DRIVERS AND OBSTACLES FOR EMPLOYEE-DRIVEN INNOVATION IN LARGE CLIENT PROJECT ORGANISATIONS

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ABSTRACT

In recent years implementation of various types of development and innovation approaches has been adapted in the construction industry, without any of them fully matching the expected success. Through a focus on, how to generate most value in the daily work and problem-solving processes, and in sequence increased revenue, this study suggests that the key source for innovation is the employees. Employee-driven innovation (EDI) is a methodology to take advantage of employees’ spoken and tacit knowledge in the development of new tools and structures. To utilise this approach in optimising the construction project management processes is a relatively new approach to engage innovation. In this broad perspective the aim is to map the boundary conditions for an EDI approach in a client project organisation and compare these with the theoretical methodology for conduction EDI. Trough semi-structured interviews this study will discover the conditions such as drivers and obstacles for EDI within major client project organisations. The field around EDI will be studied to discover the most potential management philosophies and methods. Based on this study, the theoretical approach to engage EDI in client project organisations is compared to the boundary conditions of the organisation.

Keywords: construction innovation, change management, employee-driven innovation, knowledge sharing, project organisations.

INTRODUCTION

The construction industry is, in many countries, considered to be a slow adopter of new technology and new processes. In general, it is not regarded as an innovative industry (Wandahl et al. 2011a). Instead focus is on short-term gains, instead of long term planning of development and innovation. When the industry booms, the industry gear up, man and machinery wise, and engage in as many projects as possible, disregarded the cost, more or less (Wandahl et al. 2011b). There is a lack of competition, and construction companies feel no need to use resources on innovation. In times of recession competition is substantial, and the companies gear down, and cut

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off all possible costs including R&D. Thus, the focus on long-term development and innovation has rough conditions to subsist in the industry.

In large project organisations that are based on new bonds and relations in drifting systems (Christensen and Kreiner 1991), the employees are an important and effective source of innovation that are often ignored or unseen in innovative approaches. In terms of their experience-based and up-to date knowledge about the projects, employees possess the newest and most valuable knowledge about materials, markets, customers, processes and customers/users. Hence, it is an obvious source of information and knowledge within the organisation, who can share their practical experiences and know-how in informal networks or forums (Høyrup 2010).

**State-of-the-art**

Involvement of employees has been a research topic for some years, but it has never been formalised in terms of a theoretical or practical framework (Bakker and Demerouti 2008) Hence, a methodology to take advantage of employees’ spoken and tacit knowledge in the development of new tools, structures, and processes to optimise the construction project processes, is an emerging approach to engage innovation.

There are many traditional ways to use the employee’s experiences in evaluation of the working processes in the organisation, e.g. team meetings, walk and talk session, evaluation schemes. A more recent theory, in using employees in the development of organisations, is Employee-driven innovation (EDI). This approach adapts a systematic involvement of employees in the innovation process, centred on idea-generation from employees, and a framework that can transform these ideas into new tools or working processes.

In general the EDI approach is a bottom-up process that focuses on innovation driven by the employees’ ideas, creativity, competences and problem-solving abilities. The process needs to be supported and organised by management. Furthermore, it concerns all types of innovation activities; process, product, organisation, market, and so forth, both incremental and radical (Høyrup 2010). EDI is not a well-documented field of research in the general innovation literature. EDI is often seen in a greater innovation context, in which it often is de-emphasised contrary to product and process innovation (Høyrup 2010). Dobni (2006) presents “The innovation blueprint”, a general innovation model where the employee’s figures in the organisational mindset that should drive the organisation towards innovation. Hence, a company that succeeds in innovation cannot only be defined in the company’s external behaviour and actions, it is to a great extent also determined by the culture and the mindset of employees in all levels of the organisation. In The Innovation Blueprint model the employees’ competences and development is an important factor in an organisation’s desire to invest in innovation and development. This model differs from the basic perception of EDI in the way that the employees are not considered a source for innovation, but merely as a support function that is aligned with the R&D or market innovation. Hamel (2006) also focuses on this paradox. He emphasises that more competitive advantages are developed from the non-technological innovation compared to the innovation developed from technologies and laboratories. Hamel denotes examples on how to link management and innovation in large project organisations by focusing on employees and management, and on how to create innovation through organising, leading, coordinating and motivating the employees. In project based organisations within the construction industry, knowledge and experience in terms of products and processes are often closely related to individual
employees and often irregularly driven by these employees. This knowledge is often very difficult to identify, collect, share, and utilise. Therefore the approach requires a systematic structure or methodology such as EDI, which features tools for managing structure, culture, and methods in project organisations (Teglborg-Lefèvre 2010; Høyrup 2010).

