees, who are unique and often still underrated resources for substantial work-process improvement. Improved team and organizational performance will follow when more people excel at work.

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Case study: Lean team in a truck facility²

In the mid-1990s, a well-known multinational truck manufacturer implemented lean principles. A team at their largest production facility was studied over three years. Its 11 members assemble a specific part of a truck, whereby each one of the predominantly male members perform a particular task on the production line. During this period, the team significantly improved its actual performance, as measured in terms of its own defect ratio, the number of costly “line stops,” and backlogs. Members’ satisfaction grew from 5.10 (on a 7-point scale) to 5.63 three years later. Members’ own effectiveness rating increased from 4.93 to 5.44. Sickness absence figures drastically decreased from 17.32% to only 3.82%. At the beginning of year 3, production was doubled and the team was divided into two smaller-sized, morning and evening shifts. Below we describe the truck team’s enablers and intra-team dynamics. Figure 1’s elements are in italics.

Truck team’s enablers

The 2008 crisis resulted in the unavoidable letting go of the temporary staff, while the permanent staff retained their jobs. *Higher-level leader support* was felt by these workers. During the study the leaders adopted own standard operating procedures so that they could spend more time with their work floor teams. Higher-level leaders even helped out when major problems occurred (i.e., in the case of a line stop). Despite substantially fewer orders coming in, the higher-level leaders held on to their clear, *long-term strategic priority towards lean*. They even intensified their investment in lean by upscaling their workers’ skills, improving work standards, and streamlining the factory lay out. Moreover, the human resource policy was fully aligned with the strategic company-level lean goals, and financial resources were made available to spend on those goals. Lean leadership development (in terms of values, attitudes, and behaviors) was part and parcel of the team-leader training course. Both permanent and temporary new staff members were sent on an obligatory two-day in-company lean course. In other words, the truck firm invested considerable *financial resources* in lean.

² This case study is a more elaborate version of the first of the five case studies reported in our longitudinal study: Van Dun, D. H., & Wilderom, C. P. M. (2015). Governing highly performing lean team behaviors: A mixed-methods longitudinal study. In J. Humphreys (Ed.), *Proceedings of the Seventy-fifth Annual Meeting of the Academy of Management*. Vancouver, Canada. Best paper, based on a dissertation, in AoM’s Operations Management Division.

Manifestation of effective intra-team dynamics in the truck team

During the course of the study, the team members *solved conflicts* that arose in a constructive manner, without the intervention of their team leader. Moreover, they often *backed each other up*, by fixing mistakes caused by one of their co-workers. By stepping in occasionally, they made sure production ran smoothly. Team members also actively engaged in *team-performance monitoring* and *information sharing*. Real-time performance figures were displayed and discussed during daily start-up meetings around a team board. Every now and then, team members pulled the andon cord and asked for help to prevent quality defects. The team leader openly discussed the defects that had occurred the day before with the members during the daily start-up meetings, as well as any corrective actions taken. This *psychologically safe* climate was nurtured by the *supportive team leader* who was constantly present on the work floor. He also gave compliments and socialized with team-members, he frequently assisted workers, and even brought them coffee. This leader's relations-orientation was evident in the behavioral pattern of active listening, informing, individualized consideration, some agreeing, task-performance monitoring, and little self-defensive behavior. Over time, team members mimicked his behavior amongst each other. They increased the *team's cohesion* by showing greater individualized consideration and active listening as well as informing and agreeing with ideas, and task-performance monitoring.

With regard to *innovating* behavior, two team members were assigned to develop a new set of standard operating procedures and an accompanying training program in preparation for a change in the factory's lay out. Also, members participated in weekly kaizen events in order to eliminate any further process waste. The other members shared their improvement ideas mainly during formal team meetings, thereby showing their cognitive focus on and *commitment to the firm's strategic lean goals*. For instance, team members automatically explained the "why" of standard operating procedures to newcomers.

Conclusion

As illustrated by this case, effective lean work floor dynamics involve a delicate balance of almost invisible or tacit behavioral factors. High top-management support for lean enables the emergence of healthy lean team dynamics, which leads to improved team performance. Despite the fact that this team's leadership changed regularly, (positive) leader behaviors cascaded to and were absorbed at the team member level. In other words, such role modelling is advisable for managers who want to make a difference through lean.

Figure 1

