# Chapter 9

## Communities of practice as collective lead users

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## Abstract

In today´s world of rapid technological changes and high-velocity markets, one of the central challenges many organizations face is to create truly novel products and services that can secure sustainable competitive advantage. While most organizations are quite capable of improving their products and services, they often lack the ability to break from their own treaded pathways. In this article, we elaborate on the collective side of lead users. We argue that intra-firm communities of practice as social entities can display similar lead user characteristics although no single individual member possess all criteria commonly associated with lead-userness. We ground our arguments predominantly in conceptual deliberations based on the conjunction of the concepts of lead users and communities of practice. However, as we have studied these communities of practice in the German Federal Armed Forces (an end-user-organization in the public sector), we are providing first evidence from different case studies supporting our concept of collective lead users.

**Keywords:** Lead Users; Communities of Practice; Collective Lead Users; End-User-organization

## 1 Introduction

In today´s world of rapid technological changes and high-velocity markets, one of the central challenges many organizations face is to create novel products and services in order to gain competitive advantage. While most organizations are quite capable of improving their products and services, they lack the ability to break from their own paths. Although marketing research early on tried to understand customer needs and the increasing research on user integration provided many great insights, the central problem of breaking from the existing path´s endured. In the face of this challenge von Hippel (1986) introduced the concept of lead users as innovators. As the identification and subsequent integration of these lead users would directly address the challenge to overcome path dependency regarding product and service innovation, the concept quickly attracted scholars and practitioners alike.

Within the emerging field of lead user theory scholars early on began to construct and refine a systematic approach to identify and integrate lead users. Beside the founder of this field Cornelius Herstatt was at the leading edge of this field. Engaged in the lead user method (Herstatt & von Hippel, 1992), uncovering new loci of lead users (Schweisfurth & Herstatt, 2015, 2016; Tietz, Füller, & Herstatt, 2006), as well as advancing the overall lead user theory and the characteristics of lead users (Lettl, Herstatt, & Gemuenden, 2006; Lüthje & Herstatt, 2004), Herstatt shaped this field quite substantially. In fact, we have to admit that his ideas led us to include lead users into one of our recent research projects. Especially his focus on


R. Tiwari and S. Buse (eds.), *Managing Innovation in a Global and Digital World*, https://doi.org/10.1007/978-3-658-27241-8_10

lead users embedded in organizations and his focus on user communities sparked our imagination to hypothesize if we could carry these ideas to communities of practice within end-user organizations.

In particular, we expected to spot lead users within the manifold, highly specialized domains of the German Federal Armed Forces, in which soldiers are often users of sophisticated equipment and products in extreme and novel situations such as missions abroad (e.g., Afghanistan). To our surprise, we did not recognize one single person who exhibits all commonly known lead user characteristics. Instead, we found that communities of practice that describe self-organized practitioners, who share knowledge and develop innovative solutions to their practice problems, can display all lead user criteria as a collective, social entity.

Given this unexpected finding, we turned back to the impressive research on lead users and noticed that the lead user is most commonly depicted as a singular person (Hienerth & Lettl, 2017). Although a collective side was always present in the literature on lead users (Hienerth & Lettl, 2011; Hienerth, von Hippel, & Jensen, 2014; Kratzer, Lettl, Franke, & Gloor, 2016; Morrison, Roberts, & Hippel, 2000; von Hippel, 2001), for the most part researchers envisioned collectives as support networks around lead users. However, as the market dynamic is rising and the complexity of products and services is constantly increasing, we were wondering if specific contingencies might call for more than individual lead users. We further found support for this assumption as research on lead-userness and the turn from dichotomous to continuous lead user characteristics (Faullant, Schwarz, Krajger, & Breitenecker, 2012; Morrison, Roberts, & Midgley, 2004; Schreier & Prügl, 2008) opened new possibilities to explore heterogenous groups of people, displaying different lead user characteristics.

