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## Organisational adoption of the lead user method: a follow-up study on intentions versus actions

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Pia Hannukainen\* and Samuli Mäkinen

Department of Engineering Design and Production,  
Aalto University,  
P.O. Box 17700, FI-00076 Aalto, Finland  
Email: pia.hannukainen@iki.fi  
Email: samuli.makinen@aalto.fi  
\*Corresponding author

Sampsa Hyysalo

Department of Design,  
Aalto University,  
P.O. Box 31000, FI-00076 Aalto, Finland  
Email: sampsa.hyysalo@aalto.fi

**Abstract:** Users have been shown to be a source of new product ideas, and some users also develop their own solutions. This is not a marginal phenomenon and innovating users – so-called lead users – can be found in all fields. The lead user method (LUM) has several documented advantages, but it has gained far less ground as an everyday approach among companies than more traditional user research methods. In this article, we examine the reasons why LUM is not adopted in an organisation after a successful pilot project. We use rich, longitudinal data from two case companies and find that despite stated intentions and enthusiasm, LUM is not applied repeatedly. Staff turnover, the time and effort required to conduct LUM and the difficulties of adjusting LUM to a specific context were found as reasons why LUM use did not continue. Most importantly, LUM adoption requires the transfer of the evaluative and procedural knowledge of how to conduct it, which appears to be difficult and effortful to transfer to and within the organisation.

**Keywords:** lead user method; LUM; lead users; organisational adoption; method implementation; user involvement; case study; comparative study.

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**Biographical notes:** Pia Hannukainen is a Doctoral candidate at the Department of Engineering Design and Production, Aalto University. Her research focus lies in strategic user involvement in product and service development, specialising in user innovation and lead users.

Samuli Mäkinen is a Doctoral candidate at the Department of Engineering Design and Production, Aalto University, conducting his research mainly at the Aalto Design Factory. He studies the role of users in product and service development, focusing on user innovations and user involvement practices within organisations.

Sampsa Hyysalo is an Associate Professor at the Department of Design, Aalto University. He specialises in co-design practices in organisations.

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## 1 Introduction

There is a large body of literature on how users can become a source of new product ideas and solutions (e.g., Hienerth et al., 2014b; Lettl et al., 2006; Raasch et al., 2008; von Hippel, 1986, 2005). Cooperation with lead users<sup>1</sup> (LUs) has been shown to be a particularly effective means of gaining insight into the latent trends and solutions available in the user domain and of further transforming this knowledge into product and service concepts (Herstatt and von Hippel, 1992; Lilien et al., 2002). LU generated ideas have been shown to be more innovative and novel than those generated in-house (Lilien et al., 2002; Poetz and Schreier, 2012; Urban and von Hippel, 1988). What makes involving LUs especially lucrative is that they often openly reveal their innovations to other users and to manufacturers (Harhoff et al., 2003).

Despite its advantages and its solid academic backing, the lead user method<sup>2</sup> (LUM) – a process that companies can apply in their product or service development in order to benefit from LUs (Churchill et al., 2009; Lüthje and Herstatt, 2004; von Hippel, 1986) – appears to have gained far less ground as an everyday approach among companies than traditional methods, like focus groups or customer surveys (Dahlsten, 2003; Flint, 2002; Slater, 2001), or user-centred design and participatory design methods (e.g., Johnson, 2013; Schuler and Namioka, 1993).

There is scant research on why this is so. An empirical study by Olson and Bakke (2001) examines the implementation of LUM in an IT company but only few studies have followed. Hienerth et al. (2011) report on a multi-case comparison, wherein they explore effective strategies to overcome internal resistance in established companies wishing to introduce user-centric business models. Keinz et al. (2012) have touched on the subject in their review paper on organisation design for user innovation. Lilien et al. (2002), in their investigation of the LU idea-generation process compared to more traditional methods, call for research on the organisational metrics and structures that lead to the successful implementation of LUM. Similarly, Olson and Bakke (2001) emphasise the importance of follow-up for companies after initial LUM trials and call for a longitudinal approach together with a wider cross-section of cases in order to provide proof of the merits and weaknesses of LUM.

In this paper we shed light on the reasons that affect the adoption of LUM in an organisation in a similar set-up to that of Olson and Bakke: documenting LUM's pilot use in a company and following whether or not the method has been used since that. Our empirical data is based on 64 semi-structured interviews in two organisations, wherein we first conducted or monitored the LUM process, documented the responses of the employees and then conducted a follow-up study to see whether LUM-derived results and solutions, or the further use of LUs or LUM have followed.

We now move on to review the literature on LUM use in organisations and the factors that affect LUM adoption, after which we elaborate our theoretical framework and formulate four propositions to which we primarily seek answers from the case studies. Then we explain our research design and present our two cases, followed by discussion and conclusions.

## **2 Factors affecting LUM adoption**

In our literature review we have systematically searched through both the Science Direct and Scopus databases by using the keywords 'LUs' and 'LUM', and by using different combinations of the words 'company', 'method', 'organisation', 'adoption' and 'organisational adoption'. In addition to these two databases, we have performed similar searches in Google Scholar. We have also gone through all the articles that have cited the seminal work of Olson and Bakke (2001).

In Appendix 1, we have compiled 22 industry cases where the use of LUM or other types of collaboration with LUs is reported. It is noteworthy that since the cases are not reported in an equal manner, we cannot be sure if the users in all cases have in fact been LUs or if they are experts or other knowledgeable users. Most studies report the successful results of LUM application but provide no information on how things have developed in the organisation since the pilot project. Cinet (Olson and Bakke, 2001) remains the only case where an academic follow-up study of LUM is available.

In their work, Olson and Bakke (2001) examine which LU-generated concepts had lived on and if LUM had been reapplied. Olson and Bakke found out that, despite the organisation's initial intention of continuing to use LUM and the fact that several of the LU-derived product concepts had been successfully implemented; neither LUM nor any other type of research on LUs had been continued. The main explanatory factors for returning to a technology push process were personnel turnover and the time it takes to utilise LUM. At the time of the follow-up, only one manager had peripheral knowledge of the LU project and he pointed out how the knowledge of the process had not been adequately transferred between the departing managers and their replacements. He was planning to use focus groups in the future but not search for LUs due to the extra time needed to identify them. Olson and Bakke conclude that the time and effort required to sustain LUM is a major obstacle to its adoption and/or regular use, particularly when there is no strong incentive for change. They also point out that it is important to train subordinates when implementing a change in the (NPD) process, such as when introducing LUM.

In Appendix 2 we review articles, even though they lack empirical data when compared to Olson and Bakke, that discuss the adoption of LUM and give insights into the possible factors that hinder or promote the use of the method. We identify the following categories and have organised the factors accordingly: attitude, context, credibility, effort, IPR, marketing, measuring, motivating LUs, the 'not invented here' (NIH) syndrome, no change driver, organisation, other risks, ownership, predictability, process, staff turnover and the team.

