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Sustainable Development Work (Lean) in Swedish Healthcare

A longitudinal and quantitative study concerning effects of goal settings on participation

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Introduction
The healthcare sector in the western world is put under increased demands for high quality and efficiency. At the same time, more people are in need of care since the elderly population is growing. The growing demands implicate that the limits of the societal resources is about to be reached (Mohrman et al. 2012). As a consequence of these circumstances, Lean Production (Lean) is fast spreading in the healthcare sector and worldwide (Brando de Souza 2009).

A recent report from the Swedish Association of Local Authorities and Regions (2012) indicates that four out of five Swedish county councils have initiated Lean projects. Will all of these Lean projects be sustainable? Due to the socio-technical tradition of Scandinavia, a strong union and extensive legislation concerning working conditions, it is likely that Lean in Sweden has taken on certain characteristics in order to be sustainable. One of these characteristics is the concept of employee participation (Börnfelt 2006; Oudhuis & Olsson 2011). So, how may employee participation be promoted within healthcare organizations in order to promote sustainable development work (Lean)?

Preliminary results from a quantitative study in the research project Verksamhetslyftet¹ show that participation in Swedish healthcare has some level of correlation with the innovation resources (i.e. context, time and monetary means) but also formal structures (i.e. roles, responsibilities, power and authority) in the organization (presented at Verksamhetslyftet’s conference in May 2012). Preliminary results from an interactive qualitative study also address the organizational formal structures, in order to promote participation. The results from this study, including 24 first line managers at a psychiatry healthcare unit, focus on the importance of clear goals and clear role definitions, i.e. managerial power and authority, in the Lean inspired development work (Lindskog et al. 2013).

Hence, the hypothesis is that participation correlates with the organizational formal structures. The purpose of this conference paper is thus to further elaborate on the sustainability of Lean in Swedish healthcare by studying effects on participation from the organizational formal structures in a larger sample of these organizations. The research questions are:

- Is there a correlation between the formal structures of the Lean inspired development work in Swedish healthcare and participation?
- Do these structures correlate to the level of goal settings in this sector?

¹Verksamhetslyftet is a research project and a Swedish educational program focusing on supporting hospitals and municipalities in their work to introduce Lean in their organizations.
Method

The data collection was done through a longitudinal survey including a baseline study and a follow-up study, done 13 months after the baseline study. The study included approximately 1000 respondents from two Swedish university hospitals. The respondents included managers, physicians and employees from different units at the hospitals. However, 52% of the respondents represented the division of psychiatry at one of the hospitals in the first round and 59% of the respondents represented the same division of psychiatry in the second round.

The baseline survey was sent out in December 2011 (response rate 65%) and the follow-up study was sent out in January 2013 (response rate 45% at time of the analysis). The survey was sent out electronically. The lists of e-mail addresses were given from administrative contact persons at each division at the hospitals.

The baseline survey included 76 questions concerning the organization, organizational change, management, work content, continuous improvements, Lean, working environment, health, and background data. In the follow-up survey, questions concerning vision and goal settings were added. In total, the follow-up survey included 87 questions.

Analysis

Mean values from the longitudinal study was compared to reference data from a Swedish national survey, called “Det nya arbetslivet” (the new working life, in English), representing a general view of the working conditions in Sweden (Oxenstierna et al. 2008).

The questions from the questionnaire were grouped into indexes. Focus was put on the indexes organizational formal structures, participation and level of goal settings in the organization and in the Lean work. The index organizational formal structures consisted of six items regarding role clarity, rules and formal cooperation. Seven items measured the level of participation; employee decision making and democracy. Seven items measured the level of goal settings regarding vision, objectives and follow-ups.

A mean value comparison was made between the baseline and follow-up study for the index participation. Further, a correlation was made between the indexes organizational formal structures and participation using Spearman’s test (-1 < rho < 1). The indexes level of goal settings and organizational formal structures were also correlated. Additionally, the single item question “Does the organization do follow-ups on the clear goals?” was correlated to the index organizational formal structures. The correlations were divided into three intervals, see table I.