In this article, we will elaborate on the collective side of lead users. We argue that intra-firm communities of practice as social entities can display similar lead user characteristics although no single individual member possess all criteria commonly associated with lead-userness. We ground our arguments predominantly in conceptual deliberations based on the conjunction of the concepts of lead users and communities of practice. However, as we have studied these communities of practice in the German Federal Armed Forces (an end-user-organization in the public sector), we are providing first evidence from different case studies supporting our concept of collective lead users.

## 2 Theoretical background

### 2.1 Lead users and collective entities

The initial concept of lead users was formulated by von Hippel (1986) in order address internal and external barriers in firms to break from familiar trajectories inhibiting the development of „very novel products“. In the original approach lead users are defined as individuals who (1) are facing needs ahead of the market and (2) would benefit significantly from solutions to address these needs (von Hippel, 1986). As this concept addresses one of the fundamental questions of developing a (dynamic) capability with regard to product development, researchers quickly flocked to this emerging field within the wider area of user or open innovation (Lüthje & Herstatt, 2004; Mahr & Lievens, 2012; Mahr, Lievens, & Blazevic, 2014). Especially scholars concerned with marketing and innovation management have been very active in pushing the theoretical and practical boundaries of the lead user concept and method (von Hippel, 1986; Herstatt & von Hippel, 1992; Lüthje & Herstatt, 2004).

In this line, early research on lead users focused on the interaction between manufacturing firms and lead users with the aim to identify and integrate such extraordinarily sophisticated users and their breakthrough ideas into the fuzzy front end of the new product development process (Herstatt & von Hippel, 1992; Lilien, Morrison, Searls, Sonnack, & Hippel, 2002; Lüthje & Herstatt, 2004). The reasoning behind this lead user method is to identify individual leading-edge users from a population of users and utilize their knowledge about future needs for the focal firm's innovation capability (Urban & von Hippel, 1988; von Hippel, 1986). The described interaction, therefore, is mainly dyadic between singular entities: incumbent firms and selected lead users.

Particularly the identification of lead users sparked research in order to flesh out more detailed characteristics and traits which would allow distinguishing lead users from other user groups like regular users, user innovators, and expert users (Hienerth & Lettl, 2017). Thus, the bulk of the research is conducted regarding the lead user method, while the construct itself, as well as connections to other research streams, is rather underrepresented, sometimes leading to conceptual dilution (Hienerth & Lettl, 2011, 2017).

Research on the characteristics of (potential) lead users has gained much traction, especially with regard to the concept of lead-userness. In line with the overall aim to uncover lead users, the central focus of this research stream is directed on the antecedents of lead-userness. Angur and Nataraajan (1998) early on used the term lead-usership as a latent variable explained in part by innovatorship, which in turn is explained by adoption behavior. It is argued that users with unsatisfied needs would search their environment and adopt new products or services fitting their needs (Angur & Nataraajan, 1998). Following in this line especially Schreier and Prügl (2008) have systematically uncovered additional antecedents of lead-userness. First, they outline that within the original framework consumer knowledge and use experience are critical components of lead-userness. Consumer knowledge refers to the body of knowledge users' possess in a broader use context, providing a sound basis of understanding that can be used to integrate new information and experience into their existing mental schemas (Schreier & Prügl, 2008). Use experience, on the other hand, is a more specific type of knowledge originating from direct interaction with tasks and products or services (Schreier & Prügl, 2008). Both types of knowledge are positively correlated as consumer knowledge is the basis from which use experience could be generated and interpreted, while use experience is one source to build up consumer knowledge (Schreier & Prügl, 2008). Additionally, Schreier and Prügl (2008) carve out the variables of innovativeness and locus of control. The latter is a measure for users' believe that outcomes rely on their actions, while innovativeness measures a predisposition of users for innovations, thus, being similar to the adaptation measure proposed by Angur and Nataraajan (1998).

Finally, the construct of lead-userness is no longer adhering to the implied logic of a dichotomous construct but instead assumes a gradual measure (Hienerth and Lettl, 2017). Thus, research on lead users is opened up substantially to include wider populations of users exhibiting different degrees of lead-userness. Furthermore, this opens up the avenue to argue that there might not only be a single lead user or a small group of dispersed lead users but different users exhibiting different traits of lead-userness. Taking this argument even further, while reconnecting it to the increasing expectations put on lead users due to rising product or service complexity in high-velocity environments, we might argue that the lead user must not always be considered as a specific individual. Rather, a lead user can also be conceived as a collective

of heterogeneous users with different degrees of lead-userness or even with different lead user characteristics who collectively shape the lead-userness as a group.