When widening the relevant literature to customers as a source of new product ideas in general, Nambisan (2002) points out that firms often find it difficult to locate appropriate customer innovators in a cost-effective manner and that capturing customer knowledge can also be a challenge<sup>3</sup>. Hiernerth et al. (2011) have explored the nature and

implementation process of user-centric business models through a multi-case comparison between LEGO, IBM and Coloplast. They state that employees often perceive a 'loss' of personal control and expertise in such projects, eventually exacerbating the NIH syndrome<sup>4</sup>. The organisational inertia of established companies may prevent them from adapting to new conditions (Hannan and Freeman, 1984; Leonard-Barton, 1992; De Smet et al., 2015).

Diffusion of innovation theory (Rogers, 2003) indicates several issues that may hinder the repeated and regular use of LUM in organisations. After the adoption decision, organisational adoption features a restructuring stage and clarifying stage prior to frequent and regular use [Rogers, (2003), pp.403–430]. Regarding the continuance of LUM adoption, diffusion theory indicates five further issues. First, LUM is a complex process that cannot be rote repeated, does not produce exactly the same results in different projects and requires considerable personal learning prior to deployment (Lilien et al., 2002; Churchill et al., 2009; Keinz et al., 2012). This complex nature may hinder both the restructuring and clarifying stages of adoption. Second, the poor, piecemeal or partial execution of LUM may collapse all LUM value as it relies on the reliable identification of the right LUs to yield commercially attractive innovations (Franke et al., 2006; Hienerth et al., 2014a; Lilien et al., 2002). This limits how LUM can be adjusted and 're-invented' to suit organisational specifics. It cannot easily be applied in 'rapid' or 'budget' ways, unlike many competing user-centred methods (e.g., Holtzblatt et al., 2005; Nielsen, 1993). Third, in a producer-centred organisation, capitalising on the value of LUM requires a restructuring of how the early stages of R&D are conducted (Lilien et al., 2002; Hienerth et al., 2011; Keinz et al., 2012), creating a potential barrier to moving onto the clarifying stage and establishing what are the requirements, costs and benefits of using LUM for the particular organisation. Fourth, in the clarifying stage the value of LUM is difficult to assess objectively as R&D projects differ from one another – as a purchased good, it falls into the category of credence goods, such as medical treatments or legal counselling, where even the experience of the service encounter does not provide a full guarantee of its value in the next application of the process (Zeithaml, 1981). The fifth and final issue is that LUM may require change agents on two levels: organisational-level champions to push for its continued use and operational-level change agents who can execute it and transmit the procedural skills among the employees (Frambach and Schillewaert, 2002; Hienerth et al., 2011).

To investigate these aspects of the LUM adoption process we turn to the social shaping of technology framework (Williams and Edge, 1996) and particularly its recent version 'biographies of technologies and practices' (Hyysalo, 2010; Johnson et al., 2014b; Pollock and Hyysalo, 2014; Hyysalo and Usenyuk, 2015). This theoretical framework guides examination of the adoption process in the long term within the adopter organisation and tracks if and how it has been applied repeatedly, how the awareness of the method has developed within the adopter organisation and how the procedural skills needed for LUM have been transmitted. It further guides examination of LUM adoption amidst the other methods and ways of knowing the users in the organisation (Johnson et al., 2014a, 2014b) and paying particular attention to the nature of knowledge involved in the adoption and use of LUM (Williams and Edge, 1996; Russell and Williams, 2002; Hyysalo, 2010). The framework suggests that the level of method-specific expertise and procedural skills required in LUM adoption may not only hinder the restructuring it requires and the clarification of its benefits (Rogers, 2003) but could in effect make LUM adoption feature knowledge translation and elaboration

problems across knowledge contexts. User innovation research has called similar knowledge transfer across user and producer domains ‘sticky information’ transfer (von Hippel, 1994, 1998). In other words, while LUM has an impressive track record in succeeding to ‘unstuck’ costly and difficult-to-transfer user solution and trend information from the user domain to the producer domain, the proliferation of using LUM itself inside a producer organisation requires another sticky information transfer process inside this organisation.

The above theoretical frame and literature review indicate four focal points for the study of LUM adoption in an organisation, which we formulate into four propositions, as follows.

The NIH syndrome, the fear of loss of control, the fear of poor organisational fit and a general unwillingness to change existing ways of working have been frequently mentioned as barriers to the adoption of LUM (Galbraith et al., 2008; Hienerth et al., 2011; Keinz et al., 2012; Lilien et al., 2002; Matthing et al., 2004; Olson and Bakke, 2001; cf., Nahm et al., 2012). These can be formulated into the first proposition to be investigated:

P1 LUM is perceived to not be needed by the producer organisation’s employees, even after an initially successful pilot project.

The loss of staff familiarity with LUM through turnover or a lack of mechanisms to disseminate information about it have both been suggested as key factors preventing the case company from continuing the use of LUM (Olson and Bakke, 2001; Keinz et al., 2012). We thus propose to investigate the below proposition:

P2 The loss of staff familiarity with LUM can reduce an organisation’s capability to continue using it.

The effort needed to carry out a LU project and especially the time needed to identify LUs (or suitable users in general) has been reported as factors inhibiting adoption (Keinz et al., 2012; Lilien et al., 2002; Nambisan, 2002; O’Flaherty et al., 2013; Olson and Bakke, 2001). We thus formulate our third proposition:

P3 LUM requires a great amount of effort, which reduces the number of projects where it can be viably applied.

Finally, as an adopted item, LUM is complex and features process integrity (Galbraith et al., 2008; Hienerth et al., 2014a), which hinders adjusting it and reinventing it for organisational specifics (McLaughlin et al., 1999; Rogers, 2003). Further, LUM includes a variety of specific procedural knowledge and evaluative skills regarding the findings, which form sticky skill-based information that must be transferred. We thus formulate our fourth proposition:

P4 LUM has sticky information characteristics that hamper its repeated application in an organisation.

### **3 Research design**

Our research approach is a longitudinal two-case case study (Eisenhardt, 1989; Yin, 1994), our principal case being a national broadcasting company, Broadco, of around

3,100 employees and our supportive case being a privately-owned software company, Softco, of around 70 employees. The case study approach allows us to collect novel insights from the empirical world, as opposed to testing and validating existing theoretical models, and to gain a rich understanding of certain phenomena and their dynamics in a specific context (Yin, 1994). In both case companies a LU project was carried out. In Broadco, the authors were commissioned to plan and conduct the project, and in Softco, the authors acted as mentors and supervisors for the company employees.

These two cases form a case comparison of high variation (Gobo, 2004; Patton, 2002): Broadco is a large and established organisation that already has a history of user involvement, whereas Softco is a small, young and agile organisation that has only recently begun to take steps towards user-centredness.

