

# How do leaders view their own Lean teams' behaviour?

*Desirée H. van Dun ([d.vandun@hofp.nl](mailto:d.vandun@hofp.nl))*

*House of Performance, Utrecht, the Netherlands, and  
School of Management and Governance, University of Twente, the Netherlands*

*Celeste P. M. Wilderom*

*School of Management and Governance, University of Twente, the Netherlands*

## Abstract

Lean team members continuously improve work processes, thereby aiming to enhance customer and organisational value. Our exploratory study focuses on the real-life dynamics of five highly effective Lean teams in the workplace. Although the video-recorded team dynamics have not been thoroughly analysed yet, the preceding, selection-type interviews with key informants of those highly effective Lean teams are reported here and partly confirm the extant Lean theory. Analyses of the (video) data as well as the collected survey data will aim to specify common team values, behaviours and practices.

**Keywords:** Lean Operations, Continuous Improvement, Group Dynamics

## Introduction

Continuous Improvement within organisations (CI) is widely known to lead to sustainable high organisational performance; already many companies attribute their success in part to Lean or Operational Excellence. These strategies share a focus on continuously improving their shop-floor habits or routines in order to meet and exceed customer expectations. Continuous improvement is commonly defined as: “*the planned, organised and systematic process of ongoing, incremental and companywide change of existing practices aimed at improving the company performance*” (De Lange-Ros & Boer, 2001, p. 345; Gieskes, Boer, Baudet, & Seferis, 1999, p. 1121; Middel, Op de Weegh, & Gieskes, 2007, p. 261; Schuring, Harbers, Kruiswijk, Rijnders, & Boer, 2003, p. 905).

Various researchers have tried to unravel CI and its success (see e.g., Bessant, Caffyn, & Gallagher, 2001; Boer & Gertsen, 2003; De Lange-Ros & Boer, 2001; Gieskes, et al., 1999; Jørgensen, Boer, & Gertsen, 2003; Magnusson & Vinciguerra, 2008; Middel, et al., 2007). Although relevant first steps have been set to define key CI behaviours, to identify CI drivers, and to assess CI capability-maturity, there is still a need for more detailed behavioural and team-cultural insights into CI implementation. This is because many organisations still struggle with the practicality of implementing and sustaining the Lean philosophy within their teams.

Moreover, previous Lean research has focused predominantly on industrial settings while, especially in Lean service settings, the understudied social-behavioural aspects

are likely to be crucial for its success. Even though previous studies have included CI behaviour, they were not rigorously observed in real work situations, but rather via large-scale surveys and organisational level self-assessments (see e.g. Caffyn, 1999; Middel, et al., 2007). Given that shop-floor employees are recognised as adding much value through the production of the products and services, especially when they engage in the continuous improvement of daily operational processes, we began our study with amazement about the lack of detailed studies on highly effective operational Lean teams at the bottom of organisational pyramids.

In the absence of other anthropological-type work on actual workplace practices and behaviour of highly effective Lean teams, our current exploratory, empirical study strives to understand better the behaviours of members within those exemplary teams. Such a study would enrich the extant CI/Lean literature, particularly since we are not only studying Lean manufacturing teams, but also shop floor teams in Lean service organisations. In our larger PhD-type project we will observe this behaviour not only with the naked-eye, but we will also employ video-based research methods, so that we can capture more accurately team members' improvement behaviour. Our driving research question is: *How does the behaviour of team members, who are engaged in continuously improving team practices, look like?*

This paper provides preliminary insight into those team dynamics perceived to be crucial by the leaders of five highly effective Lean teams. The data is based on interviews we held with the leaders of highly effective Lean teams in the Netherlands. Next, we will delineate the theory-guided CI dynamics within highly effective Lean teams.

## **Theoretical framework: Lean behaviours and highly effective Lean teams**

### *Typical Lean behaviours*

Previous CI research was dominated by Bessant and Caffyn, who specified ten typical behaviours, proposed to be generic to all organisations working with CI (Bessant & Caffyn, 1997; Bessant, et al., 2001). These routines can be displayed by individuals and groups and may advance over time and Lean experience (Caffyn, 1999), see Table 1. At the shop floor level, De Lange-Ros studied the misfit of improvement activities in daily operator tasks. It was found, amongst others, that a CI attitude includes three core beliefs: 'continuous improvement is important;' 'operational problems need to be cleared;' and 'problems need to be prevented' (De Lange-Ros & Boer, 2001). Beale (2007) studied the motivation of employees to adopt Lean behaviours. She divided seven behaviours that are even more generic than the ones denoted by Caffyn. Especially when trying to observe these behaviours with the naked eye in daily practice, they need to be more specific in order to be of practical use.