Development of methodologies to coach or train employees in identifying problems in the working processes, generate ideas, and transform them into solutions, is also considered to hold a higher level of novelty. Furthermore, it is essential that this development is seen in an interdisciplinary perspective, thus it can be deeply rooted in all units and at all levels in the organisation, and in the end be beneficial and value adding.

Objectives
This research takes its departure in the following objectives

- Deriving a map of the boundary conditions and point of reference for conducting EDI in a client project organisation
- Discussion of possible drivers and obstacles for conducting EDI in large client project organisations.

METHODOLOGY
This study takes its departure in a desire to challenge the capabilities for innovation and willingness to change in the construction industry, based on the challenges in a client project organisation. The focus on the employees is based on, how to capture and utilize their tacit and spoken experience and knowledge in the development and innovation of the organisation and its products and services.

Semi-structured Interviews
To map the boundary conditions and identify the point of reference for approaching EDI in a large client project organisation, various employees have been interviewed.

The interview approach was conducted through a semi-structured interview to ensure an open and focused two-way communication with the employee. Using this method should ensure a confirmation of what is already known, and the possibility to investigate new point of views. Selection of respondents is based on these criteria: they should be affiliated with a geographically spread office location; they should occupy different job-functions; they should have various experience and length of employment; and they should be of various ages. Table 1 illustrates the selection of respondents in relation to these criteria.

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Job function</th>
<th>Experience</th>
<th>Location</th>
<th>Age (app.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Architect - PM</td>
<td>8 years</td>
<td>East office 1</td>
<td>50 years</td>
</tr>
<tr>
<td>2</td>
<td>Engineer - CM</td>
<td>3 years</td>
<td>Vest office</td>
<td>38 years</td>
</tr>
<tr>
<td>3</td>
<td>Chartered Surveyor - CMM</td>
<td>2 years</td>
<td>North office</td>
<td>30 years</td>
</tr>
<tr>
<td>4</td>
<td>Engineer - CMM</td>
<td>4 years</td>
<td>South office</td>
<td>32 years</td>
</tr>
<tr>
<td>5</td>
<td>Engineer - CM</td>
<td>25 years</td>
<td>East office 2</td>
<td>60 years</td>
</tr>
</tbody>
</table>

Table 1 – Selection criteria for semi-structured interviews. PM = Project Manager, CM = Construction Manager, CMM = Construction Maintenance Manager
To ensure that the interviewee was open-minded and spoke without stinting, they all figure anonymously in the documentation. All questions were formulated as openly and objectively as possible, to both ensure that the interviewee did not sense any bias from the questions, and to compel them to reflect why they answer in the given way. All interviews were audio recorded to enhance documentation and following analysis.

The collected qualitative data was processed in two ways. Some of the answers were, as far as possible, quantified to see how many of the interviewees that answer in the same way. Furthermore, the semi-structured interviews are transcribed in full length and the answers are analysed for recurrences, keywords or statements that could indicate an attitude or feeling to a specific subject that are not clearly spoken in the answer.

**Employee-Driven Innovation**

The empirical data must be compared to the theoretical approach to discover the drivers and obstacles for conduction EDI in the case organisation. The theoretical approach to EDI embraces elements of a variety of management philosophies, such as entrepreneurship, lean construction, managing innovation, workplace learning, change management, the learning organisation and value-based management, inspired from Ramboll (2006) and (Høyrup 2010). These philosophies should explore a framework for EDI that in one end captures or contains ideas from employees and in the other end ensures that the ideas are developed into new tools to optimise the processes and problem-solving.

Hence the review of these management philosophies shall explore the most beneficial and high impact segments of these methodologies in developing a framework for an EDI approach to innovation in a large client project organisation.