The biography of technologies and practices approach we use (Hakkarainen and Hyysalo, 2013; Hyysalo, 2010; Johnson et al., 2014b; Pollock and Hyysalo, 2014) means that we have combined ongoing observation and interviewing with a historical reconstruction of the previous history of the companies and their user research method use. Taken together, several sources of data are able to illustrate the events and occurrences over time regarding the LU projects in each case company. The main data types are semi-structured interviews that were transcribed verbatim, field reports written immediately after the interviews and events, documents and periodical captures of an online web service (for the Broadco case). The open coding of content in the frame of the current paper was used to sort interviews (Glaser and Strauss, 1967). The source criticism of documents and the initial interview analyses were complemented by data triangulation (Amaratunga and Baldry, 2001; Denzin, 1989). Interview data, such as informants' accounts of the occurrences in the projects, were compared and cross-validated to complement one another.

In both cases, we kept following the events after the LU project. At Broadco, we followed the development of the Teachweb web service by periodically going through the online service in a systematic manner and capturing the main elements of the site (the first few link-hierarchy levels of the web page) by downloading the textual content and site structure, and by recording a narrated video of the run-through. We were also granted access to the beta version of the new service that later became Learnweb (eventually replacing the Teachweb service), which was captured in a similar manner. We also carried out four interview rounds (2010–2014) where we interviewed the LU project participants along with persons involved in the development of the Learnweb service. In addition we interviewed several other persons in the organisation for a better understanding of the organisation and for providing us with 'ping points' for tracking the diffusion of knowledge about the LU project and LUM. At Softco, the first round of interviews was made right after the LU project in 2013. The follow-up round was carried out approximately one year later.

There were altogether 55 interviews (with 50 individual interviewees) at Broadco and nine (with seven individual interviewees) at Softco, resulting in 1.6% and 10% of employees being interviewed respectively. At Broadco the interviews form a purposeful sample that covers first of all the LU pilot project participants (who were interviewed periodically during the five-year period) as well as interviewees from all levels of the organisational hierarchy and all typical job descriptions, such as those for the managers of all the main media genres, producers, journalists, and research and development personnel. In addition, we used snowball sampling and emergent sampling following new leads during the fieldwork (Patton, 2002). At Softco, the interviewees were selected so

that they covered both employees that were related to the LU project and also those that were not. In common with Broadco, interviewees were selected from all levels of the organisational hierarchy including the CEO, managers and developers.

## 4 Cases

### 4.1 *LUM at Broadco (2009–2014)*

Broadco is a national broadcasting company, established in 1926 with around 3,100 employees and a yearly turnover of about 450 million euros. Broadco has adjusted their operations during the past ten years to meet competition in digital media, radio and TV and changed gradually from a producer-driven organisation to a more open and user-centred one (following the global trend among public service broadcasting companies; see Maijanen et al., 2015). They use various user-centred approaches ranging from traditional methods (such as audience research, pilots and focus groups) to more explorative ones (such as applied ethnography and design probes). Our 55 interviews revealed around 70 user, customer research or involvement methods in total.

#### 4.1.1 *Step 1: laying the foundation*

Broadco was introduced to LUM in 2008 through an encounter with the authors. In August 2009, the head of television and the head of development and planning commissioned the first two authors to run a LU pilot in an online media service, targeted at teachers, called Teachweb. Teachweb was chosen because of suitable staffing, the funding model, the relative lack of time pressure and the need for redesign (its platform lifecycle was ending, some of the content of the service had become outdated and the number of service users was not reaching its target). The developers of this service felt they were not up to date on what users really wanted and that they were especially lacking qualitative user knowledge. The project group at Broadco consisted of three managers, a project manager and a producer. The project group followed the progress of the LU process and participated in meetings where relevant matters regarding each step of LUM were discussed.

#### 4.1.2 *Step 2: determining the trends*

The project began by systematically exploring the existing service and by listing all features, stakeholders, notions and such like. The list was complemented with information from discussions with the Teachweb developers (part of the LU project group), service feedback messages and short user interviews acquired earlier, a Bachelor thesis relevant to the service and two workshops (one with the Teachweb developers and one with young teachers familiar with the service) (Helminen et al., 2016). Finally, five development areas were chosen as the starting areas for LU identification: content, feedback, learning, visibility and technologies.

#### *4.1.3 Step 3: identifying LUs*

LU identification was carried out by utilising a networking approach (Hyysalo et al., 2015; von Hippel et al., 2009) in the spring of 2010 and lasted four months. In all, the network search comprised 33 referrals to persons of whom 19 were contacted<sup>5</sup>. Two dominant trends were clarified during the process: the use of social media in teaching and learning, and the use of state-of-the-art technological equipment in classroom teaching. Eventually five LUs representing different areas of the service were identified. Self-assessment, following Franke et al. (2006) and Stockstrom et al. (2012), was used to verify their lead-userness.

#### *4.1.4 Step 4: developing the new service concept*

In June of 2010, the five LUs were invited to a workshop where they created their preferred concept for an online teaching and learning service. After that, the authors formed the final concept for Teachweb redesign that fed from the LUs' concept and from what the authors had learnt during the LU identification process. The final concept was presented to the Broadco members of the project group in August 2010, including a description of the new concept, LU quotes and layout mock-ups.

The project group was satisfied with the result and expressed that it brought confirmation of recent considerations at Broadco and contained new ideas and solutions that were clearly valuable. Broadco employees stressed that despite their excitement, the concept as such was not likely to be realised due to the inertia of their organisation and its web development, and also due to the upcoming renewal of the organisation that might lead to some good ideas getting lost.

The concept was next presented to people outside the project team on two occasions, first to around 30 journalists and producers, and then to a dozen technical online-service personnel. The concept received a mixed reception among both audiences. On the other hand, the need to work with users was questioned since a number of the journalists and Teachweb service developers had a background in teaching. Some journalists and producers questioned the company's co-design or open innovation endeavours altogether, since Broadco has a decades-long history of producing programs and content of high quality. On the other hand, many were excited by the new concept and the fact that it had been created with the help of LUs. Some among the technical staff expressed concerns over the technical viability of the LU-created functionalities and structure of the concept but they were counterpoised by the lead software developer of Teachweb who pointed out how the LU concept made her see the flaws of the previous version.