In addition to the behavioural concepts mentioned in Table 1, Emiliani (1998) also defined Lean behaviours based upon the Lean principles. Although we agree with his plea that more attention to Lean versus 'fat' behaviours is necessary, we recognise that a large part of his listed Lean behaviours is rather difficult to observe in practice. Consider for instance: 'self-awareness' or 'patience'. Also, in his paper, it remains unclear whether these behaviours should be adopted by employees or only by managers.

Other than these specified Lean behaviours, learning behaviour, and leadership are also important in Lean work settings. After all, Lean is based on continuous team learning processes that take place sequentially (Bartezzaghi, Corso, & Verganti, 1997).

De Lange-Ros (1999) concludes, on the basis of her literature review, that the organisational learning literature may further enhance our knowledge on the ‘social aspects’ of continuous improvement. According to Edmondson (1999, p. 357), continuous team learning behaviours are centred around seeking feedback, discussing errors and seeking information/feedback from customers and others.

*Table 1 – Lean behaviour found in the literature*

<i>Caffyn (1999, p. 1143)</i>	<i>De Lange-Ros and Boer (2001, p. 355)</i>	<i>Beale (2007, p. 17)</i>
<ol style="list-style-type: none"> <li>1. Employees demonstrate awareness and understanding of the organisation’s aims and objectives</li> <li>2. Individuals and groups use the organisation’s strategic goals and objectives to focus and prioritise their improvement activities</li> <li>3. The enabling mechanisms (e.g. training, teamwork, methodologies) used to encourage involvement in CI are monitored and developed</li> <li>4. Ongoing assessment ensures that the organisation’s structure, systems and procedures, and the approach and mechanisms used to develop CI, consistently reinforce and support each other</li> <li>5. Managers at all levels display active commitment to, and leadership of, CI</li> <li>6. Throughout the organisation, people engage proactively in incremental improvement</li> <li>7. There is effective working across internal and external boundaries at all levels</li> <li>8. People learn from their own and others’ experiences, both positive and negative</li> <li>9. The learning of individuals and groups is captured and deployed</li> <li>10. People are guided by a shared set of cultural values underpinning CI as they go about their everyday work</li> </ol>	<ol style="list-style-type: none"> <li>1. Recognise and appreciate the importance of Continuous Improvement</li> <li>2. No longer accept operational problems as a normal aspect of daily work</li> <li>3. Treat problems more as exceptions that have to be prevented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Team working</li> <li>2. Problem-solving</li> <li>3. Employee autonomy/ empowerment</li> <li>4. Participative decision-making</li> <li>5. Multi-skilling/ motivation for skill acquisition</li> <li>6. Job rotation/labour flexibility</li> <li>7. Volunteering for extra-job activities</li> </ol>

Furthermore, as described by Magnusson and Vinciguerra (2008), the role of higher-level managers and team leaders in CI are important when studying improvement within groups. An earlier exploratory empirical study of highly effective Lean middle managers offers a set of values and behaviours that might apply in this context to team leaders as well (Van Dun, Wilderom, Hicks, & Van Lieshout, 2010). In line with the previous study of Lean leadership styles, performed by Found and Harvey (2006), we conclude that highly effective leaders in Lean organisations support their team leaders and team members for whom they are responsible. This ‘facilitating team learning’

behaviour may cascade upwards to the higher management levels (Found, Van Dun, & Fei, 2009).

In summary, all the mentioned studies to date are based around subjective self-assessment surveys and (group) interview methods. Although the resulting identification of Lean behaviours can be considered a good starting point, we aim to observe these behaviours and practices within Lean teams more objectively.