**THE CASE ORGANISATION**

In this research, the case organisation is the governmental client organisation Danish Defence Estates & Infrastructure Organisation (DDEIO), who is an integrated part of the Danish Defence. DDEIO’s main focus is to develop, operate, and deliver the physical conditions that are necessary for the operational forces, but also to the other authorities within the Danish Defence organisation.

The Construction Division (CD) within DDEIO is organised in three departments; the Project Department that primarily conduct new build, the Maintenance Department that conduct all maintenance of Defence properties, and the R&D department that support all R&D, legal, technical, and administration issues. The organisation around CD is still affected on older military traditions, which are realised in a bureaucratic and hieratical organisation, in which you communicate along the chain of command. This also results in a culture, wherein many officers and managers are involved in projects and thus want their influence forced through. Most of the employees are relatively highly educated in terms of architects, engineers, Chartered Surveyors, lawyers, controllers, and so forth. Hence, the potential to involve employees in development and innovation tasks is evident in this organisation.

**RESULTS**

The most relevant questions from the semi-structured interviews and the respective answers for mapping the boundary conditions for EDI are shown in Table 2.
Q1: Do you feel that the employees are motivated to get involved in development, if they feel that they have ideas to optimise the working-processes?

Yes/no  | No | No | Partly | Partly | No
---|---|---|---|---|---
Keyword | Generational change | Innovation from new employees | Mostly knowledge sharing between employees | Younger and new employees are more active | Time is prioritised for production

Q2: Does your department have systematic activities to ensure that experiences and new ideas are captured and utilized in the development work?

Yes/no  | No | No | No | No | No
---|---|---|---|---|---
Keyword | Based on individuals | It is running autonomous, autodidact | Only informal and related to individuals | Experienced employees feel it is a waste of time | Only briefly, if any, on weekly department meeting

Q3: Are the employees broadly and systematically involved in the development, or is the participation in development activities randomly?

Yes/no  | No | No | No | No | No
---|---|---|---|---|---
Keyword | Spontaneous or randomly emanates from the same employees | Only through random meetings in experience sharing groups | Based on passionate individuals, primarily younger | Time and resources are prioritised to production processes |

Q4: What do you see as the most significant obstacle for the development to be driven by the employees on the floor?

Keyword | Culture for curiosity and wondering, the R&D function is invisible | Culture, framework for working processes | Time, resources, no prioritising of development | Time, support from upper management, organisation

Table 2 – Output from semi-structured interviews.

Q1: 3/5 of the respondent’s answers indicate that in general the employees are not motivated for involvement in the development processes. 40% indicates that there could be some motivation in participating in development. 60% also indicates that the motivation to engage in development is mainly visible amongst the younger employees and that the development merely is based on informal knowledge-sharing between employees.

Q2: 5/5 of the respondents answer that their department has activities that systematic neither gathers experiences and ideas nor utilises them in the development of the organisational processes. According to a keyword analysis, the knowledge-sharing and idea generation are based on individual employees and the process is informally and irregularly driven. The effort is mostly seen with employees with less experience, since they are more open minded and have less faith in the bureaucratically paradigms defining the problem-solving processes. Whereas the more experienced employees have been in the system for a longer period and have adjusted to the organisational culture and processes, thus they do not have the same need for change.

Q3: 5/5 of the respondents answer that there is no broad and systematic involvement of employees. The keyword related to the answers suggests that the process is randomly and based on the same individuals, who are passionate in seeing new solutions and innovative approaches to the problem-solving processes. Hence the potential is related to a more systematic approach in involving the employees.
**Q4:** Two of the most significant obstacles for the development to be driven by the employees are the time and resource issue and the management support in prioritising the development approach in daily working processes.

**DISCUSSION**

In the following writing the key issues from the theoretical approach to EDI are presented, contemporary with a discussion of the results from the semi-structured interviews against the current perception of EDI. This should discover some of the drivers and obstacles for conduction EDI in a larger client project organisation.