Consequently, in more recent studies, researchers' focus increasingly shifts from investigating singular lead users and their characteristics to exploring what kind of social contexts such users are embedded in. For instance, one research strand explores the role of lead users within user communities (Franke & Shah, 2003; Hienerth & Lettl, 2011; Hienerth, Lettl, & Keinz, 2014; Mahr & Lievens, 2012; Shah & Tripsas, 2007). Such communities describe informal social networks in which individuals from diverse backgrounds share knowledge and innovative thoughts about a common topic or field of interest (von Hippel, 2001, 2007). These communities can be a vibrant arena for innovation because members engage in mutual problem-solving, develop innovative ideas or advance new technologies for new or existent applications (Franke & Shah, 2003; Hienerth, 2006; Hienerth, von Hippel et al., 2014; Jeppesen & Frederiksen, 2006; von Hippel & Krogh, 2003).

Another emerging literature stream recognizes that some firm employees can be lead users of the company's products and services (Schweisfurth & Herstatt, 2015, 2016; Schweisfurth & Raasch, 2015). Schweisfurth and Raasch (2015) refer to such employees as embedded lead users that are simultaneously embedded in the social context of a focal firm but also engage with other users in their user communities outside the organization's boundaries (Schweisfurth & Herstatt, 2015, 2016). Schweisfurth and Herstatt (2016) point out that such embedded lead users function as boundary spanners because they, on the one hand, hold sticky knowledge about user needs and experiences through their use of the firm's products and their interactions with other users. On the other hand, embedded lead users also possess knowledge about the focal firm's internal processes, routines, and its culture, which enables them to translate specific user needs and ideas into new products.

Furthermore, several authors point out that lead users often are members of and participate in such user communities (Hienerth & Lettl, 2011; Hienerth, Lettl et al., 2014; Jeppesen & Laursen, 2009; Shah & Tripsas, 2007). This research argues that it seems unlikely that one individual alone possesses all capabilities needed to develop an initial idea into a full-fledged innovation. Thus innovative users will probably seek the help of others who are also interested in the same topic (Kratzer et al., 2016). In this context, Shah and Tripsas (2007) point out that lead user innovations are often rooted in collective processes in which user communities provide the space for trial and error experimentation, learning by doing, and recombination of knowledge. In a similar vein, Hienerth and Lettl (2011) elaborate that communities evolving around lead users help to evaluate initial lead user' ideas and facilitate the development of prototypes because members possess heterogeneous but complimentary knowledge and skills. Besides, the user community is said to play a crucial role in adapting the lead user innovation and diffusing it, thus reducing the risks involved in innovating (Hienerth, Lettl et al., 2014). On a related note, scholars have found that lead users often function as boundary spanners between several local user communities. They are thus critical for importing and sharing new knowledge from other distant fields, helping the local community to extend or recombine its existent knowledge which is a fundamental premise for exploration (Jeppesen & Laursen, 2009; Kratzer et al., 2016; Kratzer & Lettl, 2008, 2009). Otherwise, user communities would only incrementally build on aspects already known in their field, making true breakthroughs unlikely. Lead users' solution or market knowledge from outside domains paired with the distributed intelligence and peer review mechanisms of local user communities thus build the base for developing fruitful innovations.

It becomes evident through this review of the recent literature that research on lead users increasingly studies the collective side of the lead user phenomenon by exploring miscellaneous social settings in which such users are situated. Albeit the manifold lines of research, we would like to tie all these strings together to flesh out a manifestation of the lead user that is not bound to the individual. Following the argument that lead users gain their leading edge status from use experience in extreme or novel practice, while considering the subsequent arguments for collaborative experimentation and the combination of different (tacit) knowledge sources in the context of a community, we are suggesting that communities of practices can be considered as settings to study collective lead users.