#### *Defining 'highly effective Lean operator team'*

Before we start to empirically study the team dynamics in highly effective Lean operator teams, we need to clarify what types of teams we are actually talking about. Team research is a wide field and many different connotations are known (see e.g., Salas, Stagl, & Burke, 2004). Consider for instance Cohen and Bailey (1997) who list: 'work teams,' 'parallel teams,' 'project teams,' and 'management teams.' More recently, and greatly influenced by the globalization and fast development of the internet, 'virtual teams' (Maznevski & Chudoba, 2000) and 'multicultural teams' (Durnell Cramton & Hinds, 2005) can also be added to this list. Also, the type of tasks performed by a team tend to matter: high versus low skilled; complex versus less complex; routine versus non-routine; production versus service-oriented; and volume-versus non-volume driven (De Dreu & Weingart, 2003). Also, the team's design influences the team's dynamics; consider for instance the differences between cross-functional and single-functional groups, time-limited versus ongoing teams, and manager-led versus autonomous work groups (Edmondson, 1999). The work teams we are focusing on are part of a larger organisational context; they are entities with a clearly defined team membership, and the team members share responsibility for a particular product or service (Edmondson, 1999; Hackman, 1987). More specifically, we are concentrating on *highly effective* Lean operator teams. This brings another issue to light: how did we define 'highly effective' without relying on mere subjective opinion?

One of the most influential effective-team measures comes from Hackman (1987, p. 323): the team performance scale which distinguishes three criteria for effective teams:

1. The 'productive output' of the work group should meet or exceed the performance standards of the people who receive and/or review the output;
2. The 'social processes' used to carry out the work should maintain or enhance the capability of members to work together on subsequent team tasks;
3. The 'group experience' should, on balance, satisfy rather than frustrate the personal needs of group members.

Hackman further developed this scale into the Team Diagnostic Survey, which was later used in many studies covering team performance (see, e.g. Higgins, Young, Weiner, & Wlodarczyk, 2009; Wageman, Hackman, & Lehman, 2005). Many authors used these three dimensions as a basis for their own team performance scales. For instance, Van den Bossche, Gijssels, Segers and Krischner (2006) embedded Hackman's three dimensions into four survey items: 'product performance;' 'process performance;' 'team viability;' and 'team learning.'

Cohen and Bailey (1997) further explicate the effectiveness of work teams as follows: 'performance effectiveness;' 'member attitudes;' and 'behavioural outcomes.' Their 'performance effectiveness' corresponds to Hackman's first dimension 'productive output of the work group,' since it covers efficiency, productivity, response times, quality, customer satisfaction, and innovation (Cohen & Bailey, 1997). 'Member

attitudes,' described by Cohen and Bailey as employee satisfaction, commitment, and trust in management, can be linked to both Hackman's 'social processes' and 'group experience'. Not only will the level of employee satisfaction, commitment and trust in management affect people's attitudes and thus the capability of members to effectively collaborate; it will also affect (i.e., satisfy or frustrate) team members in terms of their group experience. Thirdly, Cohen and Bailey's 'behavioural outcomes' category refers more specifically to the outcomes of Hackman's 'group experience' and how this satisfies group members, through absenteeism, turnover, and safety.

Edmondson (1999, p. 357), in her study of psychological safety and team learning behaviour, employs a measure, team performance. She only uses one output variable, namely: 'satisfies customer needs and expectations.' This corresponds in part to Hackman's first dimension 'productive output.' In line with the Service Profit Chain (Heskett, Jones, Loveman, Sasser, & Schlesinger, 2008), this criterion only partly covers the complete team performance scale. It is not only customer satisfaction that matters, but also the financial results and improvements in employee satisfaction due to their company's investment in training to better serve their customers (Heskett, et al., 2008).

Most of these measures focused on team output, instead of team members' individual performance. Edmondson (1999) therefore also included the performance measure of 'internal motivation'. These individual team member satisfaction outcomes are also related to team-level performance measures like turnover and absenteeism (De Dreu & Weingart, 2003). Also, the amount of learning and growth that team members experienced can be used as an individual performance measure of team effectiveness (Higgins, et al., 2009). Consequently, we define highly effective Lean operator teams as follows: "*Operational work teams that work in one location and perform low to medium skilled work in both service and production firms, started more than one year ago to continuously improve their own way of working and, while doing so, showed durable performance growth in terms of:*

- *Productive output (e.g. 'team productivity;' 'customer satisfaction;' 'financial result;' and 'team efficiency');*
- *Social processes (e.g. 'team learning behaviour' and 'team commitment');*
- *Group experience (e.g. 'team member satisfaction;' 'team member turnover;' 'team member absenteeism;' and 'management satisfaction and trust')."*

The focus of our current study is to specify those team dynamics that might indicate highly effective Lean operator teams. The following paragraph reports on the methods employed to select the highly effective teams participating in our empirical study.