A fundamental dilemma in EDI is the fact that the decision authority lies with a small number of specific functions and managers. The vast majority of the employees in the organisation are not involved (Kesting and Ulhøi 2010). Hence the thoughts behind *The learning organisation* on daily and continuous learning in all levels of the organisation are the essential parts in preparation for securing the innovation capabilities of an organisation (Wang and Ahmed 2003), could be sensible to integrate in a framework. An obstacle in the CD organisation in DDEIO could be derived from Q2, where the involvement in development and innovation is not present. And from Q4, where management support and prioritising of development are absent. Hence the lack of management support and organisational culture to secure innovative capabilities are absent. Another dilemma in adopting an EDI approach is managing the employee’s incentives between on one hand the curiosity in exploration and in the other exploitation in the daily production processes (Hellmann 2007). From Q3 it comes clear that the focus in CD is on the production related tasks and the incentives to and curiosity in idea generation are more or less non-existing. This could be approached by integrating some of the elements in the philosophies *Change Management* and *Managing Innovation*, where it’s important to have a structural approach to the innovation. Hence a systemized procedure, that organises how the innovation opportunities are discovered, to select the right ideas, develop and implement the idea and capture the benefits (Tidd and Bessant 2009).

The existing theory within the field of EDI focuses on the basic premise that the employees’ possess hidden abilities for innovation, and further how these abilities can be integrated in the development routines of the organisation. Research on EDI has to take the underlying management and decisions-making processes into consideration (Kesting and Ulhøi 2010). Hence development of a structure or systematic approach to capture and store the experiences and ideas from the employees is of the essence, when it comes to further idea generation, development and implementation of the input. The answers from Q2 strongly indicates, that this could be a strong obstacle, when 5/5 of the respondents from various geographically located departments cannot recognise these activities in their working processes.

One of the key notes in Kesting and Ulhøi (2010) stresses that the employees, delivering innovation inputs, should participate in decision-making procedures from which the innovation is triggered and determined. This directs attention to both *Lean* thinking (Howell and Ballard 1998), and to the *Entrepreneurship* philosophy (Praag and Versloot 2007). In which the employees are respectively focusing on reducing waste and making radical innovation. Thus it will be obvious to integrate the most relevant from those philosophies.
Contrary to R&D based development, EDI focuses on a bottom up development and innovation approach from all employees in the organisation. This bottom up approach relies on the managers to plan for and facilitate the employees’ involvement in these decision-making procedures. And simultaneously, the process will be valuable for the organisation. This perspective could be an inspiration from both *Value-Based Management* (Tissen et al. 1998) and *Workplace Learning* (Billet 2001), also focusing on, how the employees engage these learning and development procedures, which Q1 suggest could be obstacle for the EDI approach. One of the drivers could be the younger employees desire to optimise the organisational routines and processes.

The upper management’s information is often limited to strategic levels, thus the awareness and the knowledge of the operational routines in the problem-solving processes are often inadequate in terms of the development and innovation potential (Kesting and Ulhøi 2010). Q4 suggests that this is a key obstacle in both organisational culture and management support and prioritising of the development processes. This can entail inadequate communication up- and downwards including the fact that information about employee ideas and needs will only to a less extent reach the R&D-function, whereas the potential for a successful innovation process is reduced.

**CONCLUSION**

The drivers and obstacles for conduction EDI in a client project organisation are through this research discovered as:

**Obstacles:**
- No incentives or motivation to engage development and innovative activities;
- Management focus is on production tasks, hence no management support;
- No systematic approach to facilitate idea generation or knowledge-sharing;
- Organisational culture, development and innovation are based on individuals.

**Drivers:**
- The curiosity emanating especially from the new employees;
- Motivation could emerge from management support in prioritising time to development and idea generation.

Some of the obstacles discovered through the interviews are convergent with those emphasised by (Kesting and Ulhøi 2010), indicating that they are of a more general character and could be point of departure for a broader framework for conduction EDI.

This research is a part of a PhD study, thus conduction of an extensive literature review is one of the obvious research areas in the near future. Furthermore, this will form the base for developing a framework of tool and methods for engaging EDI in client project organisations. It could also be advisable to analyse the relations between the obstacles, as they could originate from the same sources. Another future research area is making the framework transferrable to other types of organisations within the construction industry.

**REFERENCES**