<table>
<thead>
<tr>
<th>Table I. Types of correlations.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value</strong></td>
</tr>
<tr>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>rho ≤</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>rho ≥</td>
</tr>
</tbody>
</table>
Results
The analysis, comparing the level of participation in the longitudinal study and reference data, showed only minor differences between the baseline study, follow-up study and reference data. The results, shown in table II, point towards a strong correlation in both studies between organizational formal structures and participation. The results also show an intermediate correlation between the level of goal settings and organizational formal structures.

<table>
<thead>
<tr>
<th>Index correlation</th>
<th>Type of correlation survey 1</th>
<th>Type of correlation survey 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational formal structures vs. Participation</td>
<td>Strong correlation (rho=0.55, p&lt;0.05)</td>
<td>Strong correlation (rho=0.55, p&lt;0.05)</td>
</tr>
<tr>
<td>Level of goal settings vs. Organizational formal structures</td>
<td>-</td>
<td>Intermediate correlation (rho=0.33, p&lt;0.05)</td>
</tr>
</tbody>
</table>

The correlation between the single item question, “Does the organization do follow-ups on the clear goals?”, and the index organizational formal structures showed a weak correlation (rho = 0.18; p<0.05).

Discussion
At present there are few quantitative studies on effects from working with development according to Lean at Swedish hospital units. This study includes empirical data from a longitudinal survey including approximately 1000 respondents (managers, physicians and employees) within healthcare. Methodologically it should be considered that there is an overrepresentation from the division of psychiatry at one hospital. However, the characteristics of the division are believed to be similar to the other hospital divisions in the study. The results in this paper are also to be considered as preliminary since the follow-up study was not ended at time of writing. Still the results point towards interesting indications.

Both the base line and follow-up studies show a strong correlation between the organizational formal structures and participation. However, since the level of participation is basically unchanged between the baseline and follow-up study, there is reason to believe that the level of organizational formal structures is also unchanged. During organizational change there is an initial phase of uncertainty, i.e. the transitional organization (Cherns 1976). This stage may be perceived as chaotic but holds an important opportunity for organizational learning (ibid). Consequently, there is reason to believe that the ongoing development work has not yet had as much effect on the level of organizational formal structures and participation as anticipated. Instead the levels of formal structures and participation were already present in the organization and they were not the results from introducing Lean. There is also reason to believe that a one year follow-up study may be a too short of an interval to do follow-up.

The results concerning the level of goal settings and organizational formal structures point towards an intermediate correlation between the two indexes. Does this mean that the level of goal settings does not have an effect on the level of organizational formal structures and hence participation? The single item question, used in the index for goal settings, “Does the organization do follow-ups on the clear goals?”, has a weak correlation to the organizational
formal structures. Hence, there is reason to believe that even if the work units have set up goals in the organization and in the Lean work, not all of them do thorough follow-ups, on the set goals. Information from the follow-ups is a means for the employees to learn from their development work, i.e. employees should be able to inspect their own work so to learn from their mistakes (Cherns 1976). In order for the development work (Lean) to be sustainable, the work needs to include characteristics such as employee learning and participation (Oudhuis & Olsson 2011). Accordingly, the development work needs to include follow-ups of the set goals.

The recommendation for future research is to do an additional follow-up study concerning effects of organizational formal structures on participation, made after the transitional phase has passed in the studied organizations. This study also ought to include a study of how the level of organizational formal structures is affected by goal settings. This in order to get further understanding of how to promote participation and sustainable development work (Lean) within Swedish healthcare.

**Conclusion**

According to the results, organizational formal structures, as role clarity, rules and formal cooperation, has an impact on the perceived participation and consequently on the sustainability of the development work (Lean) in the studied healthcare organizations. However, the effect of goal settings on the perceived organizational formal structures is still to be considered as quite uncertain. Still, the follow-ups of the set goals in the development work are believed to be important in promoting learning and consequently sustainability in the work.

The effects on the level of participation from working with development work (Lean) in the studied healthcare organizations are after one year believed to be weak. This is believed to be due to the organizations still being in the transitional phase in their development work. The study rather indicates that the organizational preconditions are important when working with sustainable development work (Lean). An additional follow-up study, made after the transitional phase, is to be recommended.

The results from this study are believed to give practical guidance to healthcare managers in their implementation of Lean and a contribution to research and organizational development concerning sustainability in development work.
References