#### *4.1.5 Broadco evaluation of LUM in 2010*

Five of the six LU project participants at Broadco were interviewed soon after the project presentations, from October to December 2010. The Broadco members regarded the LUs as true forerunners and pioneers, and their expertise in envisioning an online teaching service was acknowledged, as was the amount and quality of the outputs the small number of LUs had created. The producer responsible for web development was also already planning on continuing the development work together with the LUs:

We really need these lead users and we should also utilize them in the future. One possibility could be to invite them for a coffee and start discussing how to collaborate. (The producer responsible for web development at Teachweb, 3 December 2010)

A consensus prevailed that their understanding of the users had been too vague. None of them had been previously familiar with the concept of LUs, and the Head of learning and science programs expressed doubts at the beginning of the project. All participants expressed that it was not only the end result of the project but also the journey that was seen as valuable to Broadco. Broadco's head of development and planning regarded LUM as something they should adopt in the organisation more widely and expressed his vision for launching a new LU project in which four to five Broadco participants and the two authors would work together. He suggested this arrangement in order to ensure that the Broadco participants would learn in practice how to search for LUs, which in the current project had remained the researchers' expertise. He regarded the identification of LUs as a critical factor in the method and emphasised that it is a skilled process that has to be learnt in practice:

[Finding the LUs] is not just common sense but requires skill and understanding about the method. (The head of development and planning, 14 December 2010)

The head producer expressed her doubt regarding the future use of the method:

We can't afford many projects like this. If you could modify it to a lighter version, it would probably be easier to use [in our organization]. (The head producer of learning, 18 October 2010)

On the other hand the producer responsible for web development did not find the 'heaviness' of LUM problematic as lighter methods, such as focus groups and web surveys, had not been able to generate a good enough understanding of service use and user needs. He saw no shortcuts to obtaining the information that LUs possess.

To sum up, the LU project was seen as a success, and the end result of the project – the new concept – was seen as interesting and forward-looking, and something that could not have been generated among the Teachweb developers at Broadco. However, the Broadco participants in the LU project and Teachweb remained spectators in the process and regarded that a joint project with researchers would be needed to transfer it properly.

#### *4.1.6 Follow-up on LUM at Broadco (2011–2014)*

After some turmoil in the organisation in 2011, the development of Teachweb went on. In the Learnweb service that eventually replaced Teachweb in 2014, there were several aspects and features that resemble the new concept that was generated in the LU project, but no formal record of its systematic use in the development can be found. Contrary to their intentions after the project in 2010, the developers did not get in contact with the found LUs until the end of 2012, although the authors had prompted them about this possibility repeatedly when making the follow-up interviews. Finally, the LUs were contacted by e-mail and asked for their views about a beta version of the new service.

Despite the perceived value of the results of the pilot LU project (in 2010) and the enthusiasm to launch new LU projects expressed by the head of development and planning in 2010 and again in 2013, LUM was never applied again.

Not many people outside the Teachweb developers and the initial LU project group had heard about the pilot project or the method. This seems to be because of existing organisational boundaries and prevailing organisational culture where people and small teams work independently and also want to keep things to themselves or in their unit. For example, the head of factual programs (the neighbouring unit to learning and science programs, where the LU project took place) had never heard of the LU project. From a larger organisational perspective, Teachweb was seen as a moderately marginal service at Broadco.

In some other units, the LU project had been seen as an expensive pilot, similar to the initial perception of the head producer of Teachweb before the LU project in 2010. Some participants of the LU project group expressed the same doubt regarding its future:

It would be valuable [to the organization] if we could somehow easily apply it, without having to run a whole new big project again. (The head of development and planning, 16 April 2013)

The interviewees expressed some general resistance to collaboration with ‘outsiders’ as Broadco personnel were considered creative and competent enough as producers and in respect to audience research. Many Broadco employees were profiled (or they self-profiled themselves) as specialists either genre-wise (specialising in specific topics, such as consumer behaviour or popular music) or audience-wise (specialising in certain audience segments, such as men aged 35–45), some going as far as seeing that a journalist or producer belonging to the target segment is a prerequisite to content creation:

My target audience is not far away from myself, so I have some kind of impression of what they want. The programme you are creating should speak to you. You can try to become acquainted with an unfamiliar audience but I still do not think you could make a good programme for them. (Producer of entertainment programs, 20 January 2014)

A few user-centred methods were also standardly used, such as piloting, focus groups, bulletin board focus groups (i.e., moderated online focus groups, BBFGs), design probes and the needs, approach, benefits, competition (NABC) method. When asked, the employees related that the methods were part of the repertoire but that few had personal experience of using them:

We do not have a tradition of asking the audience for their opinion. Probes and focus groups and such are used under the direction of [The head of development and planning]. But still, it is not what we systematically do. (The head of radio, 22 January 2014)

On the other hand, journalists had informal ways of actively seeking ideas from the audience and they pursued an ongoing conversation with the users through social media:

The dissemination of knowledge about methods and techniques should be more determined. Now, how you learn about methods remains incidental. Many improvise and rely on their gut feeling, and sometimes also manage to create great results working like that. It takes a change of mindset to realize that there is an end-user and there are techniques that can be used to learn about the needs of that user. We should apply these techniques systematically in our organization. (The head producer of learning, 27 May 2013)

Finally, Broadco has reduced the amount of its employees over the years, which the personnel felt to have stifled recruitment, time for personal development and the exploration of new things.

To sum up, although the LU project was seen as a success (the developed concept provided ingredients for the service development and the expertise of the found LUs was highly valued) Broadco did not pursue further application of LUM or make it an active part of their user research toolbox. The found LUs were only later utilised through an e-mail enquiry regarding their views on the beta version of the new service. The process of conducting LUM did not transfer from the authors to Broadco employees, who remained spectators in the project. The two champions (Rogers, 2003), the head of television and the head of development and planning (who was also a member of the LU project group), welcomed the method to the company, but there was nobody to become the change agent who would deploy the method after the pilot. The method was also seen as burdensome and time-consuming. Even though there was interest in utilising the method again, repeating it would have required outside help, which would make it not only an issue about internal resources but also about costs. The knowledge about the LU project did not transfer well in the organisation, which was partly because of the prevailing organisational culture and partly because of the marginal positioning of the LU project within the organisation. The head of development and planning repeatedly expressed that a better choice of a pilot project could have facilitated the diffusion of the method within the organisation.

#### *4.2 LUM at Softco (2013–2015)*

Softco is a private company, established in 1991, with around 70 employees and a yearly turnover of around six million euros. Softco specialises in the financial and environmental effects of the built environment. They use some user-centred methods (mainly as guided by Scrum) on a regular basis but were not familiar with LUM beyond some hunches about what it approximately meant. Similar to Broadco, the spark for implementing the method arose from their development and maintenance unit director's encounter with the authors.

##### *4.2.1 Step 1: laying the foundation*

In late 2012 Softco was on the verge of initiating a fairly massive development project related to software as a service that would also be an opening to a new business area. This area – flexible and collaborative work – was chosen as the context where the LU project would be carried out. There was some internal disagreement on where to implement the method as some felt the method should be implemented on their already established business area to be able to take the end results into ongoing operations more rapidly.

The project eventually took the form of a thesis project, which was supervised by the company's development and maintenance unit director, instructed by the company UX Designer with respect to company-specific issues and guided by the authors with respect to the implementation of LUM. The project's kick-off took place in April 2013.

Softco had multiple goals for the LU project: identifying and meeting LUs; networking; identifying trends; acquiring knowledge of existing solutions and services; acquiring concrete ideas for new product development; testing and validating ideas with

LUs; testing usability with LUs; and finding out whether the thesis writer would be suitable for recruitment.