### 2.2 Communities of practice as collective lead users

The literature on communities of practice can be differentiated into at least two different streams, reflecting their underlying schools of thought: a rather institutional view originating from an organizational learning perspective and a rather instrumental view rooted within a knowledge management perspective. First and foremost there are the studies of Lave and Wenger (1991), Wenger et al. (2002) as well as Brown and Duguid (1991) that paved the way for communities of practice to be recognized as an important asset within organizational learning processes. Their main focus is to show that communities of practice as loci of specialized knowledge play a vital role in creating, preserving and sharing practices with respect to organizational tasks (Bechky, 2003; Brown & Duguid, 1991; Contu & Willmott, 2003; Jagasia, Baul, & Mallik, 2015; Kogut & Zander, 1996; Lave & Wenger, 1991; Wenger, McDermott, & Snyder, 2002). Related to the organizational learning perspective but far more management driven is the literature stream investigating the contributions of communities to the organizational knowledge and innovation management (Bertels, Kleinschmidt, & Koen, 2011; Franke & Shah, 2003; Harvey, Cohendent, Simon, & Borzillo, 2015; Kimble & Hildreth, 2005; Mahr & Lievens, 2012).

Within this article we adhere to the organizational learning side, understanding communities of practice as a web of relationships emerging within the realm of a more or less pronounced identity connected to a specific knowledge area or field of expertise shaped and reshaped in the day-to-day practices (Bridwell-Mitchell, 2016; Brown & Duguid, 2001; Lindkvist, 2005; Wenger et al., 2002). In order to connect the community of practice perspective with the concept of lead users, we further need to elaborate if communities of practice could theoretically be considered as entities that collectively develop needs ahead of the market on the one hand and would benefit from solutions for said needs. However, before we dive into the internal mechanisms of communities of practice in order to theorize if we find similar antecedents for lead user behavior, we are taking a short look at the side of the consequences attributed to lead users: “come up with attractive user innovation” (Schreier & Prügel, 2008: 334).

Regardless of the scholarly stance either on the organizational learning or the knowledge management side, research seems to agree that communities of practice can be envisioned as a vibrant source of product, service, or process innovation. Kodama (2000) for example mentions that the usage of communities of practice fosters the development of an innovative mindset, which leads to the evolution of an innovative subculture within the organization (Bertels et al., 2011), while Harvey et al. (2015) stress the importance of communities within the front end of innovation. Consequently, several scholars concentrate on communities of practice serving as loci for the successful collaborative development of innovations (Belz & Baumbach, 2010; Franke, von Hippel, & Schreier, 2006; Hienerth & Lettl, 2011; von Hippel, 2005,

2007). Besides empirical research on brand (Füller, Matzler, & Hoppe, 2008) and open source communities (Lakhani & von Hippel, 2003), several studies elucidate the outstanding potential of communities of practice with regard to user-driven innovation (Franke & Shah, 2003; Hienerth & Lettl, 2011; Jeppesen & Laursen, 2009). Withal, a central argument for these collaborative ventures is made by Harhoff, Henkel, and von Hippel stating that the creative innovation process is often characterized by complementary contributions of several actors *"since none of them has sufficient knowledge or information to produce the innovation on their own."* (2003, p. 1757). In summary, the assumption that communities of practice as collective entities produce similar outcomes as lead users, thus, carrying our overall proposition of collective lead users.

However, regarding the question, if the antecedents used in the lead user theory are similar in communities of practice, we need to look at the internal mechanisms of these entities. At first, research has shown that communities of practice provide an error-tolerant and risk-rewarding atmosphere (Kirkman, Cordery, Mathieu, Rosen, & Kukenberger, 2013; Kirkman, Mathieu, Cordery, Rosen, & Kukenberger, 2011) which stimulates the members to articulate new ideas and concepts in connection to their workplace (Brown & Duguid, 2001; Jeppesen & Laursen, 2009). Due to this specific context members are enabled to deviate from common practices or engage with ideas deviating from routines and believes ingrained in the organization. Therefore, communities of practice could not only be perceived as possessing an innovation capability, but they can also hold the potential to create radically new solutions.