## **Methods**

### *Procedure*

The most commonly used method to explore CI teams for purposes of theory-building is the case study (Boer & Gertsen, 2003; Eisenhardt, 1989; Yin, 2009). Hence, after the literature review, on CI/Lean and effective teams, we engaged in a nomination procedure to select highly effective shop-floor teams that continuously improve their way of working. We will describe this nomination procedure first. In the Netherlands, we distributed widely a call for the (self-)nomination of those kinds of teams. We published a small article to this effect in a major Dutch managerial website and announced it in a management-executive journal as well as in various active Dutch

(online and offline) networks for Lean/CI managers. This resulted in about 30 nominated teams.

Then, we deliberately selected from these 30 nominated teams nine, on-paper, most effective teams on the basis of a preliminary telephonic introductory meeting. Next, we held one-hour semi-structured face-to-face interviews with a key informant from each of the nine teams' as well as a document study of their key performance indicators. We audio-taped all nine selection interviews, and these interviews followed the same structure:

1) The interview started with various descriptive and investigative questions on the key informants' position and his/her definition of highly effective Lean operator teams, for instance: *"Could you please describe your current job position?"*;

2) Then, the key informant was asked to nominate and describe a highly effective Lean operator team in his/her organisation. For example we asked: *"Could you describe a team in your organisation that you consider to be highly effective in CI?"*;

3) Next, the researcher asked the interviewee about the key performance indicators in use by the nominated team, and probed for possible additional performance indicators, e.g.: *"How did the team perform in 2008 and 2009 in terms of employee satisfaction?"*;

4) Finally, further prospective process steps were described by us and the informant had the opportunity to raise questions and remarks concerning their prospective inclusion as a case study, by asking: *"Do you have any remaining questions?"*.

Immediately after the interview, the researcher sent a follow-up e-mail to each key informant asking for documentation of (weekly) performance reports for 2008-2009: in order to verify the following selection criteria:

- The team implemented a Lean strategy more than one year prior to this study;
- The team continuously enhances their own work habits;
- The team established stable growth in the following quantitative performance measures: employee satisfaction; customer satisfaction; and financial results.

*Analysis* – Each selection interview was then transcribed and content-analyzed. In this article we will focus on the key informant's responses to the following question: *Why do you consider this team to be exemplary to other teams that would like to learn how to continuously improve their way of working?* Based on the responses we probed the following sub questions: a) *What does the team do in particular that is so highly effective?* b) *What are the team's key performance indicators?* c) *Is this different to other effective non-Lean teams you know? Can you explain why?*

### *Sample*

The sample is described in Table 2. Based on the interviews we selected five of the initial nine teams for the subsequent observation study (the ones marked with an asterisk). In this article we will only report the findings of those five most promising teams. Whereas our interviewees were mainly male, we interviewed people from both service and manufacturing organisations. The five selected interviewees were Lean middle managers or Lean team leaders, and their organisations had started implementing Lean principles on average 58 months ago (4 years and ten months). Only the Dutch Tax Administration started implementing Lean less than a year ago, but we were able to include their team in our study since they would pass the one year criterion by the time we would start to observe. In return for their prospective participation in our observation study, the teams were promised a solid feedback report, including a calibration on how they are doing compared to the other highly effective Lean teams.

Table 2 – Description of the interview respondents

No.	Gender	Type of organisation	Main team task	Starting date of Lean implementation*
1	M	Truck Manufacturing	Truck assembling	147 months (1998)
2	M	Retail Manufacturing	Assembling small consumer products	87 months (2003)
3	M	Royal Mail	Sorting mail by hand	26 months (February 2008 )
4	F	Health Insurance	Claims handling	19 months (September 2008)
5	M	Dutch Tax Administration	Monitoring taxes	11 months (May 2009)
On average:				58 months

\* Calculated by the 1<sup>st</sup> of April 2010

## Results

Given that all the data has not been analysed yet, we will limit ourselves, in this paper, to the views of the interviewed leaders of the five most promising Lean teams. Table 3 summarises our qualitative findings on the eight proposed team dynamics and behaviours of highly effective Lean operator teams. We rank-ordered the team dynamics on the basis of how much they came-up in the interviews.

All five interviewees stressed that their highly effective teams excel through autonomous process monitoring based on the key performance measures. This corresponds to Beale's (2007) Lean behaviour 'employee autonomy/empowerment'. Through monitoring performance, employees are able to make their own decisions.