#### *4.2.2 Step 2: determining the trends*

The identified trends for flexible and collaborative work were divided into categories and then presented to senior staff at Softco. After some iteration, the final categories were: the best practices and solutions that support flexible and collaborative work; measuring and analysing flexible and collaborative work; planning and designing physical spaces for facilitating flexible and collaborative work; and utilising and managing physical spaces for flexible and collaborative work.

#### *4.2.3 Step 3: identifying LUs*

LU identification began in May 2013, lasted for four months and was conducted using the same network approach as used in Broadco (Hyysalo et al., 2015; von Hippel et al., 2009). In all, 28 interview requests were sent, out of which 22 of those who received one agreed to be interviewed. To determine their lead-userness, the subjects also answered self-assessment questions (Franke et al., 2006; Stockstrom et al., 2012). In addition to 20 potential LUs, 137 other leads – such as solutions, events, locations, organisations or not-contacted people – were found. Following all the leads would have been too burdensome and after the 22nd interview the search was ended as 13 of the contacted users had already scored high points in the lead-userness self-assessment test and the search area began to saturate, indicating it had been searched thoroughly enough.

#### *4.2.4 Step 4: developing the new service concept*

The identification was followed by organising a workshop for the LUs. The final selection of the six LUs to be involved had to be made based not only on their lead-userness assessment scores and the number of referrals but also on their physical location and the diversity of their backgrounds.

The workshop was organised in December 2013, with two main phases. The first part was for LUs only and the second for LUs and Softco personnel working in collaboration. The workshop achieved its goals in providing valuable inputs to advance the new business area, such as the evaluation and identification of trends, establishing future needs and creating preliminary service concepts.

#### *4.2.5 Softco evaluation of LUM in 2013*

Soon after the LU workshop, thoughts about LUM were gathered by conducting four interviews at Softco, by taking part in the project wrap-up and by openly discussing it with key participants. The overall feeling towards the method was enthusiastic and the project was considered successful. All the goals were met except for that of also using LUs for usability testing purposes (which was planned to be done later). The final wrap-up, presenting the process and outcomes, drew company-wide interest of exceptional proportions. The thesis writer was offered a permanent contract and given her own team.

Softco also wanted to expand the use of the method in their established business area, both for a similar to-the-point project and to deploy the identification phase of the method

as a continuous process to support their efforts, for example, in networking, benchmarking and acquiring new clients.

#### *4.2.6 Follow-up on LUM at Softco (2014–2015)*

Five follow-up interviews were conducted at Softco one year after the LU workshop to see if and how the results had been implemented and if LUM had been further utilised. The thesis writer had already left Softco for a new job opportunity but was also interviewed.

Despite the perceived value of LUs and their ideas, none of the new or validated ideas had yet been incorporated as the products and the whole new business area were only going to be launched in 2015–2016. Some of the interviewees found it slightly surprising that the ideas had not yet been taken into actual development; one of them wondered whether this was because Softco did not dare to invest in the development of a product that was a bit radical when compared to the more traditional development efforts in the established business area. The UX designer speculated whether Softco development personnel may have felt that they already had enough ideas but that LUM-generated ideas were more thoroughgoing in comparison to plain improvements, enabling long-term decision making when managed accordingly:

In the end, these are mostly management issues. Methods like this are not practical tools anymore. [...] This is the type of method that goes to the very core [of product innovation] and is not suited for fine-tuning a certain product. (UX designer, 10 December 2014)

Further contact and collaboration took place with three of the LUs, one of whom happened to be already known to Softco as a former client. Their ability to envision things was valued, and Softco is now also collaborating with a company founded by one of the LUs. Softco wishes to link the found LUs with the company's development efforts but the development cycles and timetables have not allowed it thus far. Some felt the LUs have not been utilised as much it was hoped for and wondered if it was due to the contacts being too strongly linked to the thesis writer who eventually left the organisation – the LUs were not seen as Softco's contacts but as the thesis writer's.

Despite intentions, LUM had not been utilised again in Softco. The reasons include: the change agent (the thesis writer) being too busy in her new position; a lack of resources to conduct a new study in more stable business areas; and, later on, the loss of knowledge via the change agent leaving the company. The UX designer, who worked in closest collaboration with the thesis writer, was estimated to perhaps be able to rerun LUM but he would probably seek consultation from the authors for guidance.

Regarding the future of the method, at Softco and in general, there were some suggestions. LUM could be recommended, especially if the aim is to develop something fundamentally new. It also should be more productised, similar to Scrum, so it could be bought as a clear service. However, it was estimated that in order for LUM to not be forgotten at Softco, it would need active promotion within the company. The method was also deemed to require a suitable person, similar to the enthusiastic and prosocial thesis writer. Among the key considerations was the choice of application areas and further valorisation of the search process: how to keep the identified LUs as part of a network and whether LU identification could somehow be done as a continuous by-product of other operations, or in some other, lighter form. The interviewees further considered the location of LU contacts and processes within the company – whether it should reside

within R&D or sales and whether customer relationship management systems could be used to record LU characteristics so they would be applicable to future needs.

In summary, Softco showed enthusiasm and the intention to retain LUM in their operations but failed to repeat the application of LUM. Also, similar to Broadco, the management-level champion needed an operational-level agent to run it; and once that person left the company, the skill and confidence of the value points of the method waned. Also similar to Broadco, a lack of another organisational urgency that called for a LU study held the company back from relaunching LUM and equally kept them wishing for a lighter or continuous version that they could keep 'running in the background' for development needs that did not warrant the amount of spending required by the initial study. Regardless of the challenges related to the implementation of the method, the original project was deemed successful. In fact, as a by-product of the process, a new and remarkable customer for Softco's established business area was acquired by chance (while networking to identify LUs) that in itself made the project worthwhile:

I would recommend it [LUM]. It leads to good and interesting things, and created new incentives. Actually, a new customer was also found in the process. That alone made it worth it. (Development and maintenance unit director, 9 December 2014)

## **5 Discussion**

Next we will examine our propositions in the light of our two cases. Our first two propositions deal with the adoptive organisation, whereas proposition P4 relates to LUM. Proposition P3 relates both to the adoptive organisation and LUM, as we will see below.

P1 LUM is perceived to not be needed by the producer organisation's employees, even after an initially successful pilot project.