Furthermore, within formal organizational contexts communities of practice emerge as informal entities serving as a sphere for interaction and exchange of the experts in their specific field of expertise (Brown & Duguid, 2001; Pattinson & Preece, 2014; von Hippel, 2005). Their expertise is, on the one hand, a result of their constant engagement with barriers and opportunities emerging in their day-to-day practices and on the other hand increased by their collective attempts to make sense of said barriers. In particular, scholars have argued that the formation of communities of practice can sometimes be seen as a reaction to barriers (or opportunities) encountered by individuals within the same or a similar domain (Swan, Scarbrough, & Robertson, 2002; Topousis, Dennehy, & Lebsock, 2012). Barriers in this sense can be interpreted as challenges originating from products or processes that could no longer be used to fulfill the organizational tasks in the face of changing environments, thus, bringing us back to the original definition of von Hippel (1986) regarding lead users' dissatisfaction with existing solutions. Combined with the notion that communities of practice provide low-risk environments of creative exchange, we can hypothesize that these entities are not only at the leading edge of their specific domains but are also able to overcome the negative influence of familiarity. Additionally, research on the motivation of members of communities of practice shows that, apart from advancing their domain out of joy, members also want to improve their task fulfillment (Jeppesen & Frederiksen, 2006; Pastoors, 2007; Probst & Borzillo, 2008; Shah, 2006; Sole & Edmondson, 2002). Within organizational settings, community members are at the same time located in their formal and their informal contexts. In turn, we can argue that the members of a community of practice will directly benefit from solutions they develop.

In summary, we argue that a community of practice could comprise all lead user characteristics. Communities of practice are often at the leading edge of their domain due to the interconnection of experts in similar practices. Their highly specialized practices do not only provide the possibility to identify emerging threats and opportunities, but they are also the reason why members of a community of practice would highly benefit from addressing them, as their

task fulfillment within a formal context depends on it. Furthermore, as most members are domain experts motivated to exchange knowledge with their peers to advance their overall field of expertise, communities of practice provide ideal spaces for collective sensemaking and creativity. This is increased by the fact that, in contrast to their surrounding formal and often hierarchical context, communities of practice provide spaces that allow its members to deviate from existing practices. In order to undergird these theoretical arguments, we are using the remainder of this article to present first empirical insights in the form of short case descriptions.

## 3 Collective lead users in the German federal armed forces

The following impressions stem from a four-year study of informal, self-organized communities of practice within the German military. These communities spontaneously emerged around various practices of the armed forces that were characterized through a dynamic and increasingly complex environment for task-fulfillment. For example, we studied the following communities of practice:

- The demolition community; a group of soldiers concerned with military blasting procedures within missions abroad such as Afghanistan or Kosovo that necessitated more precise and indulgent demolition techniques.
- The culture community; which evolved within the domain of intercultural competence, a critical capability within nowadays' out of area assignments that require a fundamentally renewed approach of interacting with the civilian population and the local cultural context.
- The electronic safety community; a self-organized group in the field of operational safety of electronic devices that are increasingly technologically sophisticated, modular, and delicate.
- The link community; an informal network that emerged around the operation and maintenance of state of the art radio systems utilized for the encrypted exchange of tactical information among numerous units.

During our investigations of these communities of practice, we could not identify an individual member who embodied all of the above-outlined lead user characteristics. We, however, observed that these informally networked practitioners located at the organizational frontlines developed what could be termed a collective lead-userness through their ongoing self-organized interactions. To put it differently, instead of a single extraordinary individual, it seems that the community as an emergent, social entity displays lead-userness on an aggregate level.

In particular, we observed that these self-organized communities of practice often function as collective need detectors and sensors on the practice levels. That is, community members engage in their practices within dynamic and volatile circumstances in out of area missions, which regularly results in the extreme and novel applications of operating procedures or equipment. Within these new use contexts, frontline soldiers are often confronted with practice dilemmas as they reach the limits of existing routines or technical equipment parts. Due to this field-related experience in a novel use context, community members are often the first to recognize the needs for adapting routines and procedures or innovative military equipment.