Then, we found that four of the interviewees discussed the high level of cooperation and team learning within the teams. Besides Beale (2007), who listed team working, this can also be found in Caffyn's (1999) research, 'people learn from their own and others' experiences, both positive and negative.' This also links to the eagerness to learn that we experienced when interviewing the team leaders. They were highly interested in learning more from our study in terms of how to further optimise continuous improvement in their team.

However, 'thinking/reasoning from a customer, process and chain perspective' has not been covered yet by the extant CI/Lean literature, as shown in Table 2. Since this is merely a cognitive, non-visible process, we need to further specify this potential Lean team dynamic in order to be able to observe this in daily practice.

Furthermore, from the interviews, we found that team leaders are encouraged to play an important role in the effective team's dynamics, as put forward by their middle managers, whom we interviewed. In line with our previous study (Van Dun, et al., 2010), the Lean team leaders facilitate and coach their teams. Also, Lean leaders need to provide clear guidelines. One of the interviewees illustrated this point: "*Both the team leaders and me are there purely to support them, to provide the goal and guidelines.*"

A new-to-the-literature type aspect noted by three of the five interviewees is team building through social activities and celebrating success. We did not detect this team dynamic in Lean literature before. Like in Caffyn's (1999) study, three of the Lean leaders noted that the majority of team members actively participate in the continuous improvement of work processes themselves. Two interviewees mentioned that their teams are open to fact-based information; provide feedback and are not afraid to pose their opposite opinions. Finally, only one of the interviewees pointed to the importance of understanding the strategy behind CI. This is one of the fundamental CI behaviours mentioned by Caffyn (1999) and De Lange-Ros and Boer (2001).

Table 3 – Team dynamics and behaviours from selection interviews

Team dynamic/behaviours	Quotes
1. Autonomous process monitoring, based on performance measures	<p>“It also shows in the commitment to the measures. People want to know how we perform, at the individual level, and in comparison to others.” (Royal Mail)</p> <p>“Everybody knows each day how fast he was the day before. We also measure how fast the department was yesterday.” (Health Insurance)</p> <p>“Well, you’ve seen the video screens. (...) It is a choice. They want to monitor how many they produced. (...) The team also organises itself in such a way that they even ask the line feeder to man the machine during breaks (...) Hence, they are actively solving further problems.” (Retail Manufacturing)</p> <p>“In fact everybody facilitated the Daystart at least once. They do not bother if the team leader is absent. No, someone in the team will stand up and say: I’ll facilitate today’s Daystart!” (Tax Administration)</p> <p>“This team is self-regulating, they become more-and-more autonomous in what they do.” (Truck Manufacturing)</p>
2. Cooperation among team members and team learning	<p>“You can develop high productivity, efficiency, and your employees, but in the end it comes down to teamwork, not group work, teamwork.” (Royal Mail)</p> <p>“What you see here is harmony.” (Tax Administration)</p> <p>“The employees themselves developed a course, ‘Working Faster:’ to train each other.” (Health Insurance)</p> <p>“The team selected their own team members. They even made choices like: ‘We would like to have this man to join in, although he is not the best guy we have, but he fits well in our team.’ (...) This man was helped by the team and the team made sure he performed. Eventually, you see that the team performance increases magnificently.” (Retail Manufacturing)</p>
3. Thinking/reasoning from a customer, process and chain perspective	<p>“People really started to consider what it means to the customer, to oneself, to the company. They don’t just think: ‘I work from 8 to 12 at night and go home’.” (Royal Mail)</p> <p>“The change you want is that they start to think in terms of the process.” (Truck Manufacturing)</p> <p>“Only when we have a high workload do we search for alternatives in other departments to help us out.” (Royal Mail)</p> <p>“Slowly the awareness grows (...), that the process doesn’t stop with one’s own department.” (Retail Manufacturing)</p>
4. Support from team leaders who coach and facilitate team members, including the provision of clear guidelines	<p>“We also received e-mails (from seniors) like: ‘Guys, come on, still 300 to go, we can do it!’.” (Health Insurance)</p> <p>“Both the team leaders and I are there purely to support them, to provide the goal and guidelines. We try to steer and lead them, like: ‘This is where we go in the future. Think about it yourself, what this means to you, and how you can apply those concepts’.” (Truck Manufacturing)</p> <p>“The team leader updates the board, reports, records the improvement ideas. (...) That doesn’t mean the team leader needs to do all this by himself. He facilitates the process, but they need to follow-up together.” (Royal Mail)</p> <p>“The team leader used to be afraid to make decisions. Now he stands in front of the group, self-confident, and facilitates the process very well.” (Tax Administration)</p>
5. Building the team through social activities and celebrating success	<p>“They started doing things together. They go to get a Chinese. So this is a team binder, in a way; they also invite the production managers.” (Royal Mail)</p> <p>“Normally a few times a day somewhere in the workplace a team applauds. Then the whole department joins in. Everybody works with Lean. So during the Daystarts, suddenly in one corner people start to applaud and it’s like a wave, it moves through the whole department. That is real funny.” (Health Insurance)</p> <p>“The team that is exceptional, they are absolutely driven.” (Retail Manufacturing)</p>
6. Active participation in continuously improving the work process	<p>“It is most effective if people feel responsible. (...) Simply the fact that you use the improvement board.” (Health Insurance)</p> <p>“Improving processes will be their core activity, diminishing the technical work aspect.” (Truck Manufacturing)</p> <p>“Writing things on improvement boards and follow-up to see if the improvement actually works. In a way, they continually post ideas to improve today’s work compared to how we did yesterday. (...) Just because they see it as waste, they start to look at things differently.” (Royal Mail)</p>
7. Being open to the facts; feedback; and opposite opinions	<p>“Therefore it becomes easier to say you disagree, (...) because it is normal to discuss these things.” (Health Insurance)</p> <p>“Especially critically examining your own process and being transparent on how the process is going, and from there study the possibilities. To be able to see that it is very important, to be open, open to feedback, not only the positive, but also when there is potential for improvement.” (Truck Manufacturing)</p>
8. Understanding the strategic importance of CI	<p>“Operators apply methods that deliver. (...) Understanding why we use these methods, what the goal is, what steps we could set (...) But it obviously starts with the basis of understanding, why we do all these things, why it is important.” (Truck Manufacturing)</p>