Previous literature has presented that user ideas are resented by employees of R&D organisations (Hienerth et al., 2011; Keinz et al., 2012) and the NIH syndrome could thus explain a lack of LUM adoption (Olson and Bakke, 2001). In our two cases some NIH syndrome could be found in the Broadco journalists' reliance on their professional skills, yet Broadco has a whole suite of established and informal user research or involvement methods in active use. In Softco even less NIH syndrome could be seen. Softco actively uses Scrum in their development, along with which come systematic user and usability evaluations. In general, the interviewees characterised the organisation as forward-looking and open to new ideas. In both companies employees found the LU-generated ideas valuable and of the kind the organisation could not have generated internally. At the same time, in both organisations practical matters (such as timing and the difficulty of locating a suitable next project for LUM) contributed to not repeating the method. Hence, the evidence from the two cases is that NIH, loss of control, or the loss of professional identity gain at best limited support as factors in employees' willingness to adopt LUM, but further adoption steps may have been hampered by a lack of adapting or re-inventing it for an organisations' specific needs and practices.

P2 The loss of staff familiarity with LUM can reduce an organisation's capability to continue using it.

In both cases a management-level champion pushed through a LUM adoption decision and insisted on repeating the process. In Broadco the LU project was conducted by outsiders (the authors), and just following the project was not enough to transfer the skill to the organisation. In Softco a new person was hired in for the project but her skills were lost when she moved on, even if her closest co-worker considered he might succeed in conducting LUM if he consulted the authors. The effect of staff turnover leading to the loss of staff familiarity with LUM thus featured in both cases where the operational level skill to conduct LUM was lost (cf., Olson and Bakke, 2001), indicating that both an organisational and operational level champion may be needed for LUM to become a repeated part of an organisation's user research repertoire (Rogers, 2003).

P3 LUM requires a great amount of effort, which reduces the number of projects where it can be viably applied.

In both cases, LUM was found to be resource-intensive and time-consuming, which is in line with previous research (e.g., Keinz et al., 2012; Lilien et al., 2002; Olson and Bakke, 2001). However, in both companies interviewees regarded that other methods would not have produced the valuable results that were generated in the LU project, and both intended to continue applying LUM after the pilot project, indicating it had a positive return on investment. We interpret from this that LUM was seen as unsuited for small projects but beyond this the amount of effort is relative to the given context and needs, and requires further explanation rather than being an explanatory variable as such.

P4 LUM has sticky information characteristics that hamper its repeated application in an organisation.

An explanation begged by the findings regarding P3 is provided by the findings related to P4. In both cases, the outcomes of a LU process were positive and made use of by the staff, but the process itself was difficult for the company staff to observe. The complexity of LUM was also highlighted in both cases, particularly with regard to the identification of LUs (cf., Hienerth et al., 2014a). The skill needed was enough to make persons without personal hands-on experience of LU identification feel insecure regarding their capability to independently apply LUM – conducting LUM entailed several steps, each of which required skill and competence to conduct and which were not fully explicated; this included determining the right trends, the criteria for which lead to follow in the network search process, the assessment of the lead-userness of found users and how to conduct the LU workshop. A 'lighter' version of LUM was also repeatedly wished for, indicating a need to adapt or 'reinvent' LUM to fit smaller development projects in the two organisations. In both cases we saw that knowledge of the method transferred only partially to persons that were not involved in the actual legwork but remained mere observers. The needed knowledge was sticky, that is to say, difficult and costly to transfer with the reliability needed for conducting it into the next in-house LU project. Our data implies that easier-to-transfer methods become part of the method toolbox in an organisation more easily. At Broadco, for example, 'design probes' (Mattelmäki, 2006) entered the organisation from outside in 2003 and were adopted as part of its audience research repertoire – frequently referred to as a flexible tool for different projects. We thus find that the sticky information characteristics of LUM contributed to the lack of its repeated application in the studied organisations.

## 6 Conclusions

Previous literature and the two cases studied here indicate that LUM use is difficult to sustain in producer organisations despite the academically well-documented value of LUs and their potential to create commercially attractive innovations (e.g., Keinz et al., 2012; Olson and Bakke, 2004). This goes even for organisations, such as Broadco, that have a record of adopting several user research methods into their toolbox and would thus be likely to adopt new tools and techniques (Nijssen and Frambach, 2000). We examined in detail the LUM process and its adoption in two organisations against our four propositions derived from prior research.

Our unique contribution is that instead of general resistance to user ideas or new ways of working (P1) or the cost and time required by LUM (P3), the case analyses point to the difficulty of transferring and retaining the knowledge of *how* to conduct a LU project (P2 and P4). It appears that LUM features skill components that are more costly and difficult (i.e., sticky) to transmit among employees than the adopter organisations were prepared for. Rather ironically, it is the same phenomenon that user innovation research has identified as one of the key reasons for why users hold solution and trend information and why LUs should be utilised in the first place.

As for managerial implications, supporting LUM at the management level is not enough as the method requires an operational level person as a change agent to guarantee the organisation's ability to reapply the method after the pilot project. This also heightens the risk that the skill and expertise will be lost through staff turnover. The method transfer can be augmented through having several of the adopter organisation's staff members take part in a 'hands on' way in the pilot project. Another way to tackle the stickiness of LUM is to buy the competence from outside as an expert service, project by project, when needed. In this way, however, the potential of building a longer lasting relationship with the identified LUs is compromised.

With respect to the limitations of the current research, the case study method provides limited basis for generalisation (e.g., Chetty, 1996). Our two cases, however, provide not only snapshots of occurrences in an organisation at one time but follow the developments over a longer period – five years in Broadco and two years in Softco – thus compiling a biography of LUM in these organisations over time. The case research further builds on previous findings and deepens our understanding of the factors that affect the adoption of LUM and method adoption in general.

Future research should include more longitudinal studies on LUM use in organisations to enable extensive cross-case comparisons. The value of a NPD method is not only in successful one-shot projects but also in being able to improve an organisation's operations in the long term. Perhaps LUM should also be examined in the light of what measures could be taken to ease its implementation, including but not limited to detailed tutorials and replays of how it was carried out in concrete projects, potential supporting software, building an active user community among its utilisers and documentation of how LUM has been adapted for different settings, projects and resourcing.

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## Notes

- 1 LUs are users who face needs before the majority of the market and benefit significantly from obtaining solutions to those needs (von Hippel, 1986, 1988).
- 2 LUM comprises four main steps:
  - 1 the start of the LU process, including team formation and goal setting
  - 2 the identification of needs and trends
  - 3 the identification of LUs
  - 4 concept design, typically in a workshop arrangement with LUs.
- 3 Neumann et al. (2015) further highlight that the definition of a customer in the public sector can be more complex than in the private sector.
- 4 The NIH syndrome is a factor not only in the implementation LUM but open innovation strategies in general (Kutvonen and Torkkeli, 2010). Hienerth et al. (2011) present five strategies to overcome internal resistance in an organisation: launching user integration initiatives as experiments and improving them through evolutionary learning; Collecting and distributing success stories to convince internal stakeholders; The provision of an IT environment that enables the company to benefit from user integration; Shifting the process, responsibility, and required capabilities to middle management and employees; Using 'soft' measures instead of 'hard' financial measures to assess success at the start of an initiative.
- 5 The complete search chains can be found at <http://sn.im/mountaineering> as animations.