For example, in the demolition community members sensed changes in their task-related context regarding the use of demolition devices in contemporary peace-keeping or peace-enforcing missions. To be more specific, traditional blasting procedures usually involve employing high amounts of explosives to destruct infrastructure (e.g., buildings, bridges, roads), whereas within the context of modern out of area missions requirements shift towards precise blasting in urban terrain (e.g., doors, windows, walls to gain access) without destructing civilian infrastructure. Trained demolition experts were the first to notice this profound change in their practice that requires new explosive devices, new training in the use of these devices, and new military equipment such as backpacks, tools, and tool bags to effectively transport and use the new explosives. Note, that not one single member recognized all the needs mentioned above but that these experts continuously exchange their experiences within these missions abroad from which a collective consciousness of the practice problems gradually evolves. Regarding missing equipment one informant, for example, noted:

> *"We do not have a specialized backpack for blasting materials. When we are in exercises or missions, and we have to dismount (from the combat vehicle) we have to take everything with us like tools, explosives and so on and every soldier has 10 pounds of explosives, and this becomes heavy. However, we do not have an extra backpack for it."*

Besides these strong needs for innovating procedures and products, the community members regularly pointed out that they would expect a high benefit from obtaining a solution to their practice problems. Take, for example, the blasting experts mentioned above; they literally have a vital interest in obtaining the best solution possible to their practice problems when they handle explosives in dangerous, stressful, and complicated situations. In other words, community members' benefits from obtaining innovative solutions were always connected to improving the task-fulfillment for themselves and their comrades. Additionally, informants often emphasized that finding a more effective and efficient way to perform their duties would not only facilitate individual benefits but could also increase overall organizational effectiveness of the armed forces. As one community member noted:

> *"…because we would not work in this community if there were no benefits to the Federal Armed Forces."*

Lead users, however, are not exclusively characterized by experiencing unique needs and expecting high benefits but are also often capable of developing first solutions or prototypes to the identified needs (von Hippel, 2005). Innovation emerges from knowledge about needs but also from solution knowledge. Within our investigations, we did not detect one single individual lead user developing an innovative solution, but instead, we observed a collective problem-solving process within these communities of practice. The collective development of new operating procedures or prototypes for military equipment parts relied on the distributed and heterogeneous knowledge of several community members. Returning to the example of the backpack for demolition experts, one soldier sketched out an initial draft for a new backpack that would be feasible for various mission scenarios. After that, he introduced the idea to other community members, who then began to refine the backpack relying on their knowledge about different use scenarios and their individual experiences from different missions. This is because the community involves soldiers, who are posted in various units and service areas ranging from Army Special Forces to Naval divers, and therefore, have distinct user experiences within unique contexts. Sharing this context-specific knowledge within the community

thus enabled members to further develop the backpack. Besides this knowledge about different use contexts, some community members know how to process and integrate novel ideas into the official system of the armed forces. These often more experienced members hold organizational knowledge that entails knowledge about the bureaucratic requirements that need to be fulfilled. They also knew whom and which authorities to contact during such a bottom-up induced innovation process. For example, in the case of new military equipment, all newly procured items and products need to be internally tested for their military applicability. Considering the backpack again, one member established a link to one of the internal testing facilities of the armed forces to verify the backpacks' material quality. After these tests, the community was able to prototype the backpack with the help of a civil manufacturer. Subsequently, several community members were invited to test the backpack during their day-to-day activities. One informant summarized this as follows:

> *"Moreover, we had the contact to the technical center and to the experts, who make all these experiments: when does it break under pressure, what is happening if you attach it to a parachute and so on."*

Additional to this internal organizational knowledge, the studied communities of practice often fulfill the role of boundary spanners because some members cultivate connections to manufacturing firms of military equipment or civil institutions in their field of expertise such as universities or professional associations. These connections enable members to incorporate external knowledge into their solutions and on the other hand transfer their prototypes and solutions to manufacturers to stimulate the production of new, much-needed products on the producer side. In many cases, the communities were able to initiate improvements of existing products or technical devices as they transferred their context-bound use knowledge to manufacturing firms, who were willing to integrate these experiences into their products. For example, in one of the studied CoPs informants explained how they improved the design concept of a large, industrial power generator mostly used in camps, which was later introduced into the armed forces with the second generation of the generator because members exchanged their innovative ideas with the manufacturer.