## Conclusion

Based on five in-depth interviews with the key informants of five, carefully pre-selected highly effective Lean teams in the Netherlands, we came to the following results. Highly effective shop-floor Lean teams are expected to act autonomously in monitoring performance; improve their cooperation and team learning; as well as being customer- and process-minded. The interviewees also noted the importance of teambuilding through celebrating successes and openness to feedback from all team members, including the skills to smoothly resolve an unavoidable disagreement.

On the basis of the selection interviews, as reported in this current study, we selected the same five Lean teams into our larger study. These five teams comprised Dutch consumer services (in health insurance and tax administration), and product-oriented firms (logistics and manufacturing). We plan to conduct longitudinal observatory-type studies of these five teams: in an effort to further specify their typical CI dynamics. During our EurOMA presentation we will provide additional insights coming from the by then analyzed (video)dataset, and we hope to discuss with the workshop participants how to pursue our longitudinal-intervention type of research. We plan to do so as follows:

- Compare the findings of these teams to demographically similar teams within same, larger organisations that are less successful in Lean or CI;
- Provide team-specific feedback sessions with specific recommendations for each team, and then study the way the teams follow up on these suggestions: for further continuous improvement.

Insight into the values, behaviours and related practices of highly effective Lean teams, in both manufacturing and service settings, helps academics to specify the current rather abstract CI behaviour and the CI capability-maturity model. Furthermore, the Lean managers themselves and operator teams benefit from our study, given its best-practice orientation. This is of course, at the same time, a limitation, from a more theoretical point of view. Future research needs to entail a more quantitative study of the resulting CI dynamics of Lean teams, and their contributions to team performance.

## Acknowledgements

We would like to thank Tim van Eck for his assistance as well as the participating interviewees in this part of the larger research project. Also, we truly appreciate the support obtained for this study from House of Performance.

## References

- Bartezzaghi, E., Corso, M., & Verganti, R. (1997). Continuous improvement and inter-project learning in new product development. *International Journal of Technology Management*, 14(1), 116-138.
- Beale, J. (2007). *Employee motivation to adopt Lean behaviours: Individual-level antecedents*. Paper presented at the Production and Operations Management Society 18th Annual Conference.
- Bessant, J., & Caffyn, S. (1997). High-involvement innovation through continuous improvement. *International Journal of Technology Management*, 14(1), 7-28.
- Bessant, J., Caffyn, S., & Gallagher, M. (2001). An evolutionary model of continuous improvement behaviour. *Technovation*, 21(2), 67-77.
- Boer, H., & Gertsen, F. (2003). From continuous improvement to continuous innovation: a (retro)(per)spective. *International Journal of Technology Management*, 26(8), 805-827.
- Caffyn, S. (1999). Development of a continuous improvement self-assessment tool. *International Journal of Operations & Production Management*, 19(11), 1138-1153.
- Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management*, 23(3), 239-290.

- De Dreu, C. K. W., & Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology*, 88(4), 741-749.
- De Lange-Ros, D. J. (1999). *Continuous improvement in teams: The (mis)fit between improvement and operational activities of improvement teams*. Unpublished PhD, University of Twente, Enschede.
- De Lange-Ros, D. J., & Boer, H. (2001). Theory and practice of continuous improvement in shop-floor teams. *International Journal of Technology Management*, 22(4), 344-358.
- Durnell Cramton, C., & Hinds, P. J. (2005). Subgroup dynamics in internationally distributed teams: Ethnocentrism or cross-national learning? *Organizational Behavior*, 26, 231-263.
- Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44, 350-383.
- Eisenhardt, K. M. (1989). Building Theories from Case-Study Research. *Academy of Management Review*, 14(4), 532-550.
- Emiliani, M. L. (1998). Lean behaviors. *Management Decision*, 36(9), 615-631.
- Found, P. A., & Harvey, R. (2006). The role of leaders in the initiation and implementation of manufacturing process change. *The International Journal of Knowledge, Culture & Change Management*, 6(8), 35-46.
- Found, P. A., Van Dun, D. H., & Fei, F. (2009). *Leadership skills at different levels within a Lean organization*. Paper presented at the 20th annual conference of the Production and Operations Management Society, Orlando.
- Gieskes, J. F. B., Boer, H., Baudet, F. C. M., & Seferis, K. (1999). CI and performance: a CUTE approach. *International Journal of Operations & Production Management*, 19(11), 1120-1137.
- Hackman, J. R. (1987). The Design of Work Teams. In J. Lorsch (Ed.), *Handbook of Organizational Behavior* (pp. 315-342). Englewood Cliffs, NJ: Prentice-Hall.
- Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, W. E., & Schlesinger, L. A. (2008). Putting the service - Profit chain to work. *Harvard Business Review*, 86(7-8), 118-+.
- Higgins, M., Young, L., Weiner, J., & Wlodarczyk, S. (2009). Leading teams of leaders: What helps team member learning? *Phi Delta Kappan*, 91(4), 41-45.
- Jørgensen, F., Boer, H., & Gertsen, F. (2003). Jump-starting continuous improvement through self-assessment. *International Journal of Operations & Production Management*, 23(10), 1260-1278.
- Magnusson, M. G., & Vinciguerra, E. (2008). Key factors in small group improvement work: An empirical study at SKF. *International Journal of Technology Management*, 44(3/4), 324-337.
- Maznevski, M. L., & Chudoba, K. M. (2000). Bridging Space Over Time: Global Virtual Team Dynamics and Effectiveness. *Organization Science*, 11(5), 473-492.
- Middel, R., Op de Weegh, S., & Gieskes, J. (2007). Continuous improvement in The Netherlands: a survey-based study into current practices. *International Journal of Technology Management*, 37(3-4), 259-271.
- Salas, E., Stagl, K. C., & Burke, C. S. (2004). 25 years of team effectiveness in organizations: Research themes and emerging needs. *International Review of Industrial and Organizational Psychology*, 19, 47-92.
- Schuring, R. W., Harbers, C., Kruiswijk, M., Rijnders, S., & Boer, H. (2003). The problem of using hierarchy for implementing organisational innovation. *International Journal of Technology Management*, 26(8), 903-917.
- Van den Bossche, P., Gijssels, W. H., Segers, M., & Kirschner, P. A. (2006). Social and cognitive factors driving teamwork in collaborative learning environments: Team learning beliefs and behaviors. *Small Group Research*, 37(5), 490-521.
- Van Dun, D. H., Wilderom, C. P. M., Hicks, J. N., & Van Lieshout, A. J. P. (2010). Values and behaviors of highly effective lean leaders. *Submitted to: International Journal of Operations & Production Management*, 1-43.
- Wageman, R., Hackman, J. R., & Lehman, E. (2005). Team Diagnostic Survey: Development of an Instrument. *Journal of Applied Behavioral Science*, 41(4), 373-398.
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed. Vol. 5). Thousand Oaks: SAGE Publications.