## Appendix 1

**Table A1** Review of cases where the use of LUM or other type of collaboration with LUs is reported

<i>Case</i>	<i>Content</i>	<i>Continued use of LUM?</i>	<i>Reference literature</i>
3M [incl. 3M and Bell Atlantic (now Verizon)]	The LU research method was rolled out to several divisions of 3M in the late 1990s. In all, eight divisions were involved in LU research and seven projects were completed.	Yes (studies report repetitive use)	Eisenberg (2011), Lilien et al. (2002), Olson and Bakke (2004) and von Hippel et al. (1999)
Cabot	LUM has been used. Outcomes: technology, a process.	Unknown (no studies available)	Eisenberg (2011)
Cinet	Implementation and follow-up of LUM for gathering new product ideas from leading edge customers by an IT firm that had not previously done much customer research during their new product development efforts.	No (academic study)	Olson and Bakke (2001)
Coloplast	Collaboration with users and LUs through communities and idea competitions. Has provided users with physical toolkits for user innovation.	Unclear (no studies available about the reuse of LUM; user involvement has continued)	Andersen (2005), Elgaard Jensen (2013), Hienerth et al. (2011) and Madsbjerg and Rasmussen (2014)

**Table A1** Review of cases where the use of LUM or other type of collaboration with LUs is reported (continued)

<i>Case</i>	<i>Content</i>	<i>Continued use of LUM?</i>	<i>Reference literature</i>
Dell	End users were invited to share their ideas and collaborate with Dell to create or modify new products and services through an online community – Dell IdeaStorm ( <a href="http://www.ideastorm.com">http://www.ideastorm.com</a> ). Through IdeaStorm, end users contribute their business ideas to be reviewed, discussed, and voted upon by the user community. No record of actual LUM application.	NA	Di Gangi and Wasko (2009)
Digital TV	LUs were identified with the help of an online survey in order to explore current digital TV uses and behaviour, and to identify users' specific (future) needs. The 'lead userness' of the identified ideas was validated by an expert panel.	Unknown (no studies available)	De Moor et al. (2014)
Ducati	Ducati Motor created a specific blog, developed with the purpose of involving members in a collaborative innovation process that took nearly 14 months. No record of actual LUM application.	NA	Marchi et al. (2011)
Electronic medication reconciliation for patients	LUM was used to identify specific goals and activities that are required by an electronic medication reconciliation tool and to provide a synthesised visual design that would reflect these requirements.	Unknown (no studies available)	Bellwood and Price (2015)
Gillette	LUM was used to spur on technology innovation.	Unknown (no studies available)	Eisenberg (2011)
Hilti	A successful application of LUM for developing concepts for needed new products. LUM was found to be faster than traditional ways of identifying promising new product concepts, as well as less costly. It also was judged to provide better outcomes.	Unknown (no studies available)	Herstatt and von Hippel (1992) and Lüthje and Herstatt (2004)
IBM	IBM has <i>ca.</i> ten years' experience in tapping into their employees' and customers' creative potential for the purpose of creating new product or service ideas or resolving other significant issues. Having started with ideation competitions via the corporate intranet, the initiative gradually evolved into its well-known 'Innovation Jam' project. No record of actual LUM application.	NA	Hienrath et al. (2011)

**Table A1** Review of cases where the use of LUM or other type of collaboration with LUs is reported (continued)

<i>Case</i>	<i>Content</i>	<i>Continued use of LUM?</i>	<i>Reference literature</i>
Internet service to support physical activity in rheumatoid arthritis	LUs were recruited for focus group interviews and questionnaires to collect ideas for an internet service. The LUs were intended to become co-designers of the future internet service. A series of workshops where LUs, healthcare providers, researchers, and web-designers was planned.	Unknown (no studies available)	Revenäs et al. (2014)
Johnson and Johnson	The application of LUM at Johnson and Johnson (J&J) was located in the division of surgical hygiene products. The responsible people at J&J chose the patient coverings and the protective clothing of operation personnel as the search field for innovative ideas. The workshop provided J&J with the beginnings for the development of new product lines. All four of the concepts included products that were not currently in the J&J product program. Some of the product ideas are still not available from any manufacturer in the market, making them world firsts.	Unknown (no studies available)	Herstatt et al. (2001) and Lühje and Herstatt (2004)
Kellogg	LU project in food products. Outcomes: a product, a service platform	Yes (only mentioned; no studies available)	Eisenberg (2011) and Olson and Bakke (2004)
LEGO	LEGO has built a producer–user ecosystem containing three main actors: entrepreneurial LUs who aim to start their own businesses, a vibrant user community, and the LEGO company as the focal producer firm and facilitator for multiple user-to-user and user-to-producer interactions. No record of actual LUM application.	NA	Hienerth et al. (2011, 2014a)
Nestle	LU project in food products. Outcomes: a business model, concepts	Yes (only mentioned; no studies available)	Eisenberg (2011) and Olson and Bakke (2004)
Nortel	Nortel Networks was the first company in the internet industry to implement a LUM project when they applied it in 2000 to discover new voice, data, and location-based services for the wireless internet, and to help identify disruptive technologies in their industry.	Yes (only mentioned; no studies available)	Eisenberg (2011), Nortel Networks (2000) and Olson and Bakke (2004)

**Table A1** Review of cases where the use of LUM or other type of collaboration with LUs is reported (continued)

<i>Case</i>	<i>Content</i>	<i>Continued use of LUM?</i>	<i>Reference literature</i>
Olympic Snack	Lee Meadows, principal of the consulting firm business genetics, and Eric von Hippel carried out an LU study for a major manufacturer of food products. The company was seeking a new kind of snack food. LUs, nutrition experts, and internal scientists developed a concept for a performance-enhancing snack designed to appeal to the amateur athlete market.	Unknown (no studies available)	Churchill et al. (2009)
PC CAD	LUs were successfully identified and proved to have unique and useful data regarding both new product needs and solutions responsive to those needs. New product concepts generated on the basis of LU data were found to be strongly preferred by a representative sample of PC CAD users.	Unknown (no studies available)	Urban and von Hippel (1988)
Philips	LU project in home appliances. Outcome: a product 'system'	Yes (only mentioned; no studies available)	Eisenberg (2011) and Olson and Bakke (2004)
Pitney Bowes	An LU project was involved in developing a new business model for the company's entry into the package shipping space.	Yes (only mentioned; no studies available)	Eisenberg (2011) and Olson and Bakke (2004)
Telenor	LUM was applied in one of their divisions in 2001–2002 to identify opportunities in the telecom, internet, media, and entertainment segments. The LU process was implemented by outside consultants with the help of Telenor managers. The LU generated ideas were largely seen as a confirmation of new product ideas that had previously been researched and discussed by Telenor engineers. Of the few LU generated ideas that did become future products at Telenor, none were considered new to the Telenor LU team, while the majority that were not adopted were judged to be not very interesting or not specific enough to pursue further.	No (case description available)	Olson and Bakke (2004)