In summary, the impressions from the armed forces indicate that community members collectively detect new needs regarding their practices as they engage in extreme and novel use-contexts. Besides that, the communities of practice are able to generate adaptive solutions through their self-organized interaction as complementary knowledge and perspectives are brought together. Finally, some members of the communities act as boundary spanners enabling the transfer of sticky, context-bound use experiences and local solutions to manufactures. In light of these impressions, we suggest that the lead user in our cases is best understood on the collective level of the community. That is, lead user innovation depicts a collective phenomenon socially embedded in the self-organized interactions among practitioners on the organizational frontlines. It is this self-organization that brings the heterogeneous need and solution knowledge as well as the diverse capabilities of members required for innovation (e.g., prototyping, testing, boundary spanning, and diffusing by official acceptance) together.

## 4 Conclusion

Proceeding from the literature on lead users and the outstanding contributions that our dear colleague Cornelius Herstatt made to this field, we aimed at exploring the collective side of the lead user phenomenon in more detail. To this end, we reviewed prior work about lead users in the field of open and user innovation, noting that recent research increasingly studies the social contexts in which sophisticated users are embedded such as user communities (Hienerth & Lettl, 2011), user ecosystems (Hienerth, Lettl et al., 2014), or as employees in incumbent firms (Schweisfurth & Herstatt, 2016). Although this literature provides several hints regarding the collective nature of the construct as firms or entire user communities are sometimes labeled as lead users, scholars mostly concentrate on singular entities that possess a high degree of lead-userness when they refer to these extraordinary users.

To shed more light on the collective nature on lead users we, therefore, turned to the concept of communities of practice and provided empirical impressions from our fieldwork with such self-organized, informal groupings in the Federal Armed Forces. Based on these anecdotes, we suggest that communities of practice can develop what we refer to as collective lead-userness. That is, we identify lead user characteristics on the aggregate level of the community. First, members of such communities sense, articulate, and collectively discuss their needs stemming from novel use-contexts, which echoes the lead user characteristics of recognizing needs ahead of others (Lüthje & Herstatt, 2004; von Hippel, 1986). Second, community members express a high expected benefit from obtaining a solution (Morrison et al., 2000; Urban & von Hippel, 1988; von Hippel, 1986) because this would enable effective task-fulfillment in dynamic environments. Third, communities collectively hold the capabilities and the knowledge needed to address these needs. That is, they also embody the lead user characteristics of being capable of developing novel solutions (von Hippel, 1986). Finally, some members of these communities of practice act as boundary spanners (Jeppesen & Laursen, 2009; Kratzer et al., 2016; Kratzer & Lettl, 2009) helping to integrate external knowledge as well as initiating product innovations from manufacturers.

Given these observations, we assume that in complex and dynamic changing environments such as the above-mentioned domain of demolition procedures, lead-userness depicts a collective phenomenon. This is because, a community of practice is – under these contingencies – more capable to detect needs and develop innovative solutions more effectively and efficiently than a single person. Single individuals might be quickly overwhelmed by such complex and ever-changing environments due to their bounded rationality, i.e., their limited cognitive capacity to process information. Indeed, the community of practice comprises members with heterogeneous but complementary knowledge, skills, and roles and thus is capable of finding and implementing a solution of high quality more rapidly.

In outlining this collective lead-userness, we are the first to our knowledge who suggest a collective construct of lead users. However, we admit that the provided evidence is only a first step and that further research employing qualitative, as well as quantitative methodologies, is needed to verify this assumption more rigorously. An especially fruitful avenue for future inquiries at this point might be exploring the boundary conditions of collective lead-userness; that is, under which conditions and in what kind of organizational settings is it more likely that collective lead users emerge from interacting users, instead of being concentrated on single, innovative individuals.

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