## Appendix 2

**Table A2** Review of articles that report possible factors that hinder or promote the use of LUM

<i>Category</i>	<i>Factors hindering LUM</i>	<i>Factors promoting LUM</i>	<i>Reference literature</i>
Attitude	The idea that sophisticated users can be a source of both design data and product ideas may be counter-intuitive for many personnel		Churchill et al. (2009)
	The idea that sophisticated users can be a source of needs information may be counter-intuitive for many personnel		Churchill et al. (2009)
	Collaboration with outside LUs may be difficult for some		Churchill et al. (2009)
	Collaboration between R&D and marketing may be difficult for some		Churchill et al. (2009)
		A shift in managers' attitude regarding resource allocation for concept development activities	Churchill et al. (2009)
	Managers may question what LUs can teach them		Churchill et al. (2009)
Context	The complexity of the context in which LUM is used		Galbraith et al. (2008)
	Confidentiality issues related to the context of method use		Galbraith et al. (2008)
	Ethical issues related to the context of method use		Galbraith et al. (2008)
Credibility	The credibility of LUs compared to other established and prestigious collaborators		Olson and Bakke (2001)
	The feeling that most suggestions are very mundane, caused by limited product knowledge		Olson and Bakke (2001)
	Value is downgraded; technology-focused NPD personnel even found successful concepts too simple technologically		Olson and Bakke (2001)
		The credibility of products and services	O'Flaherty et al. (2013)
		The 'voice of the customer' helps in negotiations with suppliers	Olson and Bakke (2001)
		The 'voice of the customer' helps in negotiations within an organisation	Olson and Bakke (2001)

**Table A2** Review of articles that report possible factors that hinder or promote the use of LUM (continued)

<i>Category</i>	<i>Factors hindering LUM</i>	<i>Factors promoting LUM</i>	<i>Reference literature</i>
Effort	The unwillingness of employees to participate in LU projects due to the additional work		Keinz et al. (2012)
	The greater time required relative to alternative approaches		Lilien et al. (2002)
	The greater effort required relative to alternative approaches		Lilien et al. (2002)
	The greater monetary costs to generate ideas than the costs of non-LU methods		Lilien et al. (2002)
	More time is required to generate ideas than the time required by non-LU methods		Lilien et al. (2002)
	The great amount of effort required to implement LUM		Olson and Bakke (2001)
	The extra time needed to identify LUs		Olson and Bakke (2001)
	The potential expense of implementation		O'Flaherty et al. (2013)
		Sufficient time is given to allow for insights to develop	Eisenberg (2011)
IPR	The challenge of fairness with respect to the resulting IPR		Hienerth et al. (2014a)
	The ideas generated are less protectable by means of intellectual property protection		Lilien et al. (2002)
	The need to create templates for further cooperation; the IP strategy		Keinz et al. (2012)
Marketing		Improved marketing efforts enable closer relationships with identified customers who most likely need new features	Olson and Bakke (2001)
Measuring	Difficulties in isolating the effects of improvements		Olson and Bakke (2001)
Motivating LUs		The development of incentives for LUs to collaborate with a company	Keinz et al. (2012)
	The need to create templates for further cooperation; incentive systems		Keinz et al. (2012)

**Table A2** Review of articles that report possible factors that hinder or promote the use of LUM (continued)

<i>Category</i>	<i>Factors hindering LUM</i>	<i>Factors promoting LUM</i>	<i>Reference literature</i>
Nih	No sustainable relationship is generated; concepts can fall victim to the NIH syndrome		Hienerth et al. (2014a)
	The unwillingness of employees to participate in LU projects due to the NIH syndrome		Keinz et al. (2012)
No change driver	The absence of any great reason for change		Olson and Bakke (2001)
Organisation	Fear that the ideas might have low 'organisational fit' with existing distribution channels		Lilien et al. (2002)
	Fear that the ideas might have low 'organisational fit' with existing manufacturing capabilities		Lilien et al. (2002)
	Fear that the ideas might have low 'organisational fit' with the existing strategic plan		Lilien et al. (2002)
	The lack of an established pathway to consider LUM		Galbraith et al. (2008)
		Results-based incentives that also require the measurement of the results of any NPD changes	Olson and Bakke (2001)
		Employees are convinced by a demonstration of the potential of user-generated content	Keinz et al. (2012)
		Employees are convinced by the creation of appropriate incentive systems	Keinz et al. (2012)
		The development of competencies with regard to identifying LUs	Keinz et al. (2012)
		The development of competencies with regard to moderating LU workshops	Keinz et al. (2012)
		The need for learning processes from prior LU projects	Keinz et al. (2012)
	Changing corporate strategy toward innovation leadership	Keinz et al. (2012)	
	The adaptation of the corporate strategy to deal with radical/disruptive innovation	Keinz et al. (2012)	
	Management support	Eisenberg (2011)	

**Table A2** Review of articles that report possible factors that hinder or promote the use of LUM (continued)

<i>Category</i>	<i>Factors hindering LUM</i>	<i>Factors promoting LUM</i>	<i>Reference literature</i>
Organisation		Establishing organisational control of NPD documentation	Olson and Bakke (2001)
	The need to create new processes		Keinz et al. (2012)
Other risks	User innovation communities may generate competition		Hienerth et al. (2014a)
Ownership		Assigning persons responsible for the relationship management with LUs and external experts.	Keinz et al. (2012)
Predictability		Ideas have greater commercial potential	Lilien et al. (2002)
		The increased likelihood of yielding commercially attractive innovations	Franke et al. (2006)
	Fear of LU concepts being too far ahead of the general market		Olson and Bakke (2001)
		Identifying and learning from LUs outside of the target market will increase the overall rate of the generation of major new product lines	Lilien et al. (2002)
Process	Fear that the ideas are not far enough ahead		Olson and Bakke (2001)
		Ideas are cost-effective to implement into next generation products	Olson and Bakke (2001)
		Ideas are practical to implement into next generation products	Olson and Bakke (2001)
	Too narrow user representation		Galbraith et al. (2008)
	High potential risk; the failure to identify trends		Hienerth et al. (2014a)
	High potential risk; the failure to identify LUs		Hienerth et al. (2014a)
	High potential risk; the identified LUs are not real LUs		Hienerth et al. (2014a)
	The liability of ideas		Galbraith et al. (2008)
	The fear of missing the important desires of the average customer		Olson and Bakke (2001)

**Table A2** Review of articles that report possible factors that hinder or promote the use of LUM (continued)

<i>Category</i>	<i>Factors hindering LUM</i>	<i>Factors promoting LUM</i>	<i>Reference literature</i>
Staff turnover	Staff turnover		Olson and Bakke (2001)
Team		The method improves cross-functional teamwork by involving people typically not involved in NPD Careful team selection	Olson and Bakke (2001) Eisenberg (2